GLOBAL CLIMATE CHANGE

Transfer of Technology, Financial Assistance and Sustainable Economic Development of Developing Countries under the International Legal Framework

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Submitted in fulfilment of the requirements for the degree of

Doctor of Philosophy

2017

Abstract

This thesis seeks to answer the research question: Has the international legal regime governing climate change been effective in transferring technology and providing financial assistance to developing countries? The main reference point or criterion for answering the research question as to "effectiveness" will be based on the deduction that the obligation placed on developed countries to transfer technology and render financial assistance to developing countries is fundamentally at the root of attaining the greenhouse gas stabilisation objective set by the United Nations Framework Convention on Climate Change (UNFCCC) in 1992, among other objectives; and by extension the long-term temperature goal of the Paris Agreement. The scope of issues to be covered in the discourse to be undertaken in this thesis will be guided by the basic consideration that from the ultimate stabilisation objective of the UNFCCC flows other specific and general obligations and commitments of parties relating to mitigation, adaptation, technology, finance, capacity-building, transparency, etc. Thus, any employment of the term "stabilisation objective" ought to be interpreted as liberally as possible in the context of this thesis.

This thesis will adopt the critical legal theory to argue that the treaty obligations placed on developed countries to transfer technology and render financial support to developing countries are supposed to be the main drivers of emission reduction and sustainable development in developing countries, if implemented. With cumulative greenhouse gas emissions from developing countries now projected to surpass that of developed countries in a couple of decades, current effort to support mitigation and sustainable development in developing countries becomes all more important thereby justifying an assessment of how the climate regime has fared so far in technologically and financially supporting the objectives of the UNFCCC, with specific reference to developing countries.

This thesis will be divided into five chapters. Chapter one will further elaborate the research question and point out necessary limitations, define “developed” and “developing” countries for the purposes of this thesis, and set out the methodology and structure of the thesis. Chapter two will evaluate the international legal regime governing climate change with a view to finding out to what extent the regime has been effective in advancing the attainment of the stabilisation objective of the UNFCCC. Chapter three will undertake a detailed exploration of how the principle of common but differentiated responsibilities and respective capabilities (CBDRRC) has evolved in governing the relationships between developing and developed countries from the UNFCCC and Kyoto Protocol to the Paris Agreement, especially with respect to the main greenhouse gas reduction obligations of the parties, obligations pertaining to implementation, and obligations relating to technology transfer and financial assistance. Chapter four will undertake a critical assessment of the core provisions relating to transfer of technology, financial assistance, and sustainable development of developing countries, with a view to establishing their effectiveness or otherwise, using the stabilisation objective of the UNFCCC as the main criterion. The scope of the chapter will traverse the UNFCCC, the Kyoto Protocol, the Paris Agreement, and relevant Conference of the Parties (COP) decisions, and so on. The final chapter will sum up the key findings in the previous chapters, recommend how to strengthen the Paris Agreement, and propose and expound a tripartite framework that may hold the key to future effective governance, assuming the Paris Agreement does not lead to the desired transformation.

Although this thesis will be predominantly argued from the standpoint of developing countries, necessary balance will be maintained throughout the discourse taking into account developments since the negotiation of the UNFCCC in 1992.

Dedication

To my Dad, Mom, and siblings

And to Charlie & Dan especially

Preface

Climate change is no doubt one of the greatest problems to face the international community. The uniqueness of the climate change problem lays in the fact that a solution can only be found through the collective efforts of all the members of the global community. An independent sovereign action of one state alone, or action by a selected number of states, completely divorced from actions taken by other states within their respective territories, will not be adequate to solve the climate change problem. Thus, climate change calls for cooperation among states - both developing and developed - like never before. Moreover, the fact that states comprising the international community are not cast in the same mould economically and technologically further underlines the indispensability of global cooperation in solving the climate change problem. Economically and technologically, developed countries continue to enjoy comparative advantage vis-a-vis developing countries. Therefore, solving the climate change problem will remain elusive without channelling of financial and technological resources from developed to developing countries.

Historical responsibility for climate change notwithstanding, the difference in capacity between countries now offers a more viable ground to justify assistance from developed to developing countries. While, earlier on under the UNFCCC, historical responsibility for climate change mainly characterised contestations regarding burden-sharing to address the problem as seen in the operationalization of the common but differentiated responsibilities and respective capabilities (CBDRRC) principle, which led to developing countries being assigned only general commitments under the UNFCCC and no mitigation commitments under the Kyoto Protocol, the fact that emissions are now continually increasing in developing countries, especially the emerging economies, now makes the common responsibility and respective capabilities aspects of CBDRRC assume more relevance in discussions relating to burden-sharing and responsibility for climate change.

While responsibility for past emissions that formed the initial basis for the climate change problem remains attributable to developed countries, developing countries are now reasonably contributing to current emissions and are projected to overtake developed countries in total cumulative emissions in the future. Thus, although the historical responsibility of developed countries for climate change remains relevant, especially as a justification for them to deploy their better economic and technological capacity to address the problem, developing countries can no longer *generically* be availed by any isolated arguments regarding historical responsibility.

The three philosophical underpinnings of the CBDRRC – common responsibility, differentiated responsibility, and respective capabilities, now need to be contextualised in the relationship between developing and developed countries for necessary progress to be assured. While I remain cautious of what effect the qualifier to CBDRRC in the Paris Agreement will produce in practice, the qualifier if applied fairly will serve to strike the necessary balance needed to separate some developing countries from the others, especially by using current gross emission output and capacity as the criteria. That said, the 'ball will continue to remain in the court of developed countries' for a long time into the future with respect to efforts needed to attain the stabilisation objective of the UNFCCC which entails transfer of technology and financial assistance to developing countries to enable them mitigate climate change, build resilience for adaptation, and embrace sustainable development.

This thesis undertakes the task of providing an answer to the research question: Has the international legal regime governing climate change been effective in transferring technology and providing financial assistance to developing countries? To effectively prosecute the research question, the thesis will be divided into five chapters. Chapter one will further elaborate the research question and set out the methodology and structure of the thesis.

Chapter two will evaluate the international legal regime governing climate change with a view to finding out to what extent the regime has been effective in advancing the attainment of the stabilisation objective of the UNFCCC. Chapter three will extensively assess the relationships between developing and developed countries as founded on the CBDRRC principle, especially in relation to central or main obligations, obligations relating to implementation, and obligations on technology transfer and financial assistance. The evolution of the principle from the UNFCCC and the Kyoto Protocol to the Paris Agreement will be analysed with a view to establishing to what extent the principle has engendered the relationships between developing and developed countries towards attaining the objectives of the UNFCCC. Chapter four will undertake a critical assessment of the core provisions relating to transfer of technology, financial assistance, and sustainable development of developing countries, with the goal of establishing their effectiveness or otherwise based on the UNFCCC stabilisation objective criterion. The scope of the chapter will traverse the UNFCCC, the Kyoto Protocol, the Paris Agreement, and relevant Conference of the Parties (COP) decisions. The final chapter will sum up the key findings in the previous chapters, recommend improvements to the extant regime, and expound an alternative tripartite framework that may hold the key to future effective governance, assuming the Paris Agreement does not lead to the desired transformation.

It goes without saying that the completion of this project would have been extremely difficult without the assistance of the following persons and institutions. First and foremost, I thank God Almighty for His protection and sustenance. I wholeheartedly express my gratitude to my family for financial and other supports. I thank my main and co-supervisors, Professor Klaus Bosselmann and Professor Glenn McGregor, for their guidance and commitment. I also thank Dr An Hertogen for her assistance and for accepting to act as a co-supervisor / advisor upon Glenn's departure. My appreciation also goes to the administrative staff of the Faculty

of Law, University of Auckland, for their support. I sincerely thank the librarians at the Davis Law Library for their assistance. I also appreciate the help of some of the staff of the General Library.

The law is current as of February 2017.

Contents

CHAPTER 1

INTRODUCTION

Thesis Overview

1.1 Locating thesis in the broader context of International Environmental Law (IEL)

International environmental law places the common duty of protecting the global environment on both developing and developed countries. This common duty is generally founded on the principle of global partnership or solidarity[1] which underline the need for cooperation and collaboration among states in the efforts to effectively address global environmental problems. However, a known constraint on developing countries' effort to effectively implement multilateral environmental agreements (MEAs) has been lack of economic and technological capacity, necessitating the international environmental law regime for technology and financial assistance to developing countries to facilitate implementation of MEAs.[2] This thesis advances international environmental law on the topic broadly, and particularly in the international climate change regime.

[1] See, for instance, Principle 7 of Rio Declaration on Environment and Development, UN Doc. A/CONF.151/26, reprinted in ILM 874 (1992). Further on partnership or solidarity, see Philippe Cullet *Differential Treatment in International Environmental Law* (Ashgate, England, 2003) at 42.

[2] In recognition of this constraint, the foremost IEL instrument, the Stockholm Declaration in Principle 12, underscored the "need to make international technical assistance available to developing countries". See also Chapter 34 of Agenda 21. Moreover, in further recognition of the technological and financial constraints on developing countries, a number of recent IEL treaties condition effective implementation of developing countries' obligations under the treaties on developed countries' effective implementation of obligations relating to technology and financial assistance. See Article 20.4 of the Convention on Biological Diversity (CBD), Article 13.4 of the Convention on Persistent Organic Pollutants (POPs), Articles 10 and 10A of the Montreal Protocol on Substances that Deplete the Ozone Layer, and Article 4.7 of the UNFCCC. See generally, Laurence Boisson De Chazournes, 'Technical and Financial Assistance' in Daniel Bodansky, Jutta Brunnee and Ellen Hey (eds) *Oxford Handbook of International Environmental Law* (Oxford University Press, Oxford, 2007) at 947 – 973.

1.2 Research Question.

This thesis sets out to answer the research question: Has the international climate change legal regime governing transfer of technology and financial assistance to developing countries been effective? The main reference point or criterion for answering the research question as to "effectiveness" will be based on the deduction that the obligation placed on developed countries[3] to transfer technology and render financial assistance to developing countries is fundamentally at the root of attaining the greenhouse gas stabilisation[4] objective set by the United Nations Framework Convention on Climate Change (UNFCCC) in 1992,[5] and by extension the long-term temperature goal of the Paris Agreement.[6] The operative term in the research question is the word "effective". The Concise Oxford Dictionary defines "effective", among other definitions, as "producing a desired or intended result".[7] Furthermore, "effectiveness" has been defined as a "measure of the extent to which an activity attains its objectives".[8] Thus, following from these definitions, this thesis seeks to find out if the international legal regime governing climate change has produced the desired

[3] An attempt to define "developed" and "developing" countries will be undertaken in the next sub-chapter of this chapter.

[4] As it has been scientifically proven that stabilising emissions in the climate system requires "near-zero" emissions, to what extent would developed countries be held responsible for emissions coming from developing countries and for the failure to attain the stabilisation objective of the UNFCCC if developed countries fail in their treaty obligation to effectively transfer technology and render financial assistance to developing countries? For the "near-zero" emissions requirement, see H. Damon Matthews and Ken Caldeira, "Stabilizing climate requires near-zero emissions" (2008) 35 *Geophysical Research Letters*, 1-5.

[5] Article 2 of the UNFCCC provides that: "The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner".

[6] Art. 2.1(a) of the Paris Agreement states the long-term temperature goal of the Agreement to be: "Holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels.

[7] Judy Pearsall (ed.,) *The Concise Oxford Dictionary* (Oxford University Press, Oxford, 1999)

[8] Smita Nakhooda and Marigold Norman, *Climate Finance: Is it making a Difference? A review of the effectiveness of Multilateral Climate Funds.* Overseas Development Institute (ODI), 2014, 23. <https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/9359.pdf> Accessed 17 August 2016.

or intended result with respect to transfer of technology and financial assistance to developing countries; or, if it has attained its objectives in that regard.

This thesis does not intend to approach the question of effectiveness from the perspective of actual compliance due to the inherent loose nature of the legal provisions dealing with technology transfer and financial assistance under the UNFCCC. Notwithstanding the use of the mandatory "shall" in the provisions (Articles 4.3 and 4.5), the provisions are inherently communal in nature, lack quantification, and burden sharing arrangement. As long as developed countries are collectively "doing something" under the provisions, can they be said not to be complying? This explains why this thesis adopts the approach of answering the research question based on the actual effect of technology transfer and financial assistance, which brings in the question of the extent technology and finance from developed countries have contributed to emission reduction in developing countries, based on the overarching stabilisation objective set under Article 2 of UNFCCC in 1992.

Furthermore, while a comprehensive critical analysis of the international legal regime governing climate change will be undertaken to ascertain what technology has been transferred, and what finance has been supplied to developing countries by developed countries, in a bid to answer the question as to "effectiveness", it should be noted that there are inherent limitations in tracking climate technology and finance, hence the reason informing the choice to answer the research question not only by relying on the 'narrow' outcome of the investigation relating to the actual technology transferred or finance supplied, but also on the more important and wider question of whether the primary objective of the UNFCCC informing the obligation in relation to transfer of technology and financial assistance to developing countries has been attained. By so doing, the effects of the limitations highlighted above would have been eliminated in so far as the final conclusion with respect to the research question is concerned.

Simply put: it can be argued that the stabilisation objective of the UNFCCC cannot be attained without an effective regime for transfer of technology and financial assistance to developing countries; or, conversely, that the climate change regime governing transfer of technology and financial assistance to developing countries cannot be deemed not to be effective if the stabilisation objective of the UNFCCC has been attained. Of course, I do appreciate that the stabilisation objective set by the UNFCCC is a universal objective to be pursued jointly by all parties – developed and developing; however, utilising the objective as the main basis for answering the research question is informed by the need to establish that rising emission of greenhouse gases in developing countries can be linked to the state of technology and financial support.

Under the climate change regime, developed countries are to transfer technology[9] and render financial assistance[10] to developing countries to enable the latter implement their mitigation and adaptation obligations,[11] and to pursue sustainable development.[12] This obligation is anchored on the principle of common but differentiated responsibilities and respective capabilities (CBDRRC).[13] Thus, from the ultimate stabilisation goal of the UNFCCC flows the obligations placed on both developed and developing countries, subject to the CBDRRC principle.

[9] UNFCCC, Art. 4.5; Kyoto Protocol, Art. 11.2(b); Paris Agreement, Art. 10.
[10] UNFCCC, Art. 4.3; Kyoto Protocol, Art. 11.2(a); Paris Agreement, Art. 9.
[11] UNFCCC, Art. 4.1 and 12.1; Paris Agreement, Art. 4.5 and 7.
[12] See generally, UNFCCC, Art. 3.4 and 3.5
[13] UNFCCC, Art. 3.1; Paris Agreement, Art. 2.2.

1.3 Defining "Developed" and "Developing" Countries under the Climate Change Regime

During the negotiation of the UNFCCC, determining the classes of parties posed difficulties.[14] On the one hand, while the majority of developing countries maintained that the UNFCCC should primarily classify parties based on two economic groupings – "developed" and "developing", a small number of developing countries, notably those making up the Alliance of Small Island States (AOSIS)[15] expressed preference for a "more complex and multivariate differentiation" taking into account the level of a country's vulnerability to climate change.[16] On the other hand, most developed countries demanded for the creation of further groups of parties, namely, "newly industrialised states" and "countries with economies in transition" (EITs).[17] The eventual outcome was that the UNFCCC adopted as the primary groups "developed" and "developing" countries, while "countries with economies in transition" and "least developed countries" (LDCs)[18] formed the additional groupings.

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[14] Daniel Bodansky, "The United Nations Framework Convention on Climate Change: A Commentary" (1993)18 *Yale Journal of International Law*, 451-558, 506.

[15] The AOSIS is made up of 39 small island developing countries that are deemed to be vulnerable to the adverse impacts of climate change. The AOSIS website lists its members as: Antigua and Barbuda, Bahamas, Barbados, Belize, Cape Verde, Comoros, Cook Islands, Cuba, Dominica, Dominican Republic, Fiji, Federated States of Micronesia, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, Maldives, Marshall Islands, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Singapore, Seychelles, Sao Tome and Principe, Solomon Islands, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu, and Vanuatu. Listed as observers are: American Samoa, Netherlands Antilles, Guam, U.S. Virgin Islands, and Puerto Rico. See AOSIS, members <http://aosis.org/about/members/> Accessed 18 November 2016.

[16] Bodansky, above n 14, 506.

[17] UNFCCC describes EITs as "countries that are undergoing the process of transition to a market economy". See UNFCCC, Annex I, footnote a. Following Annex I of the UNFCCC, countries in the category of EITs include Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russian Federation, Slovakia, Slovenia, and Ukraine.

[18] The UNFCCC neither defines nor classifies LDCs, making resort to United Nations' list of LDCs the usual practice. As of May 2016, the UN list consists of: Afghanistan, Angola, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Central African Republic, Chad, Comoros, Democratic Republic of The Congo, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gambia , Guinea , Guinea-Bissau, Haiti , Kiribati, Lao People's Democratic Republic , Lesotho, Liberia, Madagascar , Malawi, Mali, Mauritania, Mozambique, Myanmar, Nepal , Niger, Rwanda , Sao Tome And Principe, Senegal , Sierra Leone, Solomon Islands, Somalia, South

With the classes of parties settled, the question then arose as to how to define the parties in each category. At the level of negotiation of the UNFCCC, it was suggested that three ways of defining "developed" and "developing" countries could be by using objective standards, such as per capita income; use of listing method to indicate countries to which specific commitments apply; or a mixture of both methods.[19] Weighing both methods post-negotiation, Bodansky submits that "The definition method has the benefit of flexibility, since, as countries meet the definition of "developed country," they would automatically become subject to the specific commitments. On the other hand, the list method avoids ambiguities about whether a state meets the definition of "developed".[20] The Intergovernmental Negotiating Committee (INC),[21] the Committee saddled with the responsibility to facilitate the negotiation of the UNFCCC, eventually opted for lists as against definitions.[22] Relative to commitments under the UNFCCC, countries listed in Annex I[23] of the UNFCCC are required to carry out specific mitigation commitments enshrined in Article 4.2(a) and (b); while the specific commitments on financial assistance and transfer of technology contained in Articles 4.3 4.4 and 4.5 apply to countries listed in Annex II.[24] Countries listed in Annex I of the UNFCCC are developed countries that were members of

Sudan, Sudan, Timor-Leste, Togo, Tuvalu, Uganda , United Republic of Tanzania, Vanuatu, Yemen , and Zambia. See United Nations Policy Committee for Development Policy, List of Least Developed Countries, 2016. <http://www.un.org/en/development/desa/policy/cdp/ldc/ldc_list.pdf> Accessed 15 November 2016.

[19] Bodansky, above n 14, at 506.
[20] Ibid.
[21] See United Nations General Assembly (UNGA), *Intergovernmental Negotiating Committee for a Framework Convention on Climate Change*, First session, Washington, D.C., 4-14 February 1991, A/AC.237/1/Add.1, 18 January 1991.
[22] Bodansky, above n 14, at 506.
[23] Annex I of the UNFCCC lists 41 countries: Australia, Austria, Belarus, Belgium, Bulgaria, Canada, Croatia, Czech Republic, Denmark, European Economic Community, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy Japan, Latvia, Liechtenstein, Lithuania, Luxembourg Monaco, Netherlands, New Zealand, Norway Poland, Portugal, Romania, Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom of Great Britain and Northern, Ireland, and the United States of America.
[24] Annex II of the UNFCCC lists 24 countries: Australia, Austria, Belgium, Canada, Denmark, European Economic Community, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom of Great Britain and Northern, Ireland, and the United States of America.

the Organisation for Economic Cooperation and Development (OECD) as of 1992, plus the EIT countries. Countries listed in Annex II are developed countries making up the OECD in 1992, but excludes the EIT countries.[25]

Thus, the UNFCCC basically consists of four groupings of Parties: developed countries listed in Annex I (which includes EITs); developed countries listed in Annex II (which excludes EITs); non-Annex I parties (developing countries); and the least developed countries. In the context of this thesis, any reference to "developed countries" should be construed to mean the developed countries listed in Annex II of the UNFCCC with the specific commitment to render financial assistance and transfer technology to developing countries; and, any reference to "developing countries"[26] means countries not listed in Annex I of the UNFCCC in particular, and generally countries entitled to financial assistance and transfer of technology under the climate change regime. The terms "financial assistance" and "transfer of technology" should serve as signposts for differentiating between Annex I and Annex II countries for the purposes of this thesis. While the former bears specific binding commitments with respect to policies and measures relating to greenhouse gas sources and sinks, the latter bears mandatory obligations to provide financial resources and transfer technology to developing countries to enable them effectively implement their obligations and to cope with the adverse impacts of climate change.

[25] See generally Bodansky, above n 14, at 506-508.

[26] It should be noted that there is no homogeneity among developing countries. They differ in size, economic capacity, etc. Even in climate change negotiations, different blocs of developing countries pursue diverse interests, although G77/China remains the main bloc. For example, the AOSIS, LDCs, SIDS, OPEC, sometimes maintain different positions and views on issues subject of negotiation. See generally Rowena Maguire and Xiaoyi Jiang, "Emerging Powerful Southern Voices: Role of BASIC Nations in Shaping Climate Change Mitigation Commitments" in Shawkat Alam, *et al* (eds.) *International Environmental Law and the Global South* (Cambridge University Press, New York, 2015), 214.

This working definition of "developed" and "developing" countries also applies to any evaluation of relevant provisions of the Kyoto Protocol[27] and the Paris Agreement. Although the Paris Agreement does not make any reference to the UNFCCC annexes, it does employ the term "developed" and "developing" countries in a number of provisions[28] *without* defining the countries comprising each of the categories. In this instance, since the Agreement used the terms without definition, a journey need not be embarked upon outside the UNFCCC to seek new definitions of the terms for the purposes of interpreting the provisions of the Agreement. By implication, the Paris Agreement adopted the annexes to the UNFCCC. Although the annexes may not be central to the interpretation of most of the provisions of the Agreement as is the case with the UNFCCC and the Kyoto Protocol, they remain relevant to a lesser or greater degree, depending on the context. The relevance or otherwise of the UNFCCC annexes in the construction of the Paris Agreement, especially from the perspective of developing countries,[29] is explored further in chapter three.

The working definition of "developed" and "developing" countries adopted by this thesis notwithstanding, universally defining the terms "developed" and "developing" countries has proved intractable so far. Commenting on the difficulties inherent in finding universal definitions for the terms, Voigt submits that "The two groups, if they even can be identified, are no longer homogenous but are marked by stark internal differences".[30] Voigt proceeded to highlight the approaches adopted by the International Monetary Fund (IMF) in 2012, and the

[27] See Farhana Yamin and Joanna Depledge, *The International Climate Change Regime: A Guide to Rules, Institutions and Procedures* (Cambridge University Press, Cambridge, 2004), 107.
[28] See Arts. 4, 5, 7, 9, 10, 11, and 13.
[29] The relationship between the UNFCCC and the Paris Agreement is already generating conflicts between developing and developed countries in the ongoing deliberations on setting up the implementation framework of the Paris Agreement. See TWN, "SBSTA: Developing Countries Disappointed over Opposition to References to the UNFCCC" *Third World Network, Bonn Climate News Update*, No. 18, 2 June 2016; TWN, "The Paris Agreement: A Step to Enhance UNFCCC Implementation, Say Developing Countries" *Third World Network, Bonn Climate News Update*, No. 22, 6 June 2016.
[30] Christina Voigt, "Equity in the 2015 Climate Agreement" (2014) 4 *Climate Law*, 50-69, 52.

United Nations Statistics Division (UNSD) the same year.[31] The IMF categorised countries into two main groups – "advanced economies and emerging markets and developing economies", but proceeded to warn that "This classification is not based on strict criteria, economic or otherwise, and it has evolved over time", while further stating that "the objective [of the classification] is to facilitate analysis by providing a reasonably meaningful method of organizing data".[32] The IMF adopted the same approach with the same caution in 2016.[33] Corroborating the approach of the IMF, the UNSD in its 2012 statistics showing "developed" and "developing" regions of the world, among other things, cautioned that "There is no established convention for the designation of "developed" and "developing" countries".[34] In the 2016 update, the UNSD maintains the same position.[35]

Moreover, and from historical perspective, it has been observed that the term "developing" compared to a "developed" country used to describe non-European countries after colonial independence from European imperialism evolved from colonial terms such as "primitive", "uncivilised", and recently, "third world".[36] The evolution of the term 'developing country' has also been linked to the succession between the Mandate System (League of Nations), the Trusteeship Council (United Nations), and the Bretton Woods Institutions (IMF and World Bank).[37]

Thus, generally, fluidity rather than stability characterises any attempt at classifying, categorising, or defining "developed" or "developing" countries. Viewed from this prism, the

[31] Ibid.
[32] International Monetary Fund, *World Economic Outlook 2012: Coping with High Debt and Sluggish Growth*, October 2012, 177. (Bracketed words added].
[33] International Monetary Fund, *World Economic Outlook 2016: Too Slow for Too Long, April 2016*, 145-146.
[34] United Nations Statistics Division, *Composition of macro geographical (continental) regions, geographical sub-regions, and selected economic and other groupings, 11* October 2012.
[35] United Nations Statistics Division, *Composition of macro geographical (continental) regions, geographical sub-regions, and selected economic and other groupings,* revised 26 September 2016.
[36] Antony Anghie, *Imperialism, Sovereignty and the Making of International Law* (Cambridge University Press, Cambridge, 2005) at 1 – 12.
[37] Ibid, 263.

fact that the Paris Agreement did not attempt definition of the terms seems not a surprise. However, it is desirable for any future climate change agreement or treaty to either specifically define which parties are included in its categorisations, or adopt extant definitions from other international institutions. The annexes to the UNFCCC, though still relevant, no longer reflect the emissions outputs and economic realities of the twenty-first century,[38] although an opposing view pointedly maintains that the fact that no developing country has ascended to the status of a developed country since the UNFCCC was negotiated in 1992 supports the conclusion that much has not changed in terms of economic and technological capabilities.[39]

Meanwhile, it should be noted that the Paris Agreement, through its nuanced approach to differentiation, has arguably delineated further groups within the "developing country Parties" group. The Agreement's references to "developing country Parties"[40] in direct contradistinction with "developed country Parties", and then to "developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change"[41] "least developed countries and small island developing States",[42] or "countries with the least capacity, such as the least developed countries and those that are particularly vulnerable to the adverse effects of climate change, such as the small island developing States",[43] practically points to the fact that the expectation for action and the level of support to be

[38] On the strength of this point, this thesis will differentiate high GHG emitting developing countries of China and India from other developing countries, where necessary. See generally Samudu Atapattu, "Climate Change, Differentiated Responsibilities and State Responsibility: Devising Novel Legal Strategies for Damage Caused by Climate Change" in Benjamin Richardson, *et al*. (eds.) Climate Law and Developing Countries (Edward Elgar, Cheltenham, 2009), 37.

[39] Statement by Ambassador Nozipho Mxakato-Diseko from South Africa on behalf of G77 and China, Open-ended Consultation on Finance Process, Paris, France, December 2015.

[40] See for instance, such references can be found in Articles 3, 4.1, 4.4–4.6, 4.15, 5.2, 6.6, 7.2–7.3, 7.6–7.7, 7.10, 7.13–7.14, 9.1, 9.3–9.5, 9.7, 9.9, 10.5–10.6, 11.1–11.4, 13.2–13.3, 13.9–13.12, 13.14–13.15. See Sandrine Maljean-Dubois "The Paris Agreement: A New Step in the Gradual Evolution of Differential Treatment in the Climate Regime" (2016) 25 (2) *RECIEL* 151-159, 156, for other instances, including those listed below.

[41] Arts. 7.6, 9.4, 11.1.

[42] Arts. 4.6, 9.4, 9.9, 13.3.

[43] Arts. 11.1, 9.4

rendered will further depend on which of the sub-groups a particular developing country belongs. For instance, because least developed countries and small island states are poorer and least capable, compared to other developing countries, maximum support may be made available to them. The implementation years of the Paris Agreement will shade more light on the operationalization of these further developing country groups.

1.4 Background, Methodology and Structure

Climate change is a truly global problem that transcends the very traditional and hitherto sacrosanct life-styles of nation-states and their inhabitants. Although climate change is characteristically an environmental problem; its economic, political, and social dimensions traverse the very foundation upon which modern nation-states are built and governed. The international system has so far grappled with solving the problem of climate change in a manner reminiscent of the events preceding the global self-transformation that resulted from the Treaty of Westphalia in 1648, the Congress of Vienna in 1815, the Versailles Settlement in 1919, and Bretton Woods in 1945. But for Bretton Woods, the other three instances concerned international peace and security.

To effectively address climate change, the international community may need to exhibit the sort of unflinching will and resilience that guaranteed international peace and security. Moreover, the security implication of climate change may be of a kind that the world has never experienced before. Climate change as a formidable threat to international peace and security has been underlined by the former Secretary-General of the United Nations in his address to the Security Council on the impact of climate change on international peace and security thus: “Extreme weather events continue to grow more frequent and intense in rich and poor countries alike, not only devastating lives, but also infrastructure, institutions, and

budgets – an unholy brew which can create dangerous security vacuums".[44] Thus, the threat posed by climate change to human civilisation calls for collaboration between developed and developing countries to combat climate change by cutting emission of greenhouse gases and building climate-resilient pathways.[45]

Notwithstanding these acknowledged threats posed by climate change and the efforts invested so far toward addressing the problem by the international community, the Fifth Assessment Report of the IPCC (AR5)[46] has shown that the international community is still far away from charting a low-carbon lifestyle necessary for attaining the greenhouse gas stabilisation objective of the UNFCCC, which is now also embodied in the long-term temperature goal of the Paris Agreement. According to the AR5, "Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased".[47]

The AR5 further stated that "Each of the last three decades has been successively warmer at the Earth's surface than any preceding decade since 1850… In the Northern Hemisphere,

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[44] Ban Ki Moon, 'Warning of climate changes threat to global security, Ban urges action" *UN News Centre*, 20 July 2011. <http://www.un.org/apps/news/story.asp?NewsID=39093#.WIsbsVV96Uk> Accessed 11 November 2016.

[45] Denton, F., *et al* 2014: Climate-resilient pathways: adaptation, mitigation, and sustainable development. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Field, C.B., *et al* (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 1101-1131.

[46] See IPCC, 2013: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T.F, *et al* (eds.)] Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1535. See generally Navraj Singh Ghaleigh, "Science and Climate Change Law – The Role of the IPCC in International Decision-making" in Cinnamon P. Carlarne, Kevin R. Gray and Richard G. Tarasofsky (eds.,) *The Oxford Handbook of International Climate Change Law* (Oxford University Press, Oxford, 2016), 55-71.

[47] IPCC, 2013: Summary for Policymakers. In: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T.F, *et al* (eds.)] Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 4.

1983 – 2012 was likely the warmest 30-year period of the last 1400 years";[48] that "Ocean warming dominates the increase in energy stored in the climate system, accounting for more than 90% of the energy accumulated between 1971 and 2010…;[49] that "Over the last two decades, the Greenland and Antarctic ice sheets have been losing mass, glaciers have continued to shrink almost worldwide, and Arctic ice and Northern Hemisphere spring snow cover have continued to decrease in extent";[50] that "The rate of sea level rise since the mid-19th century has been larger than the mean rate during the previous two millennia…;[51] and, that "The atmospheric concentrations of carbon dioxide, methane, and nitrous oxide have increased to levels unprecedented in at least the last 800,000 years. Carbon dioxide concentrations have increased by 40% since pre-industrial times, primarily from fossil fuel emissions and secondarily from net land use change emissions. The ocean has absorbed about 30% of the emitted anthropogenic carbon dioxide, causing ocean acidification".[52]

The problem of climate change can be viewed from diverse perspectives;[53] however, the environmental, economic, and ethical perspectives have assumed popularity amongst parties in international climate negotiations.[54] While European countries predominantly see climate change as an environmental problem,[55] developed countries outside Europe, specifically the United States, view climate change from the economic prism.[56] Furthermore, many developing countries approach climate change from the ethical and equitable perspectives of

[48] Ibid, 5.
[49] Ibid, 8.
[50] Ibid, 9.
[51] Ibid, 11.
[52] Ibid.
[53] For a religious perspective on climate change, see Encyclical Letter, *Laudato Si'* of The Holy Father, Pope Francis, '*Care for Our Common Home*' (May 2015). <http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.pdf >
[54] Daniel Bodansky, Jutta Brunnee and Lavanya Rajamani, *International Climate Change Law* (Oxford University Press, Oxford, United Kingdom, 2017), 4.
[55] Ibid.
[56] Ibid, 4-5. See also Daniel Bodansky, "Transatlantic Environmental Relations" in John Paterson and Mark Pollack (eds), *Europe, America, and Bush* (Routledge, London, 2003), 58.

fairness and justice.[57] However, climate change as environmental problem has mainly driven the international climate diplomacy for the over two decades of its history, following the objective set by state parties to the UNFCCC in 1992 to pursue the goal of preventing dangerous climate change through reduction in emissions of greenhouse gases.[58] As an economic problem, actions and policies relating to climate governance are seen as undertaken primarily to achieve economic efficiency based on cost-benefit analysis.[59] In contrast, climate change as an ethical problem raises important questions of distributive and corrective justice,[60] especially between developing and developed countries, such as burden sharing in relation to mitigation and adaptation, historical responsibility for climate change, and responsibility for damages arising from climate change.[61]

The ethical perspective on climate change is normally put forward by developing countries as part of effort to secure equitable international climate arrangement that would allow them the carbon space[62] to continue their national economic development and poverty eradication policies without having to contend with disproportionate mitigation and adaptation costs. Since this thesis is argued predominantly from the standpoint of developing countries, the ethical perspective on climate change will be discussed further in chapter four, especially with respect to whether developing countries that are short of domestic technological and financial capacity to pursue measures to cut emissions are ethically right to give priority to

[57] Ibid. See also, Henry Shue, "Subsistence Emissions and Luxury Emissions" (1993) 15(1) *Law & Policy* 39, 54 – 59; Mark A. Drumbl, "Northern Economic Obligation, Southern Moral Entitlement, and International Environmental Law" (2002) 27:2 *Columbia Journal of Environmental Law* 363-382.
[58] Bodansky, et al, above n 54, at 5-6. See also Article 2 of the UNFCCC.
[59] Ibid, 6-7. See generally, William Nordhaus, *The Climate Casino: Risk, Uncertainty, and Economics for a Warming World* (Yale University Press, New Haven, CT, 2013); Nicholas Stern, *The Economics of Climate Change: The Stern Review* (Cambridge University Press, Cambridge, 2007).
[60] Bodansky, et al, above n 54, at 7.
[61] See Kolstad C., *et al*, 2014: Social, Economic and Ethical Concepts and Methods. *In Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Edenhofer, *et al*, (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 211.
[62] See Hans Opschoor, "Sustainable Development and a Dwindling Carbon Space" (2010) 45(1) *Environmental and Resources Economics*, 3-23. See also Anil Agarwal and Sunita Narain, "Global Warming in an Unequal World: a case of environmental colonialism", *Centre for Science and Environment, New Delhi*, 1991.

economic development and poverty reduction in the absence of transfer of technology and financial assistance from developed countries.

Ethics relates to justice and value,[63] right and wrong, and to what extent human actions that give rise to harm should attract proportionate responsibility.[64] The relevance of ethics in the climate change debate is underlined by the need for incorporation of concepts of justice, fairness, responsibility, and equity in negotiations leading to climate treaties to ensure an equitable outcome.[65] Ethical perspective on climate change takes into account the distribution of harm and benefits in the context of climate change, which includes the fact that developed countries are historically responsible for climate change, that those that will suffer most from the adverse impacts of climate change are those with least emissions output and therefore least responsible for the problem, that the most vulnerable to climate change adverse impacts are those that lack the technological and economic capacity to take adaptation measures, etc.[66] These factual circumstances make observance of the concepts of equity and fairness imperative in international climate change governance.

Fairness and equity are usually used "interchangeably as broader moral and political concepts applicable to negotiations".[67] Fairness has been said 'to denote a criterion of evenhanded, impartial, or nonarbitrary treatment of persons and groups in the distribution of benefits and burdens".[68] Fairness and equity in the international climate regime can first and foremost be traced to the UNFCCC which urges the parties in one of its principles to "protect the climate system for the benefit of present and future generations of humankind, on the basis of equity

[63] Kolstad C., *et al*, above n 61, at 211.
[64] Donald Brown, *et al,* 'White Paper on the Ethical Dimensions of Climate Change' Rock Ethics Institute, Penn State University, 7. <http://rockethics.psu.edu/documents/whitepapers/edccwhitepaper.pdf> Accessed 23 September 2017. See generally Donald Brown, *Climate Change Ethics: navigating the perfect moral storm* (Routledge, London: New York, 2013).
[65] Kolstad C., et al, above n 61, at 211.
[66] Brown, *et al*, above n 64, at 12.
[67] Jonathan Pickering, Steve Vanderheiden, and Seumas Miller, "If Equity's in, We're Out": Scope for Fairness in the Next Global Climate Agreement" (2012) 26(4) *Ethics and International Affairs*, 423-443, 426.
[68] Ibid.

and in accordance with their common but differentiated responsibilities and respective capabilities".[69] Furthermore, the UNFCCC stipulates in another of its principle that the "specific needs and special circumstances of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change, and of those Parties, especially developing country Parties, that would have to bear a disproportionate or abnormal burden under the Convention, should be given full consideration".[70] Thus, it is deducible that the UNFCCC attaches importance to the roles of equity and fairness in any scheme for burden sharing between developing and developed countries. Although "equity" continues to be undefined under the UNFCCC, recourse is usually made to "background moral or ethical notions of fairness, as would be the case in a domestic legal system when giving substance to concepts such as equality and due process".[71]

The different perspectives of developing and developed countries on climate change notwithstanding, in order to address the climate change problem cooperation between developing and developed countries is needed to ensure a fair and equitable burden sharing arrangement. As it has been rightly observed "unlike in other cases, such as international trade, developed countries cannot rely on their unequal power and influence to determine a solution, but rather require the voluntary cooperation of developing countries, particularly those that are rapidly industrializing".[72] Thus, it is imperative for parties to be guided by notions of equity and fairness in reaching agreements to address climate change, mainly by taking into consideration the fact that economic development and poverty alleviation or eradication remains the ultimate priority of developing countries. Thus, a careful balance

[69] Art. 3.1. See also Article 2.2 of the Paris Agreement. Furthermore, see Friedrich Soltau, *Fairness in International Climate Change Law and Policy* (Cambridge University Press, Cambridge, 2009), 3.
[70] Art. 3.2.
[71] Soltau, above n 69, at 3-4.
[72] Ibid, 5.

ought to be struck between development priorities of developing countries and the need to maintain a stable climate.[73]

Achieving a fair and equitable balance would, among other things, require effective implementation of the treaty obligations relating to transfer of technology and financial assistance by developed countries. While after over two decades of international climate diplomacy, any inherently self-interest argument from either developing or developed countries ought to be subjected to a fair and objective test, it should also be admitted that emerging and high GHG emitting developing countries should no longer be deemed to occupy the same position as other developing countries with respect to receiving technological and financial support. For example, China has now attained significant economic and technological capacity to address rising emissions within its own territory.

Furthermore, climate change also raises important issues relating to state responsibility.[74] Responsibility as a concept finds expression in ethical, legal and general societal practice. In the legal parlance, the breach of a legal interest conferred on one subject of international law by another subject gives rise to responsibility.[75] The Articles on the Responsibility of States provide that "Every wrongful act of a State entails the international responsibility of that State".[76] The historical development of international law is such that States are its primary subjects; hence States bear more obligations and the attendant burden of compliance.[77]

The origin of modern concept of state responsibility dates back to the *Spanish Zone of Morocco* case which enunciated the general principle that right gives rise to responsibility

[73] Ibid.
[74] See generally, Malcom D Evans (ed.), *International Law* (4th ed., Oxford University Press, Oxford, 2014), 443; Rene Provost, *State Responsibility in International Law*, (Ashgate / Dartmouth, Aldershot, 2002).
[75] Roda Verheyen, *Climate Change Damage and International Law*, Prevention Duties and State Responsibility (M. Nijhoff, Leiden; Boston, 2005), 227
[76] Article 1 of the Responsibility of States for Internationally Wrongful Act, adopted by the International Law Commission (ILC) on August 10, 2001. Report of the ILC Commission, Fifty-third Session, 2001.
[77] Evans, above n 74, at 444.

and that a right of international character gives rise to international responsibility.[78] Subsequently, in the *Chorzow Factory* case, the Permanent Court of International Justice (PCIJ) solidified the rules of state responsibility by confirming its general applicability to all forms of invasion of international law by stating that the inevitable outcome of a failure to comply with an international convention is reparation and that it is immaterial that a convention does not say so.[79]

With respect to environmental degradation and trans-boundary air pollution,[80] state responsibility may be viewed from two perspectives – first, to advance prevention rules enunciated under a treaty and, second, to form a basis for request for compensation or restoration by an offended state.[81] Commenting on the two perspectives, it has been opined "that responsibility and liability for environmental damage under international law should not always be regarded as a negative sanction but rather, and to the extent possible, as a positive inducement to prevention, restoration or compensation as the case may be. This approach might prove particularly relevant in the negotiation and management of regimes on responsibility and liability for environmental damage established under international conventions (environmental regimes), since it might better ensure the attainment of the objectives of adequate environmental protection".[82]

Although little factual evidence exists to corroborate the impact of the preceding assertion on state behaviour, it has been suggested that through political and diplomatic means an

[78] (*Great Britain v. Spain*) 1924 2 RIAA 615, 641.
[79] Case concerning the factory at Chorzow (*Germany v. Poland*) (1927) P.C.I.J (ser. A) No. 9, 21. See also the Barcelona Traction, Light and Power Company (Belgium v. Spain) 1970 I.C.J Report, 3; Corfu Channel Case (*United Kingdom v. Albania*) 1949 I.C.J Reports, 244; *The Trail Smelter Arbitration (US v Canada)* 3 RIAA 1905, 1911.
[80] See generally, Phoebe Okowa, *State Responsibility for Transboundary Air Pollution in International Law* (Oxford University Press, Oxford, 2000).
[81] Verheyen, above n 75, 232.
[82] Francisco Orrego Vicuna, "Responsibility and Liability for Environmental Damage under International Law: Issues and Trends" (1998) 10 *Georgetown International Environmental Law Review*, 279, 280.

unlawful act by a state might create a compliance incentive.[83] Notwithstanding the proliferation of international instruments on prevention of environmental damage, there is a contention that for an environmental law instrument to be effective it must contain provisions on liability that are legally enforceable.[84] Thus, the rules on liability and responsibility for environmental harm have vital roles to play in the protection of the environment but due to neglect by states they have not been extensively developed over the last decades.[85]

In relation to climate change, it has been said that developed countries are both "responsible for preventing further greenhouse gas emissions as well as for any damage caused to the economies and peoples of other States (responsibility for damage prevention and compensation)".[86] This forms the basis of the CBDRRC principle as enunciated under Article 3 of the UNFCCC. However, there exists a dominant and counter argument in determining responsibility for climate change,[87] as posited by developed and developing countries respectively.

The dominant argument posits that the climate change problem can be attributed to greenhouse gases emitted by all countries and that it is pointless holding a set of countries more responsible than the others.[88] Rather than point the finger, states should work together through cooperative and market-based instruments to find solution.[89] This position accounts for what has been described as the "neutral factual statement"[90] in the UNFCCC to the effect "that the largest share of historical and current global emissions of greenhouse gases has originated in developed countries, that per capita emissions in developing countries are still

[83] Verheyen, above n 75, 232.
[84] Ibid.
[85] Ibid.
[86] Ibid, 227.
[87] Joyeeta Gupta, *The Climate Change Convention and Developing Countries: From Conflict to Consensus?* (Kluwer, Dordrecht; Boston; London, 1997), 134-135.
[88] Ibid, 134
[89] Ibid.
[90] Bodansky, above n 14, 498.

relatively low and that the share of global emissions originating in developing countries will grow to meet their social and development needs".[91] Consequently, developed countries are expected to take the lead in addressing climate change; although developed countries insist that taking the lead does not arise from admission of liability but their superior and greater capacity to take action.[92]

Following the provision of Article 3.1 of the UNFCCC that measures to deal with climate change should be taken by the parties "on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities", the features of the UNFCCC relating to responsibility and equity have been identified as: the necessity for developed countries to take the lead;[93] the necessity to assist developing countries in implementing their obligations;[94] the necessity to support economic growth in developing countries;[95] and, the obligation of developing countries being conditioned on assistance.[96]

Conversely, the counter argument while admitting that equity forms one of the pillars of the UNFCCC, maintains that there remain pitfalls that go to the root of the question relating to

[91] UNFCCC Preamble, para. 3. Expounding on this paragraph, it has been stated that "While this paragraph contains much that is of interest to developing countries, it represents a substantial compromise on their part. Developing countries had sought inclusion of the "main responsibility" principle, which posits that since the climate change problem results primarily from the overconsumptive and profligate lifestyles of developed countries, developed countries bear the main responsibility for combating it. The first clause of paragraph 3, reflecting only the first half of this principle, appears as a neutral factual statement, severed from the corollary that "developed country parties should take the lead in combating climate change," which appears only later in the Convention. Similarly, the reference in the second clause to "per capita emissions" is all that remains of an Indian proposal that the Convention should promote the convergence of greenhouse gas emissions at a common per capita level. Finally, the concluding clause, referring to the growth in emissions of developing countries, was originally proposed as a principle and phrased in mandatory rather than descriptive terms". See Bodansky, above n 14, at 498.

[92] Gupta, above n 87, 134.

[93] UNFCCC, Preamble, Arts. 3.1 and 4.

[94] Ibid, Arts. 3.2, 4.3, 4.4, 4.5, 4.8, 11.5

[95] Ibid, Preamble and Art. 3.4

[96] Ibid, Art. 4.7. See Gupta, above n 87, 134-135. Although the Paris Agreement recognises "the specific needs and special circumstances of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change, as provided in the Convention", it did not expressly adopt the provisions of the UNFCCC giving rise to the above features of Article 3.1 as highlighted. The Agreement does refer to developed countries continuing to take the lead in Article 4.4, and equity and CBDRRC in Article 2.2.

responsibility for climate change, which has been termed "non-decisions".[97] First, the question relating to who is responsible for the climate change problem is not addressed ("distribution of responsibilities on the basis of contribution to the problem").[98] Second, the question relating to method of determining future responsibility for the problem is not answered ("distribution of future emissions").[99] Third, notwithstanding the comprehensive exposition of the concept of "capabilities" in the UNFCCC, there is the concern that the reach of the term may not be strictly adhered to in practice ("distribution of burden").[100]

The meat of the counter argument has been summarised as: that the UNFCCC should have stated that developed countries "had the "main responsibility" for the climate change problem"; and that since developed countries are responsible for causing the problem, they should take effective steps to "reduce the activities that cause the harm, and compensate those negatively affected by the harm".[101]

It must be admitted that although the points raised by the dominant and counter arguments still hold today to an extent, while historical and the then current emissions were attributed to developed countries in 1992, emissions have risen significantly in developing countries over the last two decades, with China,[102] a country which still belongs to the developing country group under the UNFCCC now the highest gross emitter of greenhouse gases.[103] Thus, while

[97] Gupta, above n 87, at 135
[98] Ibid.
[99] Ibid.
[100] Ibid.
[101] Ibid. See also Bodansky, above n 14, at 498.
[102] See Paul G. Harris (ed.,), *China's Responsibility for Climate Change: Ethics, Fairness and Environmental Policy* (Policy Press, Bristol, 2011); W.J.W Botzen, J.M Gowdy & J.C.J.M Van Den Berg, Cumulative CO_2 emissions: shifting international responsibilities for climate debt" (2008) 8:6 *Climate Policy*, 569-576; Joyeeta Gupta & King Yip Wong, "China Evolving Development Dilemma in the Context of the North-South Climate Governance Debate" (2014) 13 *Perspectives on Global Environment and Technology*, 699-727.
[103] See World Resource Institute, CAIT (Country Greenhouse Gas Emissions Data). <http://www.wri.org/resources/data-sets/cait-country-greenhouse-gas-emissions-data> Accessed 18 November 2016.

responsibility for historical emissions[104] that led to the climate change problem can firmly be placed on the shoulders of developed countries,[105] developing countries are increasingly contributing to current emissions, and have been projected to overtake developed countries in the future.[106]

Arguably, while historical responsibility and better economic and technological capability continue to justify developed countries transferring technology and providing financial support to developing countries to enable the latter implement their obligations under the climate regime, and embrace sustainable means of economic development, the hard-line stance that characterised feelings in relation to historical, current and future emissions during the negotiation of the UNFCCC in 1992 has now been overtaken by events – rising emissions in developing countries, for instance. The change in the balance in relation to current and projected future emissions from developing countries may have contributed to the path towed by the Paris Agreement in opting for the bottom-up nationally determined contributions (NDCs) framework, applicable to all countries, subject to provision of assistance to developing countries to implement their commitments.[107]

Rising emissions in China apart, China also boasts increasing economic and technological capacity which also make the case for it to assume financial obligations based on proportionate emissions and ability or capacity to pay.[108] Again, certain provisions of the

[104] Developed countries remain responsible for current and future climate change notwithstanding rising emissions in developing countries considering that CO_2 emissions have been reported to have an average "perturbation lifetime" of 1800 to 5000 years. See Montenegro, *et al*, "Long term fate of anthropogenic carbon" (2007) 34 *Geophysical Research Letters*, 1-5. This conclusion notwithstanding, there is need for emissions from developing countries to be reduced drastically. As the saying goes - 'Prevention is better than cure'.

[105] See Christian Baatz, "Responsibility for the Past? Some Thoughts on Compensating Those Vulnerable to Climate Change in Developing Countries" (2013) 16:1 *Ethics, Policy & Environment*, 94-10.

[106] See D S Ward and N M Mahowald, "Contributions of developed and developing countries to global climate forcing and surface temperature change" (2014) 9 *Environmental Research Letters*, 1-10.

[107] Art. 4; Decision 1/CP.21, paras. 12-47.

[108] See Jacoby, H., R. Schmalensee, and I. Wing, "Toward a Useful Architecture for Climate Change Negotiations", Report No. 49, MIT Joint Programme on the Science and Policy of Global Change, May 1999;

Paris Agreement seem to be cognisant of the development.[109] These post-1992 developments surely blunt some of the very sharp edges of the counter argument in relation to responsibility for climate change, especially the points on current and future emissions trajectories, and capabilities. This conclusion notwithstanding, China is only but one of over 130 developing countries,[110] so the technology and financial obligations placed on developed countries owing to historical responsibility and better capabilities remain justifiable.[111] However, it must be stated that China has not stood still while its greenhouse gas output goes through the roof. China's domestic policies to control emissions have also improved considerably.[112]

The contestations in relation to responsibility for climate change notwithstanding, the international community did move forward in trying to build an international legal regime upon which actions taken to address climate change will be based.[113] The UNFCCC, the Kyoto Protocol, and the Paris Agreement, attest to the progress that has been made in that respect. The UNFCCC, which was adopted in 1992, serves as a framework for finding consensus on the need for international action to deal with the climate change problem, and as a tool upon which guiding principles that will assist states to find a suitable approach for

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Jacoby, H.D., R. Prinn, and R. Schmalensee, "Kyoto's Unfinished Business" (1998) *Foreign Affairs* (July – August), 54-66; Daniel Bodansky, Sophie Chou and Christie Jorge-Tresolini, *International Climate Change Efforts Beyond 2012: A Survey of Approaches*, Pew Center on Global Climate Change, December 2014, 19.

[109] Generally, the qualifier to the CBDRRC principle: "in the light of different national circumstances" can be referred to as the *omnibus phrase* capable of separating relatively rich and high GHG emitting developing countries from the other developing countries. Also, expressions as "Other Parties are encouraged to provide…" also seem to refer to capable developing countries. See Article 9.2 of the Paris Agreement.

[110] IUGG, List of Developing Countries. <http://www.iugg2015prague.com/list-of-developing-countries.htm> Accessed 16 November 2016.

[111] See Drumbl, above n 57.

[112] See Xu Huaqing & Yu Shengmin, "Climate Change Responsibility and China's Endeavor" (2011) 9:3 *Chinese Journal of Population Resources and Environment*, 28-32; Tao Pang & Maosheng Duan, "Cap setting and allowance allocation in China's emissions trading pilot programmes: special issues and innovative solutions" (2016) 16:7 *Climate Policy*, 815-835; Alex L. Wang, "Climate Change Policy and Law in China" in Cinnamon P. Carlarne, Kevin R. Gray and Richard G. Tarasofsky (eds.,) *The Oxford Handbook of International Climate Change Law* (Oxford University Press, Oxford, 2016), 635-669.

[113] See generally Joyeeta Gupta, "A History of International Climate Change Policy" (2010) *WIRES Climate Change, Wiley Interdisciplinary Reviews*, 636-653; Joyeeta Gupta, *The History of Global Climate Governance* (Cambridge University Press, Cambridge, 2014).

addressing the problem will be based.[114] Moreover, it has been stated that the UNFCCC reflects a "North-South political contract".[115]

The first element of the contract is the recognition of developing countries' right to development[116] pursuant to the preambular provision "that the share of global emissions originating in developing countries will grow to meet their social and development needs".[117] The second element of the contract is the adoption of the CBDRRC[118] principle on the basis of which responsibilities are differentiated among countries subject to their greenhouse gas emissions output and their levels of capacity. Following CBDRRC, developed countries are to take steps to reduce their emissions first, thereby creating the needed "carbon space"[119] required by developing countries to grow without further aggravating the climate change problem. CBDRRC also requires developed countries to transfer technology and provide financial assistance to developing countries to enable them undertake mitigation and adaptation measures. The CBDRRC principle underlines developed countries' leadership paradigm of the UNFCCC.[120]

[114] Lavanya Rajamani, "The Principle of Common but Differentiated Responsibility and the Balance of Commitments under the Climate Regime" (2000) 9(2) *Review of European & Comparative International Environmental Law*, 120-131, 126.
[115] Joyeeta Gupta, "The Paris Climate Change Agreement: India and China" (2016) 6 *Climate Law*, 171-181, 171.
[116] See generally, United Nations General Assembly (UNGA), *Declaration on the Right to Development*, Resolution A/RES/41/128/, December 4, 1986.
[117] UNFCCC Preamble, para. 3.
[118] On the controversy that CBDRRC has generated between developed and developing countries, see Bodansky, above n 14, at 501-502; Rajamani, above n 114, at 124; Samudu Atapattu *Emerging Principles of International Environmental Law* (Transnational Publishers, New York, 2006) 388, 398; Svitlana Kravchenko, Tareq M.R Chowdhury and Md Jahid Hossain Bhuiyan "Principles of International Environmental Law" in Shawkat Alam, Md Jahid Hossain Bhuiyan, Tareq M.R Chowdhury and Erika J. Techera (eds) Routledge Handbook of International Environmental Law (Routledge, Oxford, 2013), 55.For an account of how the controversy characterised negotiation of the Paris Agreement, see Christina Voigt and Felipe Ferreira, "Differentiation in the Paris Agreement" (2016) 6 *Climate Law* 58, 62; TWN,' Differentiation under the Paris Agreement – a tough fight', *Paris News Update*, no. 23, Third World Network (TWN), Penang, December 2015.
[119] Lavanya Rajamani, "Ambition and Differentiation in the 2015 Paris Agreement: Interpretative Possibilities and Underlying Politics" (2016) 65:2 *International and Comparative Law Quarterly,* 493-514, 496.
[120] Gupta, above n 115, at 172.

However, this political contract between developed and developing countries has been termed "severely breached".[121] Gupta captures instances of the breach and the attendant consequences thus:

First, the stabilization target for 2000 in the Convention was weakened in the text. Second, the Kyoto Protocol had a minus 5.2 per cent target for 2008–2012 compared with 1990 levels for the developed countries, but the United States did not ratify it and Canada withdrew from it, leaving a gaping hole in the leadership paradigm. Third, the Doha Amendment with emission reduction targets for 2012–2020 is only applicable to the EU and Australia—with the other developed countries having walked out. As of 8 March 2016, only 61 of the 144 ratifications needed had been received. Fourth, the CBDR principle has been revised to include the qualifier "in the light of different national circumstances", so that it resembles the text negotiated by the United States and China in their agreement of November 2014. This is not to say that the United States has not tried a range of domestic measures to curb its emission growth-rate, but the message being sent through the formal climate change regime is significantly more important politically in shaping Southern public opinion.[122]

Gupta then proceeded to question the approach of developed countries, inspired by historical perspectives, thus:

The Third World Approaches to International Law school of thought has long argued that patterns of exploitation repeat themselves from field to field (human rights, trade and investment, terrorism and international security, and now the environmental field) and over time (during, and in, the colonial period). An underlying argument is that the rich countries want to see a divided world, and will use international law and politics as a way to control the developing world. For example, they will use arguments such as universal rules for all countries and the need to create a "level playing field" irrespective of a country's situation. This has led developing countries to call for the "right to development", which was agreed to in 1986. The naive among us believed that the West was willing to commit to the social contract of allowing the South to develop. However, we have now come to the uneasy realization that the South will be allowed to develop as long as it does not challenge in one way or another the leadership of the United States or other developed countries…[123]

[121] Ibid.
[122] Ibid (footnotes omitted)
[123] Ibid, 172-173.

The preceding quotations summarise the views of most Southern intellectuals that have undertaken critique of the international law system in general and international environmental law in particular.[124] While this thesis does not represent an effort to specifically expound these "Southern" views, the validity of some of the points flowing from the literature cited is worthy of note, especially in relation to international environmental law and the international climate change regime.

The efforts made so far toward governing climate change – from the UNFCCC to the Kyoto Protocol, and now the Paris Agreement, represent a clear case of two world divides characterised by acute inequality of bargaining powers trying to solve a common international problem that goes to the very root of states' political, economic, and social policies. Indeed, progress has been very difficult and, sometimes, seems impossible. For instance, although developed countries met their collective and individual emissions reductions commitments under the Kyoto Protocol, Kyoto is termed a woeful failure as it did not result in any reduction in emissions globally.[125]

Furthermore, although mixed feelings characterised the adoption of the Paris Agreement,[126] the Agreement does break new grounds in making the United States and China agree to

[124] See for example, Anghie, above n 36; Madhav Khosla, "The TWAIL Discourse: The Emergence of a New Phase" (2007) 9 *International Community Law Review*, 291-304; Ibironke T. Odumosu, "Locating Third World Resistance in the International Law on Foreign Investment" (2007) 9(4) *International Community Law Review*, 427-444; B.S Chimni, "Third World Approaches to International Law: A Manifesto" (2006) 8(1) *International Community Law Review*, 3-27; Obiora Chinedu Okafor, "Newness, Imperialism and International Legal Reform in our Time: A TWAIL Perspective", (2005) 1-2 *Osgoode Hall Law Journal*, 171. See also Shawkat Alam, Samudu Atapattu, Carmen G. Gonzalez and Jona Razzaque (eds) *International Environmental Law and the Global South* (Cambridge University Press, New York, 2015).

[125] Igor Shishlov, Romain Morel and Valentin Bellassen "Compliance of the Parties to the Kyoto Protocol in the First Commitment Period" (2016) 16:6 *Climate Policy*, 768-782, 775. See also Michael Grubb, "Full Legal Compliance with the Kyoto Protocol's First Commitment Period – Some Lessons" (2016) 16:6 *Climate Policy*, 673-681.

[126] Klaus Bosselmann fired one of the earliest warnings regarding the Agreement, though from a rather 'glass half-full' perspective. See Klaus Bosselmann "Paris deal promising, but let's not celebrate yet" *The New Zealand Herald* (online ed, Auckland, 16 December 2015). See also George Monbiot "Grand promises of Paris climate deal undermined by squalid retrenchments" *The Guardian (UK)* (online ed, London, 12 December 2015); Caroline Mortimer "COP 21: James Hansen, the father of climate change awareness, says Paris agreement is a 'fraud'' *The Independent (UK)* (online ed, 13 December 2015).

mitigation obligations,[127] albeit voluntary, and by garnering enough ratification from the parties to come into force less than one year after its adoption,[128] but the journey towards the commencement of implementation of the Agreement remains tumultuous due to disagreements between developed and developing countries on some vital issues relating to modalities and procedures for implementation[129] cutting across finance, technology, mitigation and transparency.[130] Moreover, the Agreement's qualifier to the CBDRRC principle "in the light of different national circumstances"[131] looks certain to exacerbate the controversy between developing and developed countries on issues relating to who gets what in terms of transfer of technology, financial assistance, capacity-building, and the overall scheme to channel resources from developed countries to developing countries to support sustainable development.

The totality of the foregoing highlighted issues inspires this current effort to undertake an evaluation of the three main constituents of the treaty obligations of developed countries to

[127] 'COP-21: UN chief hails new climate change agreement as "monumental triumph"' EUROCLIMA, 13 December 2015. <http://www.euroclima.org/en/services/news/item/1848-cop21-un-chief-hails-new-climate-change-agreement-as-monumental-triumph>

[128] See Christina Voigt, 'On the Paris Agreement's imminent entry into force', *PluriCourts – Centre for the Study of the Legitimate Roles of the Judiciary in the Global Order*, 7 October 2016. <http://www.jus.uio.no/pluricourts/english/blog/christina-voigt/2016-10-07-voigt-paris-entry.html> Accessed 30 November 2016; TWN, "APA: Interesting exchange on implications of early entry into force of Paris Agreement" Third World Network, Bonn Climate News Update, No. 19, 3 June 2016.

[129] UNFCCC, *Ad Hoc Working Group on the Paris Agreement (APA): Taking the Paris Agreement forward – Tasks arising from decision 1/CP.21*, March 2016. <http://unfccc.int/files/bodies/cop/application/pdf/overview_1cp21_tasks_.pdf> Accessed 17 September 2016; UNFCCC, Progress tracker: work programme resulting from the relevant requests contained in decision 1/CP.21, 28 November 2016. <http://unfccc.int/files/paris_agreement/application/pdf/pa_progress_tracker_281116.pdf> Accessed 15 December 2016.

[130] TWN, "APA: North-South Divide over Transparency Framework in the Paris Agreement" Third World Network, Bonn Climate News Update, No. 11, 25 May 2016; TWN, Battle of Interpretation over Paris Agreement" Third World Network, Bonn Climate News Update, No. 1, 17 May 2016; TWN, "Implementation of the Paris Agreement Must Preserve Balance on All Issues, Say Developing Countries" Third World Network, Bonn Climate News Update, No. 2, 17 May 2016; ELH "COP 22 – Overshadowed by Trump and lacking in decisions – can the Paris Agreement Survive?' Energy Legislation Hub, 21 November 2016. <http://www.energylegislation.co.uk/cop-22-overshadowed-trump-lacking-decisions-can-paris-agreement-survive/> Accessed 27 November 2016.

[131] Art. 2.2. See also Christina Voigt and Felipe Ferreira, above n 118, at 65; Maljean-Dubois, above n 40, at 153; Gupta, above n 115, at 178; Rajamani, above n 119, at 493.

developing countries under the climate change regime, namely, transfer of technology, financial assistance and sustainable development. The central aim of this thesis is to ascertain to what extent transfer of technology and financial assistance from developed countries to developing countries have contributed to the attainment of the greenhouse gas stabilisation objective of the UNFCCC and the promotion of sustainable development in developing countries. The effects of transfer of technology, financial assistance, and sustainable development can only be determined in the light of the stabilisation objective of the UNFCCC.

This thesis adopts the critical legal theory to undertake a critique of the climate change legal regime governing transfer of technology and financial assistance to developing countries with a view to ascertaining if it has been effective. As a research methodology, the critical legal theory or studies "provides a theoretical critique of the law in operation".[132] It serves as a paradigm for evaluating the law to establish to what extent it has served its legal and social purposes.[133] Considering that the aim of this thesis is to comprehensively and critically analyse the climate legal regime on technology and finance and to recommend improvements where necessary, the analytical, applied and prescriptive research approaches will be employed as the main research methods.

While the analytical approach offers a researcher the opportunity to utilize his own facts or readily available information to critically evaluate a topic,[134] or to show "what the law is, or why the law is the way it is";[135] the applied or action approach is normally concerned with

[132] See Katheryn K. Russell, "A Critical View from the Inside: An Application of Critical Legal Studies to Criminal Law (1994-1995) 85 *The Journal of Criminal Law & Criminology*, 222-240, 222. See generally Ian Ward, An Introduction to Critical Legal Theory (Cavendish Publishing, London, 1998), 156-161; Caroline Morris & Cian Murphy, *Getting a PhD in Law* (Hart Publishing, Oxford, 2011), 32-34; James Boyle, *Critical Legal Studies* (Dartmouth, Aldershot, 1992).
[133] Ibid, Russell, 223.
[134] Prof (Dr) Khushal Vibhute & Filipos Aynalem, *Legal Research Methods* (2009), 16. <https://chilot.files.wordpress.com/2011/06/legal-research-methods.pdf>
[135] Morris and Murphy, above n 132, at 30.

finding a solution to an immediate problem.[136] It makes a researcher view his research in a practical context.[137] The prescriptive approach undertakes a critique of a law or an existing state of affairs with a view to suggesting reforms based on a specific point of view or a set of principles.[138]

The rationale for choice of research methods includes, first, the analytical nature of the thesis - thesis provides a comprehensive analysis of the international legal regime governing climate change, not only with respect to central issues of transfer of technology, financial assistance and sustainable development, but also with respect to the broad climate regime that encapsulates the origin, ultimate objective(s) and array of obligations of parties underpinning the need for technology and financial assistance, as laid out in chapter two. Second, the problem-solving nature of the thesis - thesis is primarily driven by the need to extensively assess the present state of transfer of technology and financial assistance to developing countries with a view to identifying problems, wherever possible. The practical context provided by the "analytical method" assists the author to pin-point problems for which solutions will be recommended. Third, reform-driven nature of thesis - thesis intends, upon establishing that the state of technology transfer and financial assistance of the climate regime is not meeting the ultimate objective of the regime, suggest reforms that should be considered to put the regime on course for attaining its ultimate objective.

Following the methodology set out in this section, this thesis will undertake a comprehensive analysis of primary and secondary materials in the main sub-topics forming the building block of the research topic – international legal regime governing climate change, including its principles - particularly the CBDRRC principle, transfer of technology, financial assistance, and sustainable development

[136] Vibhute and Aynalem, above n 134, 16.
[137] Ibid.
[138] Morris and Murphy, above n 132, at 30.

The thesis will be divided into five chapters. After this chapter, chapter two will evaluate the international legal regime governing climate change with a view to establishing to what extent the regime has been effective in attaining the ultimate stabilisation objective of the UNFCCC as stipulated in Article 2 – "stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system", with specific focus on developing countries. It will be posited that in the stabilisation objective of the UNFCCC rests the wider mitigation, adaptation and implementation obligations of the regime, which in turn underscore the relationships between developing and developed countries as founded primarily on CBDRRC; which, among other things, commits developed countries to transfer technology and render financial assistance to developing countries to enable the latter mitigate and adapt to climate change, and adopt sustainable means of economic development.

Upon establishing the effectiveness or otherwise of the legal regime governing climate change, chapter three will undertake a detailed analysis of the relationships between developing and developed countries with respect to central or main obligations of the parties, obligations relating to the implementation of the provisions of the treaty, and the obligations of the parties relating to transfer of technology and financial assistance. The CBDRRC principle will be the focal point, especially how the principle has evolved over the years through the UNFCCC and the Kyoto Protocol on the one hand, and the Paris Agreement on the other hand. The reach and the implication of CBDRRC as reflected in the Paris Agreement will be critically examined with a view to establishing how future interpretation of the qualifier "in the light of different national circumstances" may impact the relationship between developing and developed countries in particular; and the implementation of the Agreement in general.

In chapter four, the three vital areas (transfer of technology, financial assistance and sustainable development) that underpin the core of this thesis will be critically and comprehensively evaluated. The evaluation to be undertaken in the chapter will centre on discovering how effective the international legal regime governing climate change has been in attaining the important objectives of transfer of technology and financial assistance to developing countries to support mitigation and adaptation to climate change and to enable them achieve sustainable development (all in a bid to attain the stabilisation objective of the UNFCCC). It will be argued that achieving the stabilisation goal of the UNFCCC (and by extension the long-term temperature goal of the Paris Agreement) primarily depends on parties implementing their obligations as enshrined in the UNFCCC and related legal instruments.

With respect to obligation of parties, pursuant to CBDRRC, developed countries are to, among other things, transfer technology and provide financial support to developing countries to enable the latter effectively implement their obligations, which includes undertaking policies and measures relating to mitigation and adaptation to climate change. Thus, transfer of technology and financial assistance are fundamentally important for developing countries to fulfil their obligations towards attaining the stabilisation goal of the UNFCCC. Proceeding from this premise, this chapter will undertake an investigation into what technology has been transferred to developing countries by developed countries, and also examine what financial support has been rendered.

The final chapter is chapter five. The chapter will summarise the key findings of the investigation undertaken by this thesis and reach a final conclusion on whether the stabilisation objective of the UNFCCC has been attained in developing countries through effective transfer of technology and financial assistance. Although the adoption of the Paris Agreement will be commended as a laudable effort by the international community, a number

of potential deficiencies of the Agreement will be identified and suggestions on how to strengthen the Agreement offered in this chapter. However, considering that the Agreement only recently came into effect but yet to be implemented, the recommendations will be prospective in manner. Finally, the chapter will formulate a proposal indicating what an effective future framework for transfer of technology and financial assistance to developing countries should encompass in a template to be called the "Tripartite Treaty Framework". In any event the Paris Agreement does not lead to expected transformation of the climate regime; the tripartite framework could form the basis for a new climate treaty.

CHAPTER 2

THE INTERNATIONAL LEGAL REGIME GOVERNING CLIMATE CHANGE

2.1 Introduction

This chapter will evaluate the international treaties governing climate change in a bid to ascertain their origin, central objectives, and the fundamental provisions that have generally underpinned the mitigation, adaptation and implementation obligations of developed and developing countries. Primarily, the chapter seeks to ascertain to what extent the treaties have, generally, been effective in advancing the attainment of the ultimate stabilisation objective of the UNFCCC as stipulated in Article 2 – "stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system". It will be posited that in the stabilisation objective of the UNFCCC rests the wider mitigation and adaptation goals of the regime, which determine the relationships between developing and developed countries as founded primarily on common but differentiated responsibilities and respective capabilities (CBDRRC); which, among other things, commits developed countries to render financial assistance and transfer technology to developing countries to enable the later mitigate and adapt to climate change, and adopt sustainable means of economic development. While the effectiveness criterion underpinning the main purpose of this thesis will be applied to the assessment of the fundamental provisions of the UNFCCC and the Kyoto Protocol, it will not obtain in the evaluation of the fundamental provisions of the Paris Agreement due to the fact that the Agreement remains more or less in an inchoate state – implementation of the Agreement is expected to commence post-2020.

The structure of the chapter will be as follows. The chapter will be made up of six main sub-headings. The first sub-heading, after the introduction, will undertake a brief discussion of the

evolution of the climate change regime. The second sub-heading will evaluate the UNFCCC under the following sub-divisions: origin and objective; fundamental provisions; and, achievements and failures (effectiveness). The third sub-chapter will undertake examination of the Kyoto Protocol with further sub-topics covering – origin and objectives; fundamental provisions; review of the first commitment period; achievements and shortcomings (effectiveness); and, the issues surrounding the second commitment period. The Paris Agreement will be analysed in the fourth sub-chapter through the following sub-divisions: origin and legal character; fundamental provisions; and, the relationship between the Paris Agreement and the UNFCCC. The final part of the chapter is the conclusion sub-chapter.

2.2 International Environmental Law and the Evolution of the Climate Change Regime

In 1979, the World Meteorological Organisation (WMO) organised the first World Climate Conference in Geneva.[1] At the Conference, scientists appealed to policy-makers to consider precautionary action concerning possible anthropogenic interference with the global climate.[2] The World Climate Conference was the first to recognise climate change as a serious problem. In 1985, another Conference was held in Villach,[3] where scientists declared that a rise in global mean temperature greater than any in human history could occur in the first half of the twenty-first century as a result of the increasing concentrations of greenhouse gases in the atmosphere.[4] In 1988, climate change was dealt with as a major political issue at a Conference in Toronto.[5] The outcome of the Conference included a recommendation that governments and industry should reduce emissions by 20% of 1988 levels by 2005 as an

[1] World Meteorological Organisation (WMO), *Declaration of the World Climate Conference*, Geneva, 1979. WMO-No. 537, Geneva.
[2] Ibid.
[3] WMO (1986), *Report on the Assessment of the Role of Carbon Dioxide and of Other Greenhouse Gases in Climate Variations and Associated Impacts*, Villach, Austria, 1985. WMO-No. 661, Geneva.
[4] Ibid.
[5] WMO (1989), *The Changing Atmosphere – Implications for Global Security*, Toronto, Canada, 1988. WMO-No. 710, Geneva.

initial global goal.[6] In 1990, at the Second World Climate Conference in Geneva,[7] with scientific and ministerial participation from 137 countries, Ministers agreed to a global strategy based on the precautionary principle. An institutional milestone was achieved in 1988 with the establishment of the Inter-governmental Panel on Climate Change (IPCC). The IPCC was set up by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) with the objective of "assessing the scientific, technical and social-economic information relevant for the understanding of the risk of human-induced climate change in a policy relevant rather than a policy prescriptive manner."[8]

In 1992, the United Nations Framework Convention on Climate Change (UNFCCC) was negotiated, and it came into force in 1994. The overall intention of the international community at the time leading to the negotiation and adoption of the UNFCCC was reflected in the stated primary objective of the Convention.[9] After the entry into force of the UNFCCC, the first Conference of the Parties meeting (COP 1) took place in Berlin in 1995. At the Berlin meeting, COP 1 reviewed the adequacy of commitments under the Convention and decided that they were insufficient in view of the Convention's objective. The Berlin Mandate was adopted, and an Ad Hoc Group on the Berlin Mandate (AGBM) was charged with negotiating a protocol to the UNFCCC.[10] The Kyoto Protocol to the UNFCCC was adopted in 1997 and entered into force in 2005. The most notable provision of the Kyoto Protocol is the establishment of quantified GHG emission caps for the Protocol's Annex 1 countries with a view to reducing their overall emissions by at least 5% below 1990 levels in

[6] Ibid.
[7] WMO (1990), *Second World Climate Conference (SWCC)*, Geneva, October 29 – November 7, 1990.
[8] Principles governing IPCC: <http://www.ipcc.ch>
[9] UNFCCC, Art. 2. See generally David Freestone, "The United Nations Framework Convention on Climate Change – The Basis for the Climate Change Regime" in Cinnamon P. Carlarne, Kevin R. Gray and Richard G. Tarasofsky (eds.,) *The Oxford Handbook of International Climate Change Law* (Oxford University Press, Oxford, 2016), 97-119.
[10] Article 17 of the UNFCCC provides for protocols.

the commitment period 2008 - 2012.[11] In 2011, COP-17 mandated the Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP)[12] to facilitate the negotiation of a new climate change agreement by 2015. The ADP has now fulfilled its task of facilitating the "adoption of a protocol, another legal instrument, or an outcome with legal force under the Convention applicable to all Parties" following the adoption of the Paris Agreement at COP-21.[13]

The Paris Agreement came into effect in November 2016[14] and as of the time of writing the Agreement has been ratified by 129 parties.[15] Detailed analysis of the Agreement will be undertaken subsequently in this chapter. It should be noted that the Paris Agreement resulted from meetings and negotiations of the COP in the years preceding COP-21, notably COP-17 (Durban, 2011), COP-19 (Warsaw, 2013), and COP-20 (Lima, 2014).

2.3. United Nations Framework Convention on Climate Change (UNFCCC)

2.3.1. Origin and Objectives of the UNFCCC

The UNFCCC is the first international environmental agreement to be negotiated by virtually the whole of the international community. However, the negotiation of the Convention was characterised by rancour and horse-trading between developed countries on the one hand, and between developing and developed countries on the other. A major point of disagreement between Europe and the United States concerned the question of which greenhouse gas

[11] Kyoto Protocol to the United Nations Framework Convention on Climate Change, opened for signature 11 December 1997, 2303 UNTS 148 (entered into force 16 February 2005) (Kyoto Protocol), Art. 3. The Kyoto Protocol was amended at COP-18 to establish a second commitment period. See Doha Amendment to the Kyoto Protocol to United Nations Framework Convention on Climate Change; Decision 1/CMP.8, Doha, 8 December 2012, FCCC/KP/CMP/2012/L.9.
[12] Durban Platform for Enhanced Action, Decision 1/CP.17.
[13] United Nations Framework Convention on Climate Change, Adoption of the Paris Agreement, Conference of the Parties, Twenty-first Session, Paris, 30 November to 11 December 2015. FCCC/CP/2015/L.9/Rev. 1. (The Paris Agreement).
[14] UNFCCC Newsroom, 'Paris Enters into Force – Celebration and Reality Check', November 4, 2016. <http://newsroom.unfccc.int/paris-agreement/paris-agreement-enters-into-force-celebration-and-reality-check/>
[15] UNFCCC, Paris Agreement – Status of Ratification <http://unfccc.int/paris_agreement/items/9444.php>

should be brought within the regulation of the Convention, and to what extent such gases should be regulated.[16] As the negotiations leading to the Kyoto Protocol revealed, the United States had its attention centred primarily on the need to protect its economic interests in view of the fact that regulation of greenhouse gases entails economic implications for a state,[17] for example, trade competitiveness and higher or lower cost of abatement,[18] depending on the gas involved.

As a practical example, in the years immediately preceding the negotiation of the UNFCCC, the United States and Australia had huge reserves of cheap coal (a major source of carbon dioxide), whereas Germany at the time was subsidizing the production of coal.[19] In this case, it would be cheaper and less economically exacting for Germany to switch to an alternative source of energy than for the United States and Australia to do the same.[20] Thus, while the abatement and the economic costs would be higher for the United States and Australia, Germany would in fact save money by switching to a low-carbon source, say natural gas.[21] This explains the hot contestations that characterised negotiations on the choice of gas to be regulated under the Convention.

Furthermore, another source of strife was the unyielding position of developing countries that emission reduction responsibilities under the Convention be determined based on historical responsibility for atmospheric concentration of greenhouse gases.[22] However, unlike some European countries that were sympathetic with the idea of historical responsibility as a basis

[16] Paolo Galizzi "Air, Atmosphere and Climate Change" in Shawkat Alam, Md Jahid Hossain Bhuiyan, Tareq M.R Chowdhury and Erika J. Techera (eds) *Routledge Handbook of International Environmental Law* (Routledge, Oxford, 2013) at 344.
[17] Paul G. Harry, "Common But Differentiated Responsibility: The Kyoto Protocol and United States Policy" (1999) 7 *New York University Environmental Law Journal*, 27-48, 36.
[18] White House, 2001: *President Bush Discusses Global Climate Change*. Office of the Press Secretary, June 2001.
[19] Daniel Bodansky, "The United Nations Framework Convention on Climate Change: A Commentary" (1993) 18 *Yale Journal of International Law*, 451-558, 478.
[20] Ibid.
[21] Ibid.
[22] Galizzi, above n 16, at 344.

for setting parties' emission reduction obligations, the United States rejected the idea while maintaining that developing countries should assume the same greenhouse gas emission reduction commitment as developed countries.[23] Following the stalemate, states could not reach agreement on the vital issue of emission reduction, leading them to settle for a framework treaty which was intended to serve as a foundation upon which future actions will be based.[24]

The ultimate objective of the UNFCCC is to "stabilise greenhouse concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system."[25] Although 'dangerous anthropogenic interference' is not defined in the Convention, scientific evidence converge around 1.5 º C – 2 º C above pre-industrial times as the best indicator.[26] The stated objective of the Convention shows that prevention of climate change is its cardinal goal, however, the Convention implicitly recognises that some climate change is inevitable, since the objective is to be "achieved within a timeframe 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."[27]

To achieve its objectives, the UNFCCC laid down the following principles: common but differentiated responsibilities - implying that developed countries should champion mitigation of climate change owing to historical responsibility for greenhouse gas emissions, among other considerations; that specific needs of developing countries should be given full

[23] Ibid, 345.
[24] Ibid.
[25] Art. 2
[26] See Rogner, H.H., *et al*, *2007: Introduction. In Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [B. Metz, *et al*, (eds)], Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 99 – 100. See also Decision 1/CP.16, Cancun Agreements: Outcome of the Work of the Ad Hoc Working Group on Long-Term Cooperative Action under the Convention, FCCC/CP/2010/7/Add.1, 1.4.

[27] UNFCCC, Art 2.

consideration, especially those countries that are especially exposed to the adverse impacts of climate change; the precautionary principle – postulating that scientific uncertainty must not be offered as an excuse for delaying measures to address climate change; recognises sustainable development while providing that domestic actions to protect the climate should be proportionate to national circumstances to enable economic development; and that international cooperation and open economic system are essential in attaining the objective of sustainable economic growth, specifically in developing countries.[28]

The ultimate decision-making body of the UNFCCC is the Conference of the Parties (COP), which meets annually to review the implementation of the Convention. The COP adopts decisions and resolutions. Successive decisions reached by the COP make up a detailed set of rules for practical and effective implementation of the Convention. So far, parties to the UNFCCC have held twenty-two COP meetings (1995 – 2016). The 21st session of the Conference of Parties to the UNFCCC registered the landmark achievement of adopting the Paris climate agreement. The first session of the Conference of the Parties serving as meeting of the Parties to the Paris Agreement (CMA 1) held in Marrakech in November 2016, alongside COP 22 and CMP 12.

2.3.2 Assessment of the Fundamental Provisions of the UNFCCC

Fundamentally, with respect to obligation of parties, the UNFCCC creates general[29] and specific commitments.[30] It has been observed that from the outset parties and other stakeholders viewed general commitments as "qualitative rather than quantitative in nature".[31] Article 4.1 embodies the core commitments applicable to all parties. It provides that all parties shall develop and publish national inventories of anthropogenic emissions by

[28] UNFCCC, Art. 3.
[29] UNFCCC, Arts. 4.1, 5, 6, and 12.1
[30] Ibid, Arts. 4.2, 12.2
[31] Bodansky, above n 19, 508

sources and sinks adopting comparable methodologies; regularly publish national and regional programmes showing measures taken with respect to mitigation and adaptation; promote development and diffusion of technology; promote sustainable management of sinks and reservoirs of greenhouse gases, including forests and oceans; cooperate in establishing adaptation measures to climate change, especially in respect to water and agriculture, and the protection of areas prone to drought, desertification and flood; consider climate change in economic, social and environmental policies and actions; cooperate in scientific, technological, socio-economic, and other research necessary to further understand and eliminate uncertainties relating to climate change; cooperate in the exchange of relevant scientific, technological, technical and socio-economic and legal information relating to climate change; cooperate in education and training relating to climate change; and, supply information related to implementation to the COP.[32]

These general commitments were subjects of intense debate among parties during the negotiation of the UNFCCC. Specifically, while some developed countries put forward the idea that parties should utilise common methodology in preparing greenhouse gas inventories to guarantee comparability, developing countries contended that a common methodology would not suit every country.[33] Also, developing countries preferred national planning requirements to cover program formulation and implementation, but not strategies, and also insisted that provisions dealing with communication of information be made permissive rather than obligatory.[34]

Eventually, developing countries accepted reporting requirement based on the understanding that developed countries will pay the costs of such report.[35] Furthermore, shrewd negotiation

[32] UNFCCC, Art. 4.1(a)-(j)
[33] Bodansky, above n 19, at 509.
[34] Ibid.
[35] Ibid.

characterised agreement on general commitments relating to greenhouse gas sources and sinks, culminating in their being considerably watered-down. For instance, while oil-producing countries argued against the regulation of sources, forest countries challenged provisions requiring the enhancement of sinks.[36] Consequently, the general commitment on emission of greenhouse gases does not refer to energy efficiency or renewable energy, but generally categorized all necessary economic sectors (industry, transport, energy, agriculture, forestry, and waste management).[37] Likewise, the general commitment on the promotion of sustainable management and enhancement of sinks and reservoirs avoided according forests priority.[38] Thus, the oil-producing states and countries with large expanse of forests achieved their goals.

It has been stated that the chapeau of Article 4.1 which provides that parties should take "into account the common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances" can be construed to mean that no common standard is applicable to parties in achieving their general commitments, thereby granting each party the latitude to determine how to implement its commitment, while according due regard to its own priorities and circumstances.[39] Additionally, the UNFCCC recognises that provision of financial and technological assistance by Annex II countries under Articles 4.3 and 4.5 will be taken into account in judging the extent developing countries implement their commitments under Article 4.1, considering that the overriding priorities of developing countries remain economic and social development, and the eradication of poverty as stated in Article 4.7.[40]

[36] Ibid.
[37] Ibid. See UNFCCC Art. 4.1(c).
[38] Ibid. See UNFCCC Art. 4.1(d)
[39] Farhana Yamin and Joanna Depledge, *The International Climate Change Regime: A Guide to Rules, Institutions and Procedures* (Cambridge University Press, Cambridge, 2004), 93
[40] Ibid.

However, no universally acceptable legal construction of Article 4.7 condition has been forthcoming. While, on the one hand, it has been contended that developing countries will remain legally liable for their Article 4.1 commitments but will not be reasonably expected to satisfactorily implement them if developed countries do not fulfil their commitments to provide financial assistance and transfer technology,[41] on the other hand, Article 4.7 has been termed a factual statement which may not entail any implication for developing countries' legal responsibility.[42] Following from the foregoing, it has been opined that "the exact implication of Article 4.7 on the implementation of general commitments set out in Article 4.1 will, in all likelihood, be determined essentially at a political level".[43]

It is submitted that Article 4.7 will arguably operate as defence for those developing countries that lack the financial and technological capacity to implement Article 4.1 commitments if developed countries listed in Annex II fail to fulfil their commitments in that respect. In arriving at this conclusion, the fact that financial and technological capacity of a specific developing country remains a question of fact to be determined through objective assessments is taken into account. Thus, while some developing countries may command the capacity to implement Article 4.1 general commitments, especially in today's world compared to 1992 when the UNFCCC was adopted, others still cannot do the same due to acute financial and technological constraints.

In a hypothetical international court, a developing country that belongs to the latter category in the preceding sentence, which puts up Article 4.7 as a defence for non-implementation of Article 4.1 commitments, and argues that it accepted the commitment in the first place on the understanding that developed countries will fulfil their financial and technological

[41] Philippe Sands, "International Law in the Field of Sustainable Development" (1995) 65 *British Yearbook of International Law*, 65.
[42] Yamin and Depledge, above n 39, 93
[43] Ibid.

commitments, will likely be availed. While the preceding reasoning on Article 4.7 may seem merely academic once the implementation of the Paris Agreement gets underway, considering that the Agreement made no reference to the Article,[44] this author is convinced that since the purpose of the Agreement includes "enhancing the implementation of the Convention, including its objectives", Article 4.7 may still be implied in situations where palpable injustice will be occasioned in the relationship between developing and developed countries, especially with respect to financial and technological resources requisite for effective implementation of developing country parties' commitments. Doing otherwise will most likely filibuster the long-term objective of the UNFCCC and its guiding principles, especially the CBDRRC, now re-modelled under the Paris Agreement by the qualifier, "in the light of different national circumstances".[45]

The UNFCCC creates further general commitments in relation to research and systemic observation,[46] education, training and public awareness,[47] and communication of information regarding implementation.[48] The provisions on reporting of inventories of anthropogenic emissions and comparable methodologies under Article 12 can be said to augment and reinforce the provisions of Article 4.1, to the extent that all parties are required to communicate their anthropogenic emissions inventories including actions taken toward

[44] On the view that Article 4.7 no longer holds in judging developing countries' implementation of their commitments vis-à-vis developed countries' provision of requisite support pursuant to CBDRRC, see Christina Voigt and Felipe Ferreira, "Differentiation in the Paris Agreement" (2016) 6 *Climate Law* 58, 70; Sandrine Maljean-Dubois "The Paris Agreement: A New Step in the Gradual Evolution of Differential Treatment in the Climate Regime" (2016) 25 (2) *RECIEL* 151, 158.

[45] Paris Agreement, Art. 2.2. For various views on the implication of the qualifier in the interpretation of the Paris Agreement in general, and CBDRRC in particular, see Voigt and Ferreira, above n 44, at 65; Maljean-Dubois, above n 44, at 153; Joyeeta Gupta, "The Paris Climate Change Agreement: India and China" 2016 6 Climate Law, 171, 178; Lavanya Rajamani, "Ambition and Differentiation in the 2015 Paris Agreement: Interpretative Possibilities and Underlying Polictics" (2016) 65 (2) *International and Comparative Law Quarterly*, 493 - 514.

[46] UNFCCC, Art. 5.

[47] Ibid, Art. 6.

[48] Ibid, Art. 12.1

implementing the provisions of the Convention, and any other information the party deems relevant in the circumstance.[49]

The UNFCCC also provides for specific commitments which primarily relate to policies and measures on greenhouse gas sources and sinks.[50] It stipulates that each party listed in Annex I shall adopt national policies and take measures to mitigate climate change by limiting emissions and enhancing its greenhouse gas sinks and reservoirs.[51] This requirement mirrors the general commitments provided under Article 4.1.[52] Article 12.5 of the UNFCCC further states that each Annex I country shall communicate its initial policies and measures within six months of the Convention entering into force, while each party not listed in Annex I shall submit its initial report within three years of entry into force of the Convention, or as of when financial resources is made available pursuant to Article 4.3. Least developed countries are allowed to submit their initial report at their discretion.[53] Report submitted by Annex I parties shall include detailed information on policies and measures, including projected impact on emissions by sources and removals by sinks, taking into account "best available scientific knowledge".[54] Each party included in Annex I shall also coordinate relevant economic and administrative instruments geared towards achieving the objective of the Convention, and identify and periodically undertake review of policies and practices which support emission of greenhouse gases at a higher rate.[55]

It has been stated that with respect to "specific commitment to adopt and report on national policies and measures, the Convention establishes a quasi-target and quasi-timetable for greenhouse gas emissions", notwithstanding the controversy that surrounded targets and

[49] Ibid, Art. 12.1(a - c)
[50] Ibid, Art. 4.2
[51] Ibid, Art. 4.2(a)
[52] Bodansky, above n 19, at 511
[53] UNFCCC, Art. 4.2(b) and 12.5
[54] Ibid, Art. 4.2(b - c). See Bodansky, above n 19, at 511.
[55] Ibid, Art 4.2(e). Policies and practices that may encourage emissions at a higher rate include those relating to fossil fuel subsidy and energy pricing. See Bodansky, above n 19, at 512.

timetables during negotiation.[56] While in common semantics, "target" means object or goal",[57] in international environmental governance, "targets and timetables" connote "quantitative limitations", legally-binding commitments inclusive.[58] International governance of atmospheric pollution has mainly utilized targets and timetables.[59]

The reporting requirements of the UNFCCC form the core of the regime, and serve as a gauge for measuring progress, while laying the foundation for the establishment of common standards and engendering trust in furthering the objectives of the Convention.[60] Reporting has been described as the "mainstay of multilateral environmental agreements".[61] Although the UNFCCC does not categorically vest in any of its institutions the power to appraise compliance with its provisions, the Conference of the Parties has created a process that facilitates comprehensive appraisal of developed countries' communications.[62] However, the specific commitments under Article 4.2 of the UNFCCC has been criticised as being opaque owing to "convoluted language agreed to by way of compromise between various OECD members, and the different interests in and between developed and developing countries".[63] That notwithstanding, they remain vital as the only international anchor for emission reduction obligation binding on parties that do not belong to the Kyoto Protocol, the United States, qualifying as a good example.[64]

However, it should be noted that while the general obligation on reporting under the UNFCCC continues to apply, the specific obligation which applied to Annex I states

[56] Bodansky, above n 19, at 512.
[57] Ibid, citing American Heritage Dictionary (2nd College ed. 1982)
[58] Bodansky, above n 19, at 512
[59] Ibid.
[60] Friedrich Soltau, *Fairness in International Climate Change Law and Policy* (Cambridge University Press, Cambridge, 2009), 58
[61] Ibid.
[62] Ibid.
[63] Philippe Sands, Jacqueline Peel, Adriana Fabra and Ruth MacKenzie *Principles of International Environmental Law* (3rd ed, Cambridge University Press, Cambridge, 2012), 279.
[64] Ibid.

exclusively, expired in 2000 pursuant to Article 4.2. Recently, it has been stated that while the fleeting specific obligation qualifies as a treaty law, the ongoing general obligation is gradually gravitating towards attaining the status of customary international law.[65] Curiously, it remains to be seen how the general obligation on reporting under the UNFCCC will form part of the transparency framework of the Paris Agreement when its implementation commences, considering that the Agreement provides that the Convention's transparency arrangements shall inform development of the modalities, procedures, and guidelines under the Agreement.[66]

2.3.3 Achievements and Shortcomings of the UNFCCC

Generally-speaking, the UNFCCC has served its purpose as a structural framework upon which a much better climate change regulatory regime could evolve. The subsequent negotiation and adoption of the Kyoto Protocol, and recently the Paris Agreement, attest to the success of the UNFCCC in setting a formidable and enduring framework for the negotiation of climate change governance by the international community. The most outstanding early positive effect of the UNFCCC derives from the provision that "each party shall communicate to the COP a national inventory of anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol."[67] This provision led to parties establishing national greenhouse gas inventories for the first time.[68] The Convention sets no legally-binding limits on GHG emissions and contains no enforcement provisions. At best, the provisions of the UNFCCC are permissive and hortatory.

[65] Alexander Zahar, *International Climate Change Law and State Compliance* (Routledge, Abingdon: New York, 2015), 86.
[66] Paris Agreement, Art. 13.4 and 13.13.
[67] UNFCCC, Art. 12. See also Arts. 4.1 and 4.2.
[68] See generally, Zahar, above n 65.

Overall, in terms of effectiveness, the UNFCCC as a framework instrument can be said to have been successful, however, when judged on the attainment of its ultimate objective as set out in Article 2 – "stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system", the UNFCCC may be termed unsuccessful. Undoubtedly, attaining the ultimate objective of the UNFCCC entails meeting the mitigation and adaptation goals of the climate change regime which in turn underscores the commitment to render financial assistance and transfer technology to support sustainable development in developing countries.

As the latest report of the IPCC shows,[69] global emission of greenhouse gases continues unabated leading to increase in global average temperature and rising sea levels, a stark pointer to the fact that the mitigation and adaptation goals set by the UNFCCC have not been met. Although the UNFCCC has on its own failed to attain its ultimate objective, being a framework treaty, it laid down the guiding principles for further action which resulted in the negotiation of the Kyoto Protocol and the Paris Agreement, both international instruments geared towards realising its ultimate objective. Thus, it is safe to submit that the expectation from the outset was never to make the UNFCCC an end in itself, but a means to an end. Being a means to an end, attaining its ultimate objective would seem to go beyond the UNFCCC itself. On this note, the assessment of the fundamental provisions of the Kyoto Protocol and the Paris Agreement will be undertaken in the preceding sub-chapters.

[69] IPCC, 2013: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T.F, *et al* (eds.)] Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1535.

2.4 Kyoto Protocol to the United Nations Framework Convention on Climate Change

2.4.1. Origin and Objectives of the Kyoto Protocol

The UNFCCC provides for protocols.[70] Negotiations for a protocol to the Convention started in 1995 after the first meeting of the Conference of the Parties in Berlin, where it was established that Annex I[71] parties commitments under the UNFCCC were not adequate in view of Articles 4.2(a) and (b), and that a process should be put in place to strengthen their commitments via a protocol or another legal instrument.[72] The third Conference of the Parties to the UNFCCC adopted the Kyoto Protocol in December 1997, and it came into force in 2005.[73]

Thus, it is right to state that the Kyoto Protocol is a creation of the Berlin Mandate initiative. In reviewing the adequacy of the commitments of Annex I Parties under Article 4.2 (a) and (b), the Berlin mandate stipulated that the process shall be guided by the provisions of the Convention, particularly Article 3.1 (common but differentiated responsibilities).[74] Specifically, the Berlin Mandate stated that the process of reviewing the commitments of Annex I parties should aim as the priorities – the strengthening of the commitments under Article 4.2 (a) and (b), elaboration of policies and measures, and setting of quantified limitation and reduction objectives,[75] but "not introduce any new commitments for Parties not included in Annex I, but reaffirm existing commitments in Article 4.1…".[76] Clearly, the Berlin mandate process in conformance with the principle of common but differentiated responsibility as enshrined and operationalized in the UNFCCC forbade any introduction of

[70] Art. 17.
[71] Annex I of the UNFCCC lists the countries that have committed to quantitative GHG emissions reduction target, comprising OECD members in 1992 and most of the Central and Eastern European countries.
[72] Decision 1/CP.1, *The Berlin Mandate: Review of the adequacy of Article 4, paragraph 2 (a) and (b), of the Convention, including proposals related to a protocol and decisions of follow-up*. FCCC/CP/1995/7/Add.1.
[73] Kyoto, Japan, 10 December 1997; 16 February 2005. Reprinted in 37 ILM 22 (1988).
[74] Decision 1/CP.1, para. 1(a)
[75] Ibid, para. 2(a)
[76] Ibid, para. 2(b).

emission reduction and limitation commitments, or any other new commitments, for developing countries. Commenting on the relevance and effect of the Berlin Mandate, it has been submitted that "the Berlin Mandate reaffirmed the principle of common but differentiated responsibility and, in keeping with the FCCC division of responsibilities between industrial and developing countries, focused on mitigation activities and thereby primarily commitments of industrial countries".[77] This development resulted in the instrument created by the process – the Kyoto Protocol – setting binding mitigation commitments for developed countries only.[78]

It should be noted that parties to the Kyoto Protocol adopted an amendment to the Protocol to establish a second commitment period for Annex I countries at Doha in 2012.[79] The second commitment period was scheduled to begin on 1 January 2013 and end on 31 December 2020.[80] The Amendment also added nitrogen trifluoride (NF_3) as a greenhouse gas controlled by the Protocol under Annex A. The Amendment shall enter into force in accordance with Articles 20 and 21 of the Kyoto Protocol. A total of 144 instruments of acceptance are required for entry into force of the Amendment, however, the Amendment has not come into force for want of ratification by the parties. The accompanying decision to the Paris Agreement while stressing the urgency of accelerating the implementation of the UNFCCC and the Kyoto Protocol to enhance pre-2020 ambition urges all parties to the Kyoto Protocol

[77] Lavanya Rajamani, "The Principle of Common but Differentiated Responsibility and the Balance of Commitments under the Climate Regime" (2000) 9(2) *Review of European Comparative & International Environmental Law*, 120-131, 126-127.
[78] Art. 3.1.
[79] Doha Amendment to the Kyoto Protocol to United Nations Framework Convention on Climate Change. Decision 1/CMP.8, Doha, 8 December 2012, FCCC/KP/CMP/2012/L.9.

[80] Canada withdrew from the Kyoto Protocol effective from 15 December 2012. In December 2010, Japan communicated that it does not intend to take up obligation under the second commitment period of the Kyoto Protocol after 2012. New Zealand remains a party to the Kyoto Protocol; however, it opted for a quantified economy-wide emission reduction target under the UNFCCC (and not under Kyoto) in the period 2013 to 2020. Russia also opted out of emission reduction commitment under the Doha Amendment. See Article 1 of the Doha Amendment to the Kyoto Protocol, especially footnotes 13 – 16.

that have not already done so to ratify and implement the Doha Amendment.[81] It is submitted that it remains unlikely that the Doha Amendment will ever come into effect considering that the Paris Agreement is to a greater extent an unfinished product requiring a reasonable amount of time and resources to bring to perfection before its implementation commences, hopefully post-2020. Thus, all attention will now be channelled towards the Paris Agreement, and it would seem that the Doha Amendment to the Kyoto Protocol has now been overtaken by events.

2.4.2 Assessment of the Fundamental Provisions of the Kyoto Protocol

Under the Kyoto Protocol, "parties included in Annex I shall, individually or jointly, ensure that their aggregate anthropogenic carbon dioxide equivalent emissions of the greenhouse gases listed in Annex A do not exceed their assigned amounts, calculated pursuant to their quantified emission limitation and reduction commitments inscribed in Annex B and in accordance with the provisions of this Article, with a view to reducing their overall emissions of such gases by at least 5 per cent below 1990 levels in the commitment period 2008 to 2012."[82] There has been a change in the composition of Kyoto Protocol Annex B parties following the end of the first commitment period to reduce emissions in December 2012 and the subsequent amendment of the Protocol to usher in the second commitment period at the Doha conference of the parties the same year.[83]

[81] Decision 1/CP.21, para. 106 (a).
[82] Art. 3:1.
[83] At adoption, the parties with binding commitments to reduce emissions listed in Annex B of the Kyoto Protocol include: Australia, Austria, Belgium, Bulgaria, Canada, Croatia, Czech Republic, Denmark, Estonia, European Community, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Monaco, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, United Kingdom of Great Britain and Northern Ireland, and the United States of America. The United States later pulled out of the Kyoto Protocol under Bush's administration. After the Doha Amendment, the composition of Annex B parties looks thus: Australia, Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, European Union, Finland, Germany, Greece, Hungary, Iceland, Ireland, Italy, Kazakhstan, Latvia, Liechtenstein, Lithuania,

The quantified emissions limitation and reduction commitments (QELRCs) represent the quantity of permissible emissions or assigned amounts (AAs). The Kyoto Protocol creates three mechanisms through which Annex I countries can obtain part of their GHG reduction commitment from non-domestic sources. These are emissions trading, joint implementation and the clean development mechanism, as provided under Articles 17, 6, and 12 of the Protocol respectively. While emissions trading permits the trading of assigned amount units (AAUs) between Annex I countries; joint implementation governs the scheme whereby Annex 1 countries are permitted to receive emissions reduction units (ERUs) from further emissions reduction investment in another Annex 1 country; whereas the clean development mechanism (CDM) generates certified emissions reductions (CERs) for Annex 1 countries that invest in further greenhouse gas reduction activities in non-Annex I countries.[84] The tradable permits of the Kyoto Protocol (AAUs, ERUs and CERs) represent the 'legal tender' of its economy.[85]

The legally binding targets for Annex I countries stand out as the most important provision of the Kyoto Protocol.[86] The Kyoto Protocol created two categories of targets – individual target for every Annex I party and a collective target based on the overall Protocol's Annex B cap, also applicable to Annex 1 countries.[87] Every Annex I party's specific quantified emission limitation and reduction commitments are determined based on the percentage inscribed for that party in Annex B of the Protocol. The specific targets served as a tool for sharing the emission reduction responsibility needed to attain the collective target of 5 per cent by all

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Luxembourg, Malta, Monaco, Netherlands, Norway, Poland, Romania, Slovakia, Slovenia, Sweden, Switzerland, Ukraine, and the United Kingdom of Great Britain and Northern Ireland.

[84] Luke Brander "The Kyoto Mechanisms and the Economics of their Design" in Michael Faure, Joyeeta Gupta and Andries Nentjes (eds.) *Climate Change and the Kyoto Protocol: The Role of Institutions and Instruments to Control Global Change* (Edward Elgar, England, 2003) at 25.

[85] Alexander Zahar "The Climate Change Regime" in Shawkat Alam*, et al* (eds) *Routledge Handbook of International Environmental Law* (Routledge, Oxford, 2013) at 357.

[86] Kyoto Protocol, Art. 3.1

[87] Ibid. See Yamin and Depledge, above n 39, at 119 -120.

Annex B countries in an explicit, definitive legally binding manner.[88] With respect to the wordings of the Protocol on the attainment of the collective target, it has been stated that the Protocol adopted a soft approach by using the expression "with a view to reducing the overall levels", "leaving open various questions about the legal nature of the collective target and the distribution of responsibilities for achieving it".[89]

Pursuant to Article 3.1, each Annex I party is not permitted to emit more than its assigned amount for the period 2008 – 2012 (Kyoto's first commitment period). The Protocol calculates the actual amount each party is permitted to emit following its provisions,[90] and the extensive modalities set up by COP 7.[91] In calculating the assigned amount, COP 7 decided that each party in Annex I will emit an assigned amount equal to the percentage set for it in Annex B of the aggregate anthropogenic carbon dioxide equivalent emissions of greenhouse gases and sources, stated in Annex A of the Protocol, in 1990 (or other base year) multiplied by five, taking into account base year provisions, assigned amounts of the EU and its member states, and the assigned amount of parties with land use, land-use change and forestry (LULUCF) as a net source of greenhouse gas emissions in 1990.[92]

However, emission-trading (and to an extent the other flexibility mechanisms) gives Annex I countries the liberty to exceed their assigned amounts, provided the excess amount is counterpoised through purchase of emission allowance from other Annex I parties or via the clean development or joint implementation mechanisms.[93] A grace period of 100 days is granted any party that overshoots its assigned amount in any commitment period, following

[88] Yamin and Depledge, 120.
[89] Ibid.
[90] Kyoto Protocol, Arts. 3.7, 3.8 and 7.4
[91] Decision 19/CP.7, 'Modalities for the accounting of assigned amounts under Article 7, paragraph 4, of the Kyoto Protocol'. FCCC/CP/2001/13/Add.2.

[92] Ibid, Annex 5 (a) – (c).
[93] Zahar, above n 65, at 92.

review of the final inventory of such party by the Expert Review Team, to address the infringement.[94] Under Kyoto's first commitment period, this period has become known as the so-called "true-up" period.[95]

In the course of negotiating the Kyoto Protocol, a number of targets were put forward by parties for specific greenhouse gases leading to difficulties in arriving at a consensus; however, the employment of differentiated targets produced result acceptable to the concerned parties, to a certain degree.[96] For instance, whereas the European Union (EU) proposed 2005 as the year set targets should be met, the United States opted for 2010. The proposal by the EU is reflected in the Kyoto Protocol to the effect that "each party included in Annex I shall, by 2005, have made demonstrable progress in achieving its commitment under the Protocol".[97]

It has been submitted that from fairness standpoint, the question or expectation that targets might be set taking historical responsibility into account assumed popularity, although alternative approaches such as calculating emissions according to population or Gross Domestic Product (GDP) were also suggested.[98] However, the choice of 1990 as a base year for emissions limitation mirrored recognition of acquired rights in contradistinction to fairness considerations based on responsibility (polluter-pays principle) or per capita

[94] Ibid. See also Kyoto Protocol, Art. 8.

[95] Decision 13/CMP.1, Annex, para. 14, reads: "For the purpose of fulfilling commitments under Article 3, paragraph 1, of the Protocol, a Party may, until the hundredth day after the date set by the Conference of the Parties serving as the meeting of the Parties to the Protocol for the completion of the expert review process under Article 8 of the Protocol for the last year of the commitment period, continue to acquire, and other Parties may transfer to such Party, emission reduction units, certified emission reductions, assigned amount units and removal units under Articles 6, 12 and 17 of the Protocol, from the preceding commitment period, provided the eligibility of any such Party has not been suspended in accordance with section XV, paragraph 4". See also, UNFCCC Secretariat, True-up period for the first commitment period under the Kyoto Protocol, Bonn, Germany, 2014.

[96] Soltau, above n 60, at 65-66.

[97] Kyoto Protocol, Art. 3.2

[98] Soltau, above n 60, at 66.

distribution of emissions rights.[99] Distributional consequences also flow from the choice of base year – most Annex I countries had 1990 as the historical base year, however, parties transitioning to a market economy were allowed the discretion to a different base year,[100] leading to the following countries choosing base years other than 1990 – Slovenia (1986), Romania (1989), Poland (1988), Hungary (1985-1987), Bulgaria (1988).[101]

There was also the issue of which sources of greenhouse gases should be regulated and the extent sinks (forests) should be part of the mitigation arrangement. For sources, parties agreed to what became known as basket of gases, "or a comprehensive approach that, in addition to the three GHGs – carbon dioxide, methane, and nitrous oxide – includes three trace gases that have very powerful warming effects".[102] Thus, the Kyoto Protocol followed UNFCCC's comprehensive approach to greenhouse gases. This approach brought about flexibility in the choice of gases a party would like to concentrate on for mitigation, leading to a leeway as to decision on cost-effectiveness, which in turn engenders efficiency.[103] To guarantee comparability of reduction of different gases constituting the basket, parties adopted IPCC's global warming potentials, which "express the greenhouse forcing effect of a gas relative to CO_2".[104]

The discussions relating to sinks were more problematic and technical. States endowed with large expanse of forests would benefit considerably if removal of greenhouse gases by sink is to count in carbon dioxide reduction.[105] However, inclusion of sinks posed the question as to whether actual reduction in emissions is not being traded-off for the benefit of a handful of

[99] Ibid.
[100] Kyoto Protocol, Art. 3.5
[101] The different base years selected by these parties were in accordance with Article 3.5. See Soltau, above n 60, at 66.
[102] Soltau, above n 60, 66.
[103] Ibid, 66-67.
[104] Ibid, 67.

[105] Ibid.

countries. Although parties eventually agreed that natural sinks (extant forests) should not be counted towards mitigation actions, a question has been put forward as to what qualifies as an "anthropogenic sink".[106] Nonetheless, parties eventually agreed an outcome leading to the provision that: "the net changes in greenhouse gas emissions by sources and removals by sinks resulting from direct human-induced land-use change and forestry activities, limited to afforestation, reforestation and deforestation since 1990, measured as verifiable changes in carbon stocks in each commitment period, shall be used to meet the commitments under this Article of each Party included in Annex I. The greenhouse gas emissions by sources and removals by sinks associated with those activities shall be reported in a transparent and verifiable manner and reviewed in accordance with Articles 7 and 8".[107] This provision has been criticised as leaving a lot of questions open, leading to notable challenges in adopting subsequent rules of implementation.[108]

On the exact nature and reach of Kyoto's mitigation architecture vis-à-vis UNFCCC's objective of stabilising atmospheric greenhouse gas concentration to avoid dangerous climate change, it has been stated that:

The Kyoto Protocol developed the FCCC's specific mitigation rule through the novel element of state-level quantification. By contrast, the FCCC's general mitigation rule, which is tied to the dangerousness test, was not further developed by the Protocol. Indeed, it could not have been, because a global budget of emissions that achieves non-dangerous stabilization could not be 'managed' through reductions in Annex I alone. There have been suggestions that the protocol stands for a top-down approach. In fact, it is a continuation of the bottom-up tradition of the FCCC's specific mitigation rule, in which a few countries commit to mitigation effort whose impact is essentially arbitrary and not in furtherance of the general, communal, rule.[109]

[106] Ibid.
[107] Kyoto Protocol, Art. 3.3.
[108] Soltau, above n 60, 69.
[109] Zahar, above n 65, at 92.

The Kyoto Protocol contains mechanisms to facilitate the implementation of its provisions. First, there are compulsory provisions dealing with reporting and verification for Annex 1 parties.[110] However, it has been reported that Annex 1 countries had failed to report on all their efforts toward combating climate change and that some Annex 1 countries had not taken sufficient steps to confirm if their domestic actions and policies were producing the desired results, especially as pertains to mitigation.[111]

Second, Kyoto provides a structure for compliance.[112] The provisions on compliance are strengthened through decisions of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP).[113] The Compliance Committee of the Kyoto Protocol commenced operations in 2006.[114] The Compliance Committee consists of two branches: the Facilitative Branch and the Enforcement Branch. While the Facilitative Branch is "responsible for providing advice and facilitation to parties in implementing the Protocol, and for promoting compliance by Parties with their commitment under the Protocol", in accordance with the CBDRRC principle,[115] the Enforcement Branch is to apply the consequences of failure to comply with Article 3.1 of the Protocol, with a view to ensuring environmental integrity.[116]

It has been observed that as at the end of Kyoto's first commitment period, "the modalities, if not the very purpose, of the Facilitative Branch were still unsettled", however, the Compliance Committee still approved of the Branch's mandate.[117] Moreover, the powers of the Facilitative Branch has been adjudged largely theoretical, as it never met the expectation

[110] Kyoto Protocol, Arts. 5, 7 and 8.
[111] UNFCCC Secretariat, Compilation and Synthesis Report, Executive Summary, p. 6.
[112] Kyoto Protocol, Art. 18.
[113] Kyoto Protocol, Decision 27 / CMP.1, Procedures and mechanisms relating to compliance under the Kyoto Protocol, 9-10 December, 2005. FCCC/KP/CMP/2005/8/Add.3.
[114] Report on the Meeting of the Compliance Committee, Plenary of the Committee, First Meeting, 1-3 March 2006, Bonn, Germany. CC/1/2006/4, 29 May 2006.
[115] Kyoto Protocol, Decision 27/CMP.1, Annex, para. IV.4.
[116] Ibid, para. V.6
[117] Zahar, above n 65, at 71-72.

to discover likely compliance issues and resolve them before they develop into substantive problems.[118] With respect to the Enforcement Branch, there existed the problem of appraising the overall influence of the Branch on the compliance of parties with the reporting rules and the quality of reports submitted.[119] While it is likely that some parties may decide to abuse the reporting system in the absence of the Branch, such negative behaviour would potentially have been dealt with by the Expert Review Teams (ERTs) of the UNFCCC by raising the concern with the party involved and requesting amendment, although such intervention by the ERTs will not be adjudged an issue of implementation, as would be the case if undertaken by the Enforcement Branch.[120]

There is also the view that the Enforcement Branch had a very narrow influence owing to the fact that most of the concerns that triggered its mandate were issues pertaining to institutional design which normally get addressed rather quickly.[121] Thus, notwithstanding the substantive compliance provisions of the Kyoto Protocol and the periodic reviews by the CMP, compliance and enforcement constitute the major flaws of the Kyoto Protocol architecture.

The foregoing assessment of the role of the Compliance Committee and its potential shortcomings notwithstanding, it should be noted that Annex I countries achieved their collective emission reduction target for Kyoto first commitment period, although barring the flexibility mechanism some countries would not have met their emission reduction obligations domestically.[122] Only Ukraine is deemed not to have complied with its individual

[118] Ibid, 77-78
[119] Ibid, 82
[120] Ibid.
[121] Ibid, 80
[122] Igor Shishlov, Romain Morel and Valentin Bellassen "Compliance of the Parties to the Kyoto Protocol in the First Commitment Period" (2016) 16:6 *Climate Policy*, 768-782, 775. See also Michael Grubb, "Full Legal Compliance with the Kyoto Protocol's First Commitment Period – Some Lessons" (2016) 16:6 *Climate Policy*, 673-681.

or domestic reduction commitment, albeit on technical grounds – missing the deadline for submission of the true-up report, but it was certified to hold sufficient units for compliance.[123]

Third, Kyoto created the CDM to promote sustainable development in non-Annex I countries, to assist in realizing the objective of the Convention, and as a mechanism for Annex I countries to utilize to attain their quantified emission limitation and reduction commitments.[124] The original conception of the CDM can be traced to a proposal by Brazil for a Clean Development Fund to be primarily funded through levies on Annex I parties that fail to comply with their emissions reduction commitments.[125] However, after further negotiations between the parties the proposal metamorphosed into the CDM, which embodies the concept of joint implementation.[126]

The CDM is geared towards "breaking new ground in promoting international investment in climate friendly technologies for the benefit of developing countries".[127] Through the CDM, developed countries gain certified emission reductions (CERs) from projects executed in developing countries, which counts toward meeting their quantified emissions reductions commitments under the Kyoto Protocol. CERs are tradable in the carbon market. Thus, the

[123] Shishlov, *et al,* 775.

[124] Kyoto Protocol, Art. 12. See David Freestone and Charlotte Streck (eds.), *Legal Aspects of Implementing the Kyoto Mechanisms: Making Kyoto Work* (Oxford University Press, Oxford, 2005), 175 – 249; Christina Voigt, "The Deadlock of the Clean Development Mechanism: Caught between Sustainability, Environmental Integrity and Economic Efficiency" in Benjamin J. Richardson, Yves Le Bouthillier, Heather McLeod-Kilmurray and Stepan Wood (eds.) *Climate Change and Developing Countries: Legal and Policy Challenges for the World Economy* (Edward Elgar, Cheltenham:Northampton, 2009), 235 – 261; David Freestone and Charlotte Steck (eds.), *Legal Aspects of Carbon Trading: Kyoto, Copenhagen and Beyond* (Oxford University Press, New York, 2009); W.Th. Douma, L. Massai and M. Montini (eds.) *The Kyoto Protocol and Beyond: Legal and Policy Challenges of Climate Change* (T.M.C Asser Press, The Hague, 2007); Michael Faure, Joyeeta Gupta and Andries Nentjes (eds.), *Climate Change and the Kyoto Protocol: The Role of Institutions and Instruments to Control Global Change* (Edward Elgar, Cheltenham, 2003).

[125] UNFCCC, Implementation of the Berlin Mandate, Additional Proposals from Parties, Paper No. 1 (Brazil), Paragraphs 11 and 12. FCCC/AGBM/1997/MISC.1/Add.3.

[126] Naoki Matsuo, "CDM in Kyoto Negotiations: How CDM Has Worked as a Bridge between Developed and Developing World" (2003) 8(2) *Mitigation and Adaptation Strategies for Global Change*, 191 – 200, 196.

[127] Maria Netto and Kai-Uwe Barani Schmidt, "CDM Project Cycle and the Role of the UNFCCC Secretariat" in David Freestone and Charlotte Streck (eds.) *Legal Aspects of Implementing the Kyoto Protocol Mechanisms: Making Kyoto Work* (Oxford University Press, New York, 2005), 175.

return on investment in a CDM project carried out in a developing country by a developed country, which has the effect of reducing emissions above what would have obtained without the project, is the generation of the CERs.[128]

The CDM framework provides an opportunity for partnership between intergovernmental entities and the private sector. To secure the environmental integrity of the CDM process, extensive rules have been put in place by the COP, spanning validation of projects and registration with the Executive Board, verification, certification, and credit issuance from CDM projects.[129]

The regulatory framework of the CDM involves many actors. First, there is the COP/MOP. The Kyoto Protocol provides that "the clean development mechanism shall be subject to the authority and guidance of the Conference of the Parties serving as the meeting of the Parties to this Protocol [COP/MOP] and be supervised by an executive board of the clean development mechanism".[130] Thus, the COP/MOP represents the highest authority of the CDM because it exercises authority over and issues guidance to the Executive Board.[131]

However, prior to Kyoto entering into force in 2005, the UNFCCC COP assumed the responsibilities of the COP/MOP.[132] The responsibilities of the COP/MOP include offering guidance to the Executive Board on rules of procedure; review of Executive Board's recommendations pursuant to decision 17/CP.7 and COP/MOP decisions that are relevant; and designation of operational entities pursuant to Article 12.5 of the Kyoto Protocol, and

[128] Ibid.
[129] Soltau, above n 60, at 80.
[130] Kyoto Protocol, Art. 12(4)
[131] Decision 3/CMP.1, Annex, B, para. 2. Report of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol on its first session, held at Montreal from 28 November to 10 December 2005. FCCC/KP/CMP/2005/8/Add.1

[132] Decision 17/CP.7, Para. 2. Modalities and procedures for a clean development mechanism as defined in Article 12 of the Kyoto Protocol. Report of the Conference of the Parties on its Seventh Session, held at Marrakesh from 29 October to 10 November 2001. FCCC/CP/2001/13/Add.2

accreditation standards.[133] Furthermore, the COP/MOP "shall review the annual reports of the Executive Board; review the regional and sub-regional distribution of designated operational entities and take appropriate decisions to promote accreditation of such entities from developing country Parties; review the regional and sub-regional distribution of CDM project activities with a view to identifying systematic or systemic barriers to their equitable distribution and take appropriate decisions, based, inter alia, on a report by the Executive Board; and assist in arranging funding of CDM project activities, as necessary".[134]

Second, there is the Executive Board.[135] The primary role of the Executive Board is to "supervise the CDM, under the authority and guidance of the COP/MOP, and be fully accountable to the COP/MOP".[136] The Executive Board is made up of 10 members and 10 alternate members,[137] electable for two years and eligible for two consecutive terms.[138] Executive Board members must possess requisite technical and /or policy expertise and must carry out their duties in their personal capacity.[139] The role of the Executive Board is extensively laid out in the decision arising from the first meeting of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP.1).[140] Under CMP.1, decisions were also made in relation to the secretariat;[141] accreditation and designation of operational entities;[142] designated operational entities;[143] requirements for participation in

[133] Decision 3/CMP.1, Annex, B, para. 3(a)-(c).
[134] Ibid, para. 4(a)-(d).
[135] Decision 3/CMP.1, Annex, C.
[136] Ibid, para. 5.
[137] Ibid, paras. 7 and 8(a)
[138] Ibid, para. 8(b)
[139] Ibid, para. 8(c).
[140] Decision 3/CMP.1, Annex, C, paras. 5 – 19.
[141] Ibid, para. 19.
[142] Ibid, Annex, D, paras. 20 - 25
[143] Ibid, Annex, Annex, E, paras. 26 - 27

CDM projects;[144] validation and registration of projects;[145] monitoring;[146] verification and certification;[147] and issuance of certified emission reductions.[148]

As of October 2016, a total of 8456 CDM projects were reported to be in the pipeline, which does not include the 276 projects that received negative validation from the Designated Operating Entities (DOEs), the 2219 projects for which the DOEs terminated validation, the 273 projects declined by the Executive Board, and the 64 projects that have been withdrawn; whereas a total of 7740 projects were registered and active, with another 8 in the course of being registered, while 2960 CDM projects have been issued certified emission reductions.[149]

The preceding figure compared to the number of CDM projects registered as of 31 March 2012, which stood at 3949, shows progress in the admission of projects into the CDM.[150] Moreover, considering the shrinking of the global carbon market since 2011, leading to concerns that the CDM and the other Kyoto flexibility mechanisms might collapse,[151] the updated figure on the number of active CDM projects shows that the scheme has not been a complete failure. However, the overall effect of the CDM projects towards the attainment of the set objectives in the Kyoto Protocol – assisting developing countries achieve sustainable development, contributing to the ultimate objective of the Convention, and helping developed countries realize their emission reduction commitments – remains questionable.[152]

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[144] Ibid, Annex, F, paras. 28 – 34
[145] Ibid, Annex, G, paras. 35 - 52
[146] Ibid, Annex, H, paras. 53 - 60
[147] Ibid, Annex, I, paras. 61 - 63
[148] Ibid, Annex, J, paras. 64 - 66
[149] UNEP/DTU Partnership, CDM/JI Pipeline. Available online at: <http://www.cdmpipeline.org/overview.htm> Accessed 26 October 2016
[150] Kevin Murphy, Grant A. Kirkman, Stephen Seres and Erik Haites, "Technology Transfer in the CDM: An Updates Analysis" (2015) 15:1 *Climate Policy*, 127-145, 128.
[151] Chris Lang, Global carbon markets have shrunk in value by 60% since 2011', January 9, 2014. Available online at: <http://www.redd-monitor.org/2014/01/09/global-carbon-markets-have-shrunk-in-value-by-60-since-2011/> Accessed 30 July 2016.
[152] Michael Gillenwater and Stephen Seres, "The Clean Development Mechanism: A Review of the First International Offset Programme (2011) 1:3-4 *Greenhouse Gas Measurement and Management*, 179 – 209;

The operation of the various actors of the CDM has attracted attention. While the Executive Board has been censured for "applying overly stringent project approval criteria, lack of transparency, and insufficient resources and capacity, with negative consequences on the ability to cope with its workload";[153] the designated operational entity has been criticised for adopting "ambiguous standards and unwieldy rules, arriving at uncommon misunderstandings, and the proliferation of CDM rules and standards".[154] Consequently, transaction costs in relation to the implementation of the validation and verification process is increased dramatically, which in turn affects the efficiency and utility of CDM projects.[155]

The CDM has also been criticised for uneven and lopsided geographical distribution of projects.[156] For example, a UNFCCC report on the distribution of CDM projects in developing countries as of 31 October 2014, shows that 49.67 per cent went to China, 20.23 to India, 4.36 to Brazil, 3.34 to Vietnam, 2.51 to Mexico, 1.93 to Indonesia, 1.88 to Malaysia,

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Stefan Bakker, Constanze Haug, Harro Van Asselt, Joyeeta Gupta and Raouf Saidi, "The Future of the CDM: same same, but differentiated?" (2011) 11:1 *Climate Policy*, 752-767, 753.

[153] Soltau, above n 60, at 81.

[154] Tyson Dyck, "Enforcing Environmental Integrity: Emissions Auditing and the Extended Arm of the Clean Development Mechanism" (2011) 36 *Columbia Journal of Environmental Law*, 259, 309 – 321.

[155] Ibid, 314

[156] Soltau, above n 60, at 82. See also Malte Schneider, Andreas Holzer and Volker H. Hoffmann, "Understanding CDM's Contribution to Technology Transfer" (200) 36 *Energy Policy*, 2930 -2938, 2934. For regional and country-specific case studies on the CDM, see Damilola Olawuyi, "Beautifying Africa for the Clean Development Mechanism: Legal and Institutional Issues Considered" in Benjamin J. Richardson, Yves Le Bouthillier, Heather McLeod-Kilmurray and Stepan Wood (eds.) *Climate Change and Developing Countries: Legal and Policy Challenges for the World Economy* (Edward Elgar, Cheltenham:Northampton, 2009), 262 – 284; Esteve Corbera, and Noelia Jover, "The Undelivered Promises of the Clean Development Mechanism: Insights from Three Projects in Mexico" (2012) 3:1 *Carbon Management*, 39-54; Nicolas Kreibich, Lucas Hermwille, Carsten Warnecke and Christoph Arens, "An Update on the Clean Development Mechanism in Africa in Times of Market Crisis (2016) *Climate and Development*, 1 – 13; John C Cole and Diana M Liverman, "Brazil's Clean Development Mechanism Governance in the Context of Brazil's Historical Environment-Development Discourses (2011) 2:2 *Carbon Management*, 145 – 160; Lei Zeng and Jinyue Yan, "Policy, Institutional and Market Barriers to the Implementation of Clean Development Mechanisms (CDM) in China" (2005) 2:3 *International Journal of Green Energy*, 259 – 271; Sangbum Shin, "The Domestic side of the Clean Mechanism: The Case of China" (2010) 19:2 *Environmental Politics*, 237 – 254; Ali Mohammadi, Majid Abbaspour, Mohammad Soltanieh, Farideh Atabi and Morteza Rahmatian, "Post-2012 CDM Multi-criteria Analysis of Industries in Six Asian Countries: Iranian Case Study" (2013) 13:2 *Climate Policy* 210 – 239; Thomas W. Turner and Arun Varughese, "Experiences of Project Developers around CDM in South Africa" (2013) 61 *Energy Policy* 1271 – 1275; and Jiang Xiaoyi, "A Comparative Study on the Implementation of CDM Projects in India" (2012) 10:1 *Chinese Journal of Population Resources and Environment*, 42 – 52.

1.90 to Thailand, and 14.17 to the rest of developing countries.[157] By region, the distribution of projects shows that Asia and the Pacific attracted 84.02%, Africa 2.51%, Latin America and the Caribbean 12.84%, and other 0.63%.[158] The scheme of distribution of CDM projects as shown is likely to produce negative results in relation to the contribution of the CDM in assisting developing countries embrace sustainable development, especially with respect to transfer of climate technologies. There is an urgent need for a reform of the distribution criteria to secure a more equitable arrangement. Although the CDM Executive Board seems to have taken some steps toward addressing the problem,[159] it remains to be seen what the outcome will be.

A more frontal attack on the CDM by different stakeholders and commentators has been captured thus:

Commentators have criticised the CDM as an inefficient institution, lacking sufficient resources and producing frustratingly slow results. The process of obtaining CERs has been described as lengthy and cumbersome. [In] A 2009 McKinsey & Company report on the UNFCCC Secretariat, the bureaucratic staff responsible for the CDM's day-to-day activities, notes that costs have risen, lead-times have lengthened and people are overstretched. According to the World Bank, delays in registering new projects have weakened the market for CERs. Other commentators have noted that the administrative fees project developers must pay to register with the CDM sometimes exceed the cost of the project implementation. Still others have criticised the CDM as an inefficient use of resources. For example, given that the financial incentive offered by the CDM has sometimes been larger than the cost of abatement, Michael Wara has called the CDM an excessive subsidy that represents a massive waste of developed-world resources.[160]

[157] Executive Board, Clean Development Mechanism, Annual Report, 2014. Available online at: <http://unfccc.int/resource/docs/publications/pub_cdm_eb_annualreport_2014.pdf > Accessed 15 August 2016.
[158] Ibid.
[159] Ibid.
[160] Dyck, above n 154, at 273 (footnotes and quotations omitted).

Furthermore, Voigt while x-raying the core of the crises bedevilling the CDM pointed to what she referred to as a "tridimensional problem – environmental integrity, sustainable development and economic efficiency".[161]

First, with respect to environmental integrity, Voigt submits that the CDM is expected "to deliver real, measurable and lasting climate benefits…, often referred to as its environmental integrity", but that this has not been the case due to a number of factors, including the lack of observation of "conservative methods of accuracy and transparency", and a decision-making process that is devoid of bias or that can be influenced.[162]

Second, apart from environmental integrity, the CDM was conceived as a tool to promote sustainable development in developing countries that host its projects, however, this has been proved to be seldom the case, considering that "host countries have been quite willing to approve CDM projects with little or no added 'sustainability' value", owing to the fact that "host countries often define the contribution of CDM projects to sustainable development in line with existing national development strategies, which more often than not are based on economic development rather than sustainability".[163] While, theoretically, the additionality[164] condition of a CDM project relates mainly to the sustainable development objective of

[161] Voigt, above n 124, at 244. Further on environmental integrity and sustainable development, see Christina Voigt, "Responsibility for the Environmental Integrity of the CDM: Judicial Review of EB Decisions" in David Freestone and Charlotte Streck (eds.), *Legal Aspects of Carbon Trading: Kyoto, Copenhagen and Beyond* (Oxford University Press, New York, 2009), 273 -310; Christina Voigt, "Is the Clean Development Mechanism Sustainable?" (2008) 15 *Sustainable Development Law and Policy*, 15 -21

[162] Ibid.

[163] Ibid, 244 – 245.

[164] Kyoto Protocol, Art. 12.5(c) provides that emission reductions from a CDM project are to be "additional to any that would occur in the absence of the certified project activity". See Voigt, above n 124, 236 -237; Michaelowa Axel, "Interpreting the Additionality of CDM Projects: Changes in Additionality Definitions and Regulatory Practices over Time" in David Freestone and Charlotte Streck (eds.), *Legal Aspects of Carbon Trading: Kyoto, Copenhagen and Beyond* (Oxford University Press, New York, 2009), 249 -272.

Article 12, in real terms, most projects accepted as being explicitly additional end up being of little sustainable development value to host states.[165]

Third, regarding economic efficiency, it has been submitted that "In order for CDM to play a role in the climate market while being a significant response to climate change, it must succeed in attracting a 'critical mass' of participants, especially project developers and investors, which are willing to participate in 'good' CDM projects, namely projects that are both additional and contribute to sustainable development. This will require transparency, consistency, certainty, and predictability of the process, reduction of lead times (especially the duration of review) and transaction and administrative costs, and increased overall efficiency and cost-effectiveness".[166] However, Voigt laments the fact that projects that qualify as "additional and contribute to sustainable development are extremely rare and often have to go through a long, opaque and very bureaucratic process before registration, which affects their economic efficiency".[167]

The shortcomings of the CDM taken into account, it has been asked if a better use of resources does not dictate that developing countries be given direct access to schemes that is capable of assisting them transit to low-carbon development, especially when consideration is given to the question whether the CDM has produced the intended broader sustainable development gains to developing countries that host its projects, specifically in relation to technology transfer.[168]

While the intendment of the creators of the CDM and the other Kyoto flexibility mechanisms can be said to be genuine and innovative, there is no doubt that the CDM has not lived up to the expectation of the parties with respect to emission reduction, sustainable development of

[165] Voigt, above n 124, at 245
[166] Ibid.
[167] Ibid.
[168] Soltau, above n 60, at 83.

developing countries, and the achievement of the ultimate objective of the UNFCCC, as enshrined in Article 2. While the Paris Agreement's provision for voluntary market and non-market approaches,[169] which are likely to supplant the flexibility mechanisms of the Kyoto Protocol, is a welcome development and a foray into uncharted waters, there is still the need for the CDM to be strengthened for improved efficiency pending the inception of implementation of the Paris Agreement. Previously, a number of legal reforms has been put forward – which criss-cross issues such as observance of rule of law, setting of measurable standards for the sustainable development criterion of a CDM project, definition of environmental integrity, stakeholder involvement, and judicial review.[170] Further reforms based on preferential treatment, minimum requirements for sustainable development set internationally, differentiation founded on quotas, CERs discounting,[171] and incorporating options,[172] have also been put forward.

2.4.3 Review of the First Commitment Period to Reduce Emission of GHGs under the Kyoto Protocol

The Kyoto protocol provides for a commitment period within which developed countries were to achieve their quantified emission reduction commitments. To that effect, Kyoto stipulates that "the parties included in Annex I shall, individually or jointly, ensure that their aggregate anthropogenic carbon dioxide emissions of the greenhouse gases listed in Annex A do not exceed their assigned amounts, calculated pursuant to their quantified emission limitation and reduction commitments inscribed in Annex B and in accordance with the provisions of this Article, with a view to reducing their overall emissions of such gases by at

[169] Art. 6
[170] Voigt, above n 124, at 247 -254.
[171] Faure, *et al*, above n 124, 762 – 763.
[172] David G. Carmichael, Joseph J. Ballouz and Maria C.A Balatbat, "Improving the Attractiveness of CDM Projects through allowing an Incorporating Options" (2015) 86 *Energy Policy*, 784-791.

least 5 per cent below 1990 levels in the commitment period 2008 to 2012;[173] and that each party included in Annex I shall by 2005 have made demonstrable progress in achieving its commitments under this Protocol."[174]

The foregoing provisions embody the first commitment period of the Kyoto Protocol (KP-CP1). The KP-CP1 expired on 31 December 2012. An *ex post* evaluation of Kyoto Annex B countries compliance shows that on the domestic level, nine out of thirty six Annex B countries that participated in the first commitment period had to resort to flexibility mechanisms in order to comply.[175] The countries that would have been non-compliant but for the flexibility mechanisms are Austria, Denmark, Iceland, Japan, Lichtenstein, Luxembourg, Norway, Spain and Switzerland.[176] At the risk of repetition, technically, Ukraine is deemed to be the only country not to have complied with its Kyoto emission reduction commitment. It failed to submit its true-up[177] report before the deadline of 18 November 2015, although it had sufficient units to comply.[178] At the global level, Annex B countries over-achieved their aggregate commitment due mainly to four reasons: hot air from EIT countries; the absence of the United States and Canada; the global financial crisis and economic recession that reduced emissions; and, participating countries emission reduction policies and measures.[179] Notably, Japan, the EU and New Zealand were the overall highest importers of emissions allowances

[173] Art. 3.1
[174] Art. 3.2
[175] Igor Shishlov, Romain Morel & Valentin Bellassen, "Compliance of the Parties to the Kyoto Protocol in the first commitment period" (2016) 16:6 *Climate Policy*, 768-782, 770.
[176] Ibid.
[177] UNFCCC, Report and review process for the true-up period of the first commitment period of Kyoto Protocol. Online at: <http://unfccc.int/kyoto_protocol/reporting/true-up_period_reports_under_the_kyoto_protocol/items/9049.php>
[178] Shishlov, *et al* n 175 above, 775.
[179] Ibid, 772

and carbon credits,[180] while the highest net exporters of assigned amount units (AAUs) were Poland, Romania and Czech Republic.[181]

The outcome of the preceding evaluation of Kyoto first commitment period notwithstanding, the Kyoto Protocol failed in reducing overall global emissions of greenhouse gases, and thereby proved ineffective towards attaining the stabilisation objective of the UNFCCC. A blunt corroboration of the failure of KP-CP1 was first handed down in May 10 2013, when scientists at a climate observing station in Hawaii (US National Oceanic and Atmospheric Administration) announced that concentration of carbon dioxide in the atmosphere measured above 400 ppm [part per million].[182]

Thus, a renowned climate scientist has concluded that the KP-CP1 ultimately failed to make any global impact in GHG emission reduction.[183] As a further corroboration, the Fifth Assessment Report (AR5) of the IPCC concluded that: "warming of the climate is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amount of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased. Each of the last three decades has been successively warmer at the Earth's surface than any preceding decade since 1850. In the Northern Hemisphere, 1983 – 2012 was likely the warmest 30-year period of the last 1400 years."[184] The foregoing starkly points to the fact that the outcome of the first commitment period of the Kyoto Protocol failed to advance the greenhouse gas stabilization objective of the UNFCCC.

[180] Ibid, 777
[181] Ibid, 779
[182] United States, National Oceanic and Atmospheric Administration (NOAA), "Greenhouse gas benchmark reached" NOAA , 10 May, 2013.
[183] Michael Mann "Climate Tipping Point? Concentration of Carbon Dioxide Tops 400 PPM for First Time in Human History" Michael Mann Interview, *Democracy Now,* 13 May 2013.
[184] Working Group I (WG I) Contribution to the IPCC Fifth Assessment Report Climate Change 2013: The Physical Scientific Basis – Summary for Policymakers (SPM IPCC WGI AR5), at 3.

2.4.4 Achievements and Shortcomings of the Kyoto Protocol

First, Kyoto Protocol takes the credit of being the first binding multilateral agreement to deal with climate change. Kyoto Protocol built upon the non-binding emission reduction framework of the UNFCCC to move developed countries to take up binding commitments to reduce emissions of GHGs. Second, Kyoto introduced innovative market-based approaches intended to lower the economic costs of reducing GHGs: Emissions Trading among Annex I countries that take on binding targets (Article 17); Joint Implementation which permits project-level trades among Annex I countries (Article 6); and the Clean Development Mechanism which allows for the utilisation of project-based emission offsets executed in non-Annex I (developing) countries to aid compliance obligations in Annex I countries, and to promote sustainable development in non-Annex I countries (Article 12). Thus, Kyoto provides the flexibility for countries to meet their emission targets via different means.

Third, Kyoto recognises the principle of common but differentiated responsibility and respective capabilities in consonance with the spirit of the UNFCCC – to the effect that the wealthiest countries as those historically responsible for the current stock of anthropogenic GHGs in the atmosphere lead the way by taking up binding commitments first.[185] Fourth, Kyoto can be said to be politically viable in terms of participation, having been ratified by more than 180 countries, including a reasonable number of Annex I countries, which made it come into force.[186] Finally, the Kyoto Protocol can arguably be said to have contributed to, or boosted domestic and regional climate change policies.[187] Moreover, it has been opined that "the procedures and human capital produced by the Kyoto Protocol, in particular in the field

[185] Art. 10.
[186] Sheila M. Olmstead and Robert N. Stavins "Three Key Elements of Post-2012 International Climate Architecture" Discussion Paper 2010-37, *Harvard Project on International Climate Agreements*, Belfer Center for Science and International Affairs, Harvard Kennedy School, June 2010, at 4. Available online at: <http://belfercenter.ksg.harvard.edu/files/Stavins_OlmsteadMontrealFinal-2.pdf> Accessed 15 October 2013.
[187] Shishlov, *et al,* above n 175, at 779.

of monitoring, reporting and verification – rebranded as 'transparency' in the Paris Agreement – are valuable assets used by all sorts of climate mitigation tools and policies around the world".[188]

However, the Kyoto Protocol did not succeed in other notable ways. First, some of the world leading emitters are not bound under Kyoto, conspicuously the United States, and then China and India. Understandably, these countries (excluding the US) qualify as non-Annex I countries under the Kyoto Protocol considering the economic development gap between them and the current group of developed countries. However, GHG emissions in China and India have increased tremendously in recent years due to heavy reliance on coal-powered stations to drive their economic expansion. Although the rising emissions in the fast industrialising or emerging developing countries still qualify as "subsistence emissions"[189] as against continued "luxury emissions"[190] by developed countries, it is now desirable for big emerging developing countries to assume some emissions reduction responsibilities, at least based on ability to pay and emissions level criteria. Nonetheless, considering that the NDC framework of the Paris Agreement applies to all parties (developing and developed); this particular pitfall of the Kyoto Protocol seems resolved, at least on paper for now.

Second, although countries subject to emission reduction obligations in the Kyoto first commitment period can be said to have legally complied with their individual and collective commitments,[191] partly through the flexibility mechanisms, the first commitment period registered no overall effect on global reduction of emission of greenhouse gases.[192] Moreover, excessive reliance on the flexibility mechanisms for compliance by some Kyoto

[188] Ibid.
[189] See Henry Shue, "Subsistence Emissions and Luxury Emissions" (1993) 15(1) *Law & Policy* 39, 54 – 59.
[190] Ibid.
[191] Michael Grubb, "Full Legal Compliance with the Kyoto Protocol's First Commitment Period – Some Lessons" (2016) 16:16 Climate Policy, 673-681. See also Shishlov, *et al*, above n 161.
[192] See the US NOAA report, above n 168; IPCC AR5, above n 170.

Annex B parties,[193] as against domestic measures, raises questions as to what would have been without the flexibility mechanisms. Obviously, but for the flexibility mechanisms countries like Japan, New Zealand and Spain, among others, would not have complied with their individual commitments under the Kyoto Protocol.[194] Specifically, New Zealand has been severely criticised for being a large importer of emission allowances and carbon credits necessary for compliance with its Kyoto emission reduction commitments.[195] With this development, the initial suggestion by some countries that restraint be placed on the use of Kyoto's flexibility mechanisms seems justifiable.[196]

Third, Kyoto failed to make signatory parties take substantial action or change their behaviour substantially.[197] Kyoto aimed to achieve more than the UNFCCC but it ended up suffering the same political and sovereignty-induced pressure that led to the watering down of the UNFCCC.[198] For instance, following the announcement by the USA that it will not ratify Kyoto, Canada and Japan used their "sinks" as a bargaining chip for ratification, while Russia insisted on obtaining further surplus emissions trading allowance (hot air) in order to ratify the Protocol.[199] While this renegotiation of the Kyoto Protocol eventually paved the

[193] Shishlov, *et al*, above n 175, at 777.
[194] For an earlier comment on these countries performance in relation to their binding mitigation commitments (including Canada before it abandoned Kyoto), see Scott Barrett, "Rethinking Global Climate Change Governance" (2009-5) 3 *Economics: The Open-Access, Open-Assessment E-Journal*, 3. It should be noted that Spain being part of the EU, the EU bubble / allocation of emission reduction commitments amongst the EU countries, would factually render Spain's individual performance irrelevant as long as the collective target of the EU is achieved. See Barrett, Rethinking Global Climate Change Governance, 3.
[195] Geoff Simmons & Paul Young, "Climate Cheats: How New Zealand is cheating on our climate change commitments, and what we can do to set it right" *The Morgan Foundation Publication* (April 2016). Available online at: <http://morganfoundation.org.nz/wp-content/uploads/2016/04/ClimateCheat_Report9.pdf>
[196] Lavanya Rajamani, *Differential Treatment in International Environmental Law* (Oxford University Press, Oxford, 2006), 179. See also David Victor, *The Collapse of the Kyoto Protocol and the Struggle to Slow Global Warming* (Princeton University Press, Princeton & Oxford, 2001).
[197] Barrett, above n 194, 2.
[198] Ibid, 3
[199] Ibid.

way for it to come into effect, it undoubtedly compromised its environmental integrity and effectiveness.[200]

Fourth, Kyoto's first commitment period from 2008 to 2012 constituted an attempted short-term solution to an environmental phenomenon that is inherently a long-term global problem. Stocks of some greenhouse gases emitted into the atmosphere remain active for more than a century,[201] and to achieve the requisite technological drive necessary to meaningfully address climate change, it will be desirable to set long-term targets in order to stimulate the private sector for sustained investment and technological innovation.[202]

Fifth, Kyoto's international emission trading has proved ineffective principally because the actual trading is designed to be among national governments, not private sector firms. It has been observed that "an important obstacle to the successful operation of such a system [international tradable permits] is that by its very nature, the trading would be among nations. Nation-states are hardly simple cost-minimizers, like private firms."[203]

Finally, the CDM emission-reduction-credit system creates the unique challenge of how to compare actual emissions with what would have been without the CDM project. The risk of claiming credits for projects which are most profitable, and which would still have been executed without the CDM mechanism remains high. This is usually termed the "additionality problem".[204]

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[200] Ibid.
[201] Solomon, S., *et al. Technical Summary. In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., *et al* (Eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 33 – 34.
[202] Barrett, above n 194, at 8.
[203] Joseph E. Aldy and Robert N. Stavins "Economic Incentives in a New Climate Agreement", Issue Paper, The Climate Dialogue, Copenhagen, May 2008, 6.
[204] Olmstead and Stavins, above n 186, at 5.

Following from the foregoing, and based on the effectiveness criterion of this thesis, the Kyoto Protocol would be adjudged to have failed in contributing sufficiently to the attainment of the ultimate objective of the UNFCCC as stated in Article 2. The failure of the first commitment period to contribute to global emissions reduction, flexibility mechanisms that failed to lead to overall reduction in emissions among parties due to excessive reliance on emission allowances and carbon credits, flawed architecture for compliance and enforcement, are some of the reasons why the Kyoto Protocol has been ineffective.

The fact that the Kyoto Protocol has been ineffective in making the main objective of the UNFCCC realisable mirrors the ongoing unsatisfactory international regime to provide financial assistance and transfer technology to developing countries to put them on a sustainable development path. The goal of stabilisation of emission of greenhouse gases set by the UNFCCC will not be attained without a robust international framework for financial assistance and transfer of technology to developing countries. Although some degree of financial assistance and transfer of technology to developing countries have taken place under the UNFCCC and the Kyoto Protocol, as will be shown in the next chapter, demand continues to outstrip supply.

2.4.5 Kyoto Protocol Second Commitment Period – Why the centre could not hold.

Upon entry into force of the Kyoto Protocol in 2005, questions as to what to do after Kyoto first commitment period expires at the end of 2012 became a central focus of the UNFCCC parties. Developing countries such as India and China wanted Kyoto to continue unchanged, imposing quantitative limits on developed countries' emissions only. The European Union indicated it would be part of any second commitment under the Kyoto, but with the condition that any such arrangement will be an inclusive framework encompassing all leading

economies, including the United States and China.[205] Outright replacement of the Kyoto Protocol with an all-inclusive new treaty with emissions reduction obligations for both developing and developed countries was proposed by Japan, Canada and Russia.[206]

In 2005 parties to the Kyoto Protocol set up an *ad hoc* working group to facilitate the negotiation of further commitments under the Protocol for post-2012 period.[207] At COP 17 (Durban, 2011), parties agreed a second commitment period to Kyoto starting from 1st January, 2013. At COP 18 (Doha, 2012), the second commitment under the Kyoto Protocol, from 1st January 2013 to 31 December 2020, was launched with the adoption of the Doha Amendment to the Kyoto Protocol.[208] All the parties listed under Annex B of the Kyoto Protocol, excluding Canada, Japan, Russia and New Zealand,[209] declared their intention to participate in the second commitment period.

The Doha Amendment to the Kyoto Protocol is yet to enter into force, and may never come into force considering that the preoccupation of the UNFCCC parties is now how to iron out the creases in the Paris Agreement to ready it for operation by 2020. However, as of the time of writing, only 75 countries out of the 144 required to bring the Doha Amendment into force have communicated acceptance to the United Nations Secretariat.[210] Moreover, no member country has communicated the intention to apply the provisions of the Amendment provisionally pending its entry into force.[211] The Doha Amendment is intended to cover

[205] Statement of the European Union to the 16th Session of the Ad Hoc Working Group on Further Commitments under the Kyoto Protocol, April, 5, 2011.
[206] Daniel Bodansky, "Whither the Kyoto Protocol? Durban and Beyond" (2011) *Social Science Research Network* (28 August), 1.
[207] Decision 1/CMP.1, Consideration of commitments for subsequent periods for parties included in Annex I of the Convention, Decisions adopted by the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol, 28 November – 10 December 2005. FCCC/KP/CMP/2005/8/Add.1
[208] Doha Amendment to the Kyoto Protocol, above n 11.
[209] New Zealand remains a party to the Kyoto Protocol but opted for a quantified emission reduction target via the UNFCCC track for the period 2013 to 2020.
[210] UNFCCC, Status of Ratification of the Doha Amendment.
<http://unfccc.int/kyoto_protocol/doha_amendment/items/7362.php>
[211] Kyoto Protocol, Arts. 20 and 21; Doha Amendment to the Kyoto Protocol, Art. 5.

mitigation effort from 2013 – 2020, taking into account the fact that the Paris Agreement will not come into operation until 2020.

Even if the Doha Amendment had come into force, the non-ratification of the Kyoto Protocol by the United States, the withdrawal by Canada, and non-participation by Japan and Russia, would have rendered the second commitment to reduce emissions under the Kyoto Protocol a fruitless venture, and of no effect whatsoever. GHG inventory for 2009 shows that emissions from Japan, Canada and Russia represented 40% of emissions from the Annex B countries.[212] While the effort of the remaining Annex B countries for keeping the Kyoto Protocol politically alive (but environmentally dead) should be applauded, the insistence of the non-participating Annex B parties that developing countries should take up binding emissions reduction commitments as a condition precedent for them to participate was untenable and stifling. This represented the second failure of leadership in the international climate governance. The first failure of leadership was the refusal of the United States to ratify the Kyoto Protocol.

While the negotiation and adoption of the Paris Agreement may be said to have now assuaged these failures, it is still unknown to what extent the Agreement will positively impact the fundamental problems that bedevilled the Kyoto Protocol. Moreover, with the inauguration of Donald Trump as the 45th President of the United States, an unapologetic climate change sceptic, the 'pomp and pageantry' that greeted the adoption of the Paris Agreement, especially from the perspective of United States' participation, may have been short-lived.

[212] UNFCCC, National Inventory Submissions 2009. <http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/4771.php>

2.5 United Nations Framework Convention on Climate Change: The Paris Agreement 2015.[213]

2.5.1 Origin and Legal Character

The origin of the Paris Agreement can be traced to the establishment of the Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP) at the Conference of the Parties meeting in Durban, South Africa, in 2011. Following the highly-publicised failure of the Copenhagen climate change conference to reach an agreement on a new global deal governing climate change in 2009, the Durban Conference provided the opportunity for parties to the UNFCCC to re-launch the bid for a new instrument that will replace the Kyoto Protocol. Thus, at Durban the Conference of the Parties decided to "launch a process to develop a protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all parties . . . through the Ad Hoc Working Group on the Durban Platform for Enhanced Action".[214] COP 17 also decided that "the ADP shall complete its mandate not later than 2015 to enable the adoption of a protocol, another legal instrument, or an agreed outcome with legal force at the twenty-first session of the Conference of the Parties and for it to come into effect and be implemented from 2020."[215]

Landmark epochs on the road to the Paris conference include COP 19 decision to invite parties to the UNFCCC to submit their intended nationally determined contributions (INDCs),[216] and COP 20 where the elements of a draft negotiating text was agreed,[217] setting

[213] Decision 1/CP.21, Adoption of the Paris Agreement, Annex (Paris Agreement), FCCC/CP/2015/L.9/Rev.1 (2015)

[214] Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP), Decision 1/CP.17, Durban, 2011.
[215] Decision 1/CP.17.
[216] Decision 1/CP.19, para. 2b.
[217] Decision 1/CP.20, Annex, 'Elements for a draft negotiating text'.

the stage for the Geneva conference where the negotiation text was officially adopted.[218] The ADP completed its mandate leading to the adoption of the Paris Agreement in December 2015.[219]

The Paris Agreement entered into force on 4 November 2016 after satisfying the threshold for entry into force on 5 October 2016.[220] Following the entry into force of the Agreement, the first session of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA1), held in Marrakech alongside COP 22 and CMP 12 from 7 – 18 November 2016. As at 17 November 2016, a total of 110 out of 197 parties have ratified the Paris Agreement.[221]

Before delving into the assessment of the fundamental provisions of the Agreement, the legal form or character of the Agreement is worth evaluating. From the outset, questions impinging on legal form characterised the negotiations leading to the adoption of the Paris Agreement.[222] Once the Agreement was adopted and released into the public domain, opinions as to its legal character began to filter in. A few days after the adoption of the Agreement, Anne-Marie Slaughter bemoaned the Paris Agreement as a failure, considering that "by the standards of a traditional treaty, it falls woefully short".[223] However, her offensive against the Agreement temporary evaporated in the next line as she rather defensively stated: "yet its deficit in this regard [that of standards of a traditional treaty] are

[218] UNFCCC, 'Ad Hoc Working Group on the Durban Platform for Enhanced Action, Work of the Contact Group on Item 3, Negotiating Text', 8-13 February 2015, Geneva, Switzerland.
[219]See Decision 1/CP.21.
[220] According to Article 21, "This Agreement shall enter into force on the thirtieth day after the date on which at least 55 Parties to the Convention accounting in total for at least an estimated 55 percent of the total global greenhouse gas emissions have deposited their instrument of ratification, acceptance, approval or accession".
[221] UNFCCC, The Paris Agreement, Status of Ratification: http://unfccc.int/paris_agreement/items/9444.php
[222] Daniel Bodansky, "The Legal Character of the Paris Agreement" (2016) 25(2) *Review of European Community & International Environmental Law*, 142-150
[223] Anne-Marie Slaughter, "The Paris Approach to Global Governance" Project Syndicate, Sustainability & Environment (28 December 2015), online at: <https://www.project-syndicate.org/commentary/paris-agreement-model-for-global-governance-by-anne-marie-slaughter-2015-12>

its greatest strengths as a model for effective global governance in the twenty-first century.[224] Afterwards, her criticism of the legal character of the Agreement continued:

The international legal gold standard is a treaty, a binding document that can be enforced by courts and arbitration tribunals. Such agreements comprise more than expression of intent; they contain codified, enforceable rules, along with sanctions for non-compliance. Indeed, they must be ratified by national parliaments, so that they become domestic law. The Paris Agreement is none of these things. In the United States, as a matter of domestic law, it is an executive agreement, binding only on President Barack Obama's administration. An executive-legislative agreement would have the same status as a treaty, except that a treaty must be ratified by two-thirds of the Senate, whereas an executive-legislative agreement must be adopted by the Senate and the House under the same rules that apply to all domestic legislation. An executive agreement made by one administration is not necessarily binding on its successor, but it would have to be expressly repudiated.[225]

Taking on substantive provisions of the Agreement, Slaughter submitted that commitments under the Agreement are not fixed and therefore lack permanence and authority, pointing specifically to the NDC framework which is a non-binding system which encourages (but does not require) parties "to submit increasingly stringent revisions" of their NDCs.[226] Secondly, she criticised the Agreement as abandoning "the idea of compliance as a stamp of legality or illegality", while noting that the Agreement replaced compliance with transparency.[227]

Furthermore, Slaughter dismissed the expert based compliance mechanism of the Agreement as likely to perform the role of a support group rather than a disciplinary committee,[228] taking on the Agreement's provisions that the compliance "committee shall be expert-based and facilitative in nature and function in a manner that is transparent, non-adversarial and non-

[224] Ibid.
[225] Ibid.
[226] Ibid.
[227] Ibid.
[228] Ibid.

punitive".[229] Slaughter then concludes that "by traditional international legal standards, the Paris Agreement is essentially a statement of good intentions, setting forth aspirational goals…; it is as far as could be from the Treaty of Vienna, the Treaty of Versailles, or even the treaties banning landmines and establishing the International Criminal Court, and that is precisely why it has a good chance of working".[230] Thus, while Slaughter is convinced that the Paris Agreement has a questionable international legal character viewed from the prism of treaties in international law generally, she has no doubt that the shortcomings of the Agreement in that regard underpin its distinguished capability as to workability:

But perhaps the most important shift made in the Paris Agreement is from selective coercion to collectively supported competition. Instead of suing one another for failure to comply with a legal obligation, countries will try to outdo one another in their efforts to help address a shared problem. The transparency mechanism supports this shift, by allowing journalists, activists, scientists, concerned citizens, and climate-friendly businesses to engage in debates, publicise successes and failures, solicit help and advice, and offer support to lagging countries.[231]

Whatever the merits or demerits of Slaughter's view as summarised in the foregoing paragraphs,[232] a major concern deriving from her views is that the Paris Agreement qualifies as only an executive agreement under the United States domestic legal system, binding only on the administration that executed it. With the Obama administration out of office, it has been widely reported in the media that the President-elect, Donald Trump, has indicated that his administration will repudiate the agreement.[233]

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[229] Paris Agreement, Art. 15.
[230] Slaughter, above n 222.
[231] Ibid.
[232] Bodansky, above n 221, at 142
[233] Caroline Lucas, 'Donald Trump isn't just bad for America – when it comes to his climate change beliefs he is a danger to all of us' *The Independent*, 10 November 2016, online: <http://www.independent.co.uk/voices/climate-change-donald-trump-president-elect-paris-agreement-china-a7407476.html>; Gregory Krieg, 'Climate change worries escalate as Trump elevates top deniers' *CNN Online*, 16 November 2016, online at: <http://edition.cnn.com/2016/11/16/politics/climate-change-donald-trump/index.html?iid=ob_lockedrail_topeditorial>; Andrea Thompson, 'Climate Experts Weigh in on Trump's

Reasoning along the same line as Slaughter, Richard Falk highlighted what he described as "worrisome concerns"[234] about the Paris Agreement. While Falk started by describing the ability of states to arrive at an agreement as impressive, he pointed out the inherent weakness of international law in general when it comes to enforcing prescribed norms that bind parties, and then proceeded to opine that the Paris Agreement took that weakness to another level by "raising serious questions as to whether anything at all had even been agreed".[235]

Falk further submitted that "the Paris Agreement went to great lengths to avoid obligating the parties, making compliance with pledged reductions in carbon emissions an unmistakably voluntary undertaking", and that "this is the core cause for doubt about what was agreed upon, raising the haunting question as to whether what emerged from Paris is even worth the paper upon which it is written".[236] However, Falk stated that the voluntary character of the Paris Agreement may not doom the Agreement considering that some voluntary international norms have garnered support and compliance from parties, citing cases of diplomatic immunity and maritime safety.[237] Furthermore, Falk concluded that "against this background, the Paris Agreement should neither be celebrated nor rejected, being a process that is only scheduled to go into effect in 2020, with an assessment period of five years, meaning that there will be no official audit as to the adequacy of the pledging approach until 2025".[238]

However, Bodansky summarily disagrees with the views espoused by Slaughter and Falk with respect to the legal character of the Paris Agreement. Bodansky is of the view that the

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Election Win' *Climate Central*, 9 November 2016, online at: <https://ww2.kqed.org/science/2016/11/09/climate-experts-weigh-in-on-trumps-election-win/>; Matt McGrath, 'Climate change: Nations will push ahead with plans despite Trump' *BBC Online*, 9 November 2016, online at: <http://www.bbc.com/news/science-environment-37928593>

[234] Richard Falk, "Voluntary International Law and the Paris Agreement", Global Justice in the 21st Century, 16 January 2016, online at: <https://richardfalk.wordpress.com/2016/01/16/voluntary-international-law-and-the-paris-agreement/>

[235] Ibid.

[236] Ibid.

[237] Ibid.

[238] Ibid.

Paris Agreement qualifies as a treaty within the ambit of international treaty jurisprudence - it creates legal obligations for signatory parties, and that compliance with the obligation flowing from the Agreement is not voluntary,[239] while acknowledging that the positions of Slaughter and Falk that the Agreement cannot be enforced in municipal courts, that it may not require domestication through legislation in some countries, and that it is devoid of enforcement apparatus, are correct.[240] However, Bodansky proceeded to knock the bottom off the admitted correct position of the authors by stating thus: "But these are not the tests of whether an international agreement qualifies as a treaty. Nor does the fact that some of the Paris Agreement's provisions do not create legal obligations mean that none of them do, or that the agreement as a whole is not law. Not every provision of a legal instrument necessarily creates a legal obligation, the breach of which entails non-compliance".[241]

Bodansky then proceeded to suggest criteria for separating the concept of legally binding from other manners of bindingness. One, he stated that the question whether a norm is legally-binding is not founded on whether a court exists that has the jurisdictional power to enforce it. Two, that the question of a norm being legally-binding differs from question as to enforcement. Three, the issue of legal form differs from concerns relating to precision – although precise norms engender compliance and efficacy; however, "legally binding norm can be very vague, while non-legal ones can be quite precise".[242] Bodansky then poses the question: if legal bindingness excludes judicial application, enforcement and precision, what is the effect of adjudging the Paris Agreement a legal instrument? While appreciating the difficulty inherent in categorically answering the question, he concluded as follows:

Ultimately, legal bindingness reflects a state of mind – most importantly of officials who apply and interpret the law (judges, executive branch officials and so forth), but also to some degree of the larger community that law

[239] Bodansky, above n 221, at 142.
[240] Ibid, 143.
[241] Ibid.
[242] Ibid.

purports to govern. It depends on what the British philosopher, H.L.A Hart referred to as their 'internal point of view', a sense that a rule constitutes a legal obligation and that compliance is therefore required rather than merely optional.[243]

Following from the foregoing, Bodansky concluded that the Paris Agreement is a treaty as defined under the Vienna Convention on the Law of Treaties,[244] notwithstanding that some provisions of the agreement do not create a legal obligation – the Agreement being a cocktail of obligatory and non-obligatory provisions.[245] Although it is difficult to definitively ascertain the extent of legally binding character of the Agreement and most of its provisions, which notionally may impact on assurance of compliance; however, a framework to engender transparency, accountability and precision can also bring about positive outcomes in changing behaviour.[246] Moreover, legal bindingness can constitute a double-edged sword if it discourages states from participating in a regime, or result in a weak commitment. In summary, the questions as to the legal character of the Paris Agreement, though not immaterial, constitutes only one element in evaluating the relevance of the Paris aftermath.[247]

There is little doubt that constraints associated with the United States domestic law on climate change contributed immensely to shaping the legal form and character of the Paris Agreement,[248] and that the Obama administration explored the best option possible to shield the Paris outcome from congressional and legal attacks. A widely reported example of how

[243] Ibid.

[244] Article 2 of the Vienna Convention provides that: "Treaty" means an international agreement concluded between States in written form and governed by international law, whether embodied in a single instrument or in two or more related instruments and whatever its particular designation". Vienna Convention on the Law of Treaties, 23 May 1969, UNTS 18232.

[245] Bodansky, above n 221, at 150.

[246] Ibid.

[247] Ibid.

[248] David A. Wirth, "Cracking the American Negotiator's Hidden Code: United States Law and the Paris Agreement" (2016) 6 *Climate Law*, 152-170; Sebastian Oberthur, "Legal Form and Nature of the Paris Outcome" (2016) 6 *Climate Law*, 40-57; Bodansky, above n 221, 149-150; Meinhard Doelle, "The Paris Agreement: Historic Breakthrough or High Stakes Experiment?" (2016) 6 *Climate Law*, 1-20, 7; Charlotte Streck, Paul Keenlyside and Moritz von Unger, "The Paris Agreement: A New Beginning" (2016) 13 *Journal of European Environmental & Planning Law*, 3-29, 6.

the United States negatively influenced the legal form of one of the most important provisions in the Paris Agreement is the case of initial use of the mandatory "shall" in setting out the obligation of developed countries under Article 4.4 of the Agreement.[249] Rajamani captures the controversy that ensued, with the United States on the offensive, thus:

Indeed it is precisely because this provision **{Article 4.4}** *creates no new obligations that the US agreed to the package. This provision was at the centre of the 'shall/should' controversy that nearly unravelled the Paris deal in the final hours. The 'take it or leave it' text presented by the French contained mandatory ('shall') in relation to developed country targets, and recommendatory language ('should') in relation to developing country mitigation efforts. In addition to the lack of parallelism in the legal character of requirements placed on developed and developing countries, the use of mandatory language for developed countries' targets posed a problem for the US. In the light of long-standing and intractable resistance to climate treaties in the Senate, the US had been priming the Paris Agreement to ensure that it could be accepted as a Presidential-executive agreement. This would likely only be possible if the Paris Agreement is consistent with existing US domestic laws, and can be implemented through them. Since the US does not currently have a domestic emissions target, it could not accept an international agreement obliging them to have one through a Presidential-executive agreement. The 'shall' had to go if the US were to stay, but the prospect of changing such a critical word in a 'take it or leave it' text, endangered the entire deal. The LMDCs* **{Like Minded Developing Countries}** *in particular threatened to revisit other compromises in the text if this word were to change. Eventually, after furious huddling in the room, and high-level negotiations outside it, the 'shall' was declared a typographical error and changed to a 'should' by the FCCC Secretariat.*[250]

This sort of account leaves one wondering if the international community would not have left Paris with a stronger climate agreement had the United States not been part of the negotiation. Of course, the United States being part of the negotiation and the resulting Agreement was one of the preoccupations of states and other stakeholders, considering the

[249] Ibid.

[250] Rajamani, above n 45, 510-11. (Emphasis added). LMDCs are a group of developing countries consisting of Venezuela, Sudan, Sri Lanka, Saudi Arabia, Philippines, Nicaragua, Mali, Malaysia, Iraq, Iran, India, El Salvador, Egypt, Ecuador, Dominica, Cuba, China, and Bolivia. See also John Vidal, "How a 'typo' nearly derailed the Paris climate deal" *The Guardian* (Online ed, UK, 2015), available at: <https://www.theguardian.com/environment/blog/2015/dec/16/how-a-typo-nearly-derailed-the-paris-climate-deal>

fate of the Kyoto Protocol in not having the United States as a party. The hope is that the Paris Agreement works; if not, the United Nations may have to re-think the sort of leadership being provided by some developed countries, especially the United States. Interestingly, as the Obama administration has succeeded in making the Paris Agreement "congressional Republican-proof", it remains to be seen whether the Agreement will end up being "Trump-proof" as well. If not, the international climate change regime will have to live without the United States once more, and, maybe, the *ghost of Article 4.4* may come back to haunt parties to the Paris Agreement. Watering down a core provision of an international agreement to accommodate the United States may be one thing, but a successive government in the United States repudiating the same agreement through wanton exercise of executive power would be another altogether.

2.5.2 Assessment of the Fundamental Provisions of the Paris Agreement

According to Rajamani, the Paris Agreement charts an ambitious 'direction of travel' for the regime governing climate change.[251] Fundamental provisions of the Paris Agreement traverse mitigation, finance and technology, adaptation and capacity-building, and transparency and review.

The ultimate mitigation goal of the Paris Agreement is that of "holding the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels..."[252] The Agreement's objectives set out in Article 2 "will be implemented to reflect equity and the principle of common but differentiated responsibilities and respective capabilities, in the light

[251] Ibid, 496.
[252] Art. 2.1

of different national circumstances".[253] The temperature goal of the Paris Agreement has been described as a "triumph of science and reason over short-term politics".[254] While the below 2°C threshold can be traced to COP 16 decision,[255] the reasonably ambitious 1.5°C undoubtedly resulted from the pressure mounted by countries that will be most affected by the adverse impacts of climate change, especially the least developed countries (LDCs) and the small island developing states (SIDS), call for parties to pursue more ambitious mitigation goals owing to the survival threat climate change poses to them.[256]

Moreover, the agreement by COP 16 to periodically revisit and review the adequacy of the long-term temperature goal, with the first review to commence in 2013 and terminate in 2015,[257] contributed in no small measure to the 1.5°C aspirational temperature goal appearing in the Paris Agreement and the accompanying COP decision. COP 16 decisions resulted in the establishment of the Structured Expert Dialogue (SED),[258] through which climate scientists were assembled to evaluate risks associated with global average temperature of 2°C above pre-industrial levels, and the possibility of pegging temperature limit at 1.5°C. The final report of the SED stated, among other things, that following from the Fifth Assessment Report of the IPCC (AR5) and other scientific findings, the long-term temperature goal of 2°C may no longer be deemed safe.[259] To an extent, the Paris Agreement[260] and the

[253] Ibid. Although the Paris Agreement and the accompanying COP decision made no direct reference to historical responsibility, Article 2.2 of the Agreement recognises the CBDRRC principle. CBDRRC generally, and under the Paris Agreement, will be evaluated in the next chapter.
[254] M.J Mace, "Mitigation Commitments under the Paris Agreement and the Way Forward" (2016) 6 *Climate Law*, 21-39, 22.
[255] Decision 1/CP.16, Report of the Conference of the Parties on its sixteenth session, held in Cancun from 29 November to 10 December 2010. FCCC/CP/2010/7/Add.1

[256] See the Earth Negotiations Bulletin (ENB), vol. 12 (659), December 8, 2015; ENB, vol. 12 (660), December 9, 2015; ENB, vol. 12 (661), December 10, 2015. See also Alliance of Small Island Sates (AOSIS), 'Small Islands propose "below 1.5 °C" global goal for Paris Agreement', June 8, 2015, online at: <http://aosis.org/small-islands-propose-below-1-5%CB%9Ac-global-goal-for-paris-agreement/>
[257] Decision 1/CP.16, paras. 138 - 139.
[258] UNFCCC, Report on the structured expert dialogue on the 2013-2015 review (SED Report), FCCC/SB/2015/INF.1, 4 May 2015.
[259] Ibid, themes I and II, paras. 28 – 58; 106 – 115.
[260] Art. 2.

accompanying decision[261] took the SED report into account, "cushioned by language around equity, sustainable development, and eradication of poverty to address resistance from Saudi Arabia, Russia and India".[262]

The "nationally determined contributions (NDCs)" form the bedrock of the mitigation framework of the Paris Agreement.[263] The origin of the NDC (earlier on referred to as intended nationally determined contributions (INDC) can be traced to COP 19, following which parties were called upon to prepare and submit their INDC come 2015.[264] Afterwards, COP 20 set out what information should be included in parties' INDC to include base year, time frames, scope and coverage, planning, assumptions and methodologies, information as to how a party's INDC is considered "fair and ambitious, in light of national circumstances", and its contribution to the objective of the UNFCCC as set out in Article 2.[265]

The Paris Agreement provides that all parties are to communicate ambitious efforts as nationally determined contributions to the global climate change response in line with the purpose of the Agreement as stated in Article 2, and that "the efforts of all parties will represent a progression over time".[266] Furthermore, parties while communicating their NDC must provide information to aid "clarity, transparency, and understanding".[267] NDC is to be communicated by each party to the Agreement every five years based on the outcome of the global stocktake under Article 14.[268]

In order to realize the ambitious temperature objective of the Agreement, "parties aim to reach global peaking of greenhouse gas emissions as soon as possible…, and to undertake

[261] Decision 10/CP.21.
[262] Mace, above n 251, at 23.
[263] See Arts 3 and 4; Decision 1/CP.21, paras. 12-21
[264] Decision 1/CP.19, para. 2(b).
[265] Decision 1/CP.20, para. 14.
[266] Art. 3.
[267] Art. 4.8
[268] Art. 4.9

rapid reductions thereafter… so as to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century…"[269] It has been stated that while parties favoured quantitative global goal for mitigation, the eventual outcome reflected the qualitative goal which is one of the hallmarks of the UNFCCC mitigation framework.[270] The negotiation surrounding whether emission reduction should be quantitative or qualitative was said to be very fractious and controversial.[271] Following from the qualitative global mitigation goal of the Agreement, parties are to "strive to formulate and communicate long-term low greenhouse gas emission development strategies", taking into account Article 2.[272]

The core of the mitigation provisions of the Paris Agreement is found in Article 4.2, which states that "Each Party shall prepare, communicate and maintain successive nationally determined contributions that it intends to achieve. Parties shall pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions". This provision can be distinguished from the other provisions of the Agreement on a number of grounds.

One, this provision applies to "each party" compared with most of the provisions of the Agreement which apply to "parties", thereby individualizing the obligations set out therein.[273] Two, the obligations flowing from the provision, like a number of other provisions of the Agreement,[274] are underlined by mandatory language "shall", making it compulsory for each party to prepare, communicate, maintain successive NDCs, and pursue domestic measures.[275] Three, while, no doubt, the provision creates binding obligations, they are obligations of

[269] Art. 4.1.
[270] Rajamani, above n 45, 496.
[271] Mace, above n 251, at 3-4.
[272] Art. 4.19
[273] Rajamani, above n 45, at 497. Moreover, the coverage of NDCs under the Paris Agreement (in applying to "each party") also differs from obligation to reduce emissions under the Kyoto Protocol, which applied to developed countries listed in Annex I of the UNFCCC only. See Article 3.1 of the Kyoto Protocol.
[274] Mandatory language "shall" is also employed in Arts. 4.5, 4.8, 4.9, 4.13, 4.15, 4.16, 4.17, 7.9, 7.13, 9.1, 9.7, 10.2, 10.6, 11.4, 12, 13.7, 13.9, 13.11, 13.13, and 13.14. See Rajamani, above n 45, at 497.
[275] Rajamani, above n 45, at 497.

conduct, and not of result.[276] This conclusion arises from the expression "intends to achieve" in the provision, underscoring a sincerity of intention on the part of parties to work toward achieving their NDCs, but nothing requires them to so do.[277] Likewise, the clause "with the aim of achieving the objectives of such contributions" in the provision has been construed in the same vein as the foregoing – an obligation of conduct encouraging parties to aim to achieve their NDC objectives.[278]

The background to the language of Article 4.2 can be traced to the divergent positions of parties in the build-up to the Paris conference. While the EU and small island states favoured provisions requiring parties to implement or achieve their NDCs, the United States, China and India, and a handful of other parties, vehemently opposed any language making it mandatory for parties to achieve their NDCs – a binding obligation of result.[279] Although the Paris Agreement opted for a binding obligation of conduct with respect to parties achieving their NDCs, it has been asserted that it "ensured that Parties had binding obligation of conduct coupled with a good faith expectation of results".[280] This expectation of result based on good faith is operationalized in the Agreement through provisions that make it possible for progress made by parties in achieving their NDCs to be tracked,[281] and those setting up arrangements for parties to "participate in a facilitative, multilateral consideration of progress" in the implementation of their NDCs.[282]

It is submitted that while a mitigation framework that is built on obligation of conduct rather than of result may not represent the overarching expectation of the international community in the twenty-first century in seeing that parties contribute meaningfully toward addressing

[276] Ibid.
[277] Ibid, 497-498.
[278] Ibid, 498
[279] Ibid. See also Bodansky, above n 221, at 146.
[280] Ibid.
[281] Art. 13.7(b).
[282] Art. 13.11. See Rajamani, above n 45, 498.

climate change, taking into account historical, current and projected emissions, and capability to address the problem, any assessment of the Paris Agreement in that respect at this point may only be hypothetical rather than factual. However, an arrangement mandating an obligation of conduct as well as of result seems a more formidable framework for cutting emission of greenhouse gases globally, but considering the strategic importance of parties (US, China, India, etc)[283] that opposed any institution of obligation of result as against those in favour, any insistence on that may have resulted in another 'Copenhagen 2009' outcome in Paris.

Furthermore, the use of the word "objectives" in Article 4.2 is not without connotations. The NDCs submitted by parties reflect divergent objectives – ranging from quantitative (e.g., target to reduce absolute emissions) to qualitative objectives (e.g., embracing climate-friendly development pathway).[284] For instance, while the United States opted for a quantitative NDC,[285] India chose the qualitative option.[286] Moreover, some NDCs are conditioned on provision of financial and technological support,[287] while others had no conditions attached.[288] Following from these diverse objectives of parties towards achieving their NDCs, any obligation of result would have been extremely difficult to enforce, considering the lack of uniformity as to how parties pursue attainment of the objectives of their NDCs.[289]

[283] According to data from the World Resource Institute (WRI), the top four highest emitters of greenhouse gases are China, United States, EU-28, and India. See WRI, Top Ten Emitters, online at: <http://www.wri.org/blog/2014/11/6-graphs-explain-world%E2%80%99s-top-10-emitters> Accessed 15 October 2016
[284] Rajamani, above n 45, 498.
[285] U.S Cover Note, INDC and Accompanying Information (March 31, 2015), online at: <http://www4.unfccc.int/submissions/indc/Submission%20Pages/submissions.aspx >
[286] India INDC to the UNFCCC (October 2, 2015), online at: <http://www4.unfccc.int/submissions/indc/Submission%20Pages/submissions.aspx>
[287] Ibid. See Rajamani, above n 45, at 498.
[288] See, for instance, Brazil's INDC (September 28, 2015), online at: <http://www4.unfccc.int/submissions/indc/Submission%20Pages/submissions.aspx>
[289] Rajamani, above n 45, at 498.

The Agreement further provides that the NDCs "communicated by Parties shall be recorded in a public registry to be maintained by the Secretariat".[290] There was disagreement between parties as to whether NDCs should be housed inside or outside the Agreement. While the United States, Canada and New Zealand were in favour of housing NDCs outside, pointing to the potential advantage of the approach aiding accelerated and easy maintenance of successive contributions, other parties raised the concern that housing NDCs outside may hand parties the freedom to revise their NDCs to avoid higher contributions.[291] Eventually, housing the NDCs outside the Agreement was favoured. It should be noted that COP 21 provides for elaboration of the modalities and procedures necessary for the operation of the public registry.[292]

The Paris Agreement also provides that "Each party shall communicate a nationally determined contribution every five years...;"[293] and to include in such communication "information necessary for clarity, transparency and understanding..."[294] Considering that the Agreement employs the mandatory "shall", this provision creates binding obligations for parties.[295] Under the Agreement, "Parties shall account for their nationally determined contributions..., in accordance with guidance adopted by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement".[296] The bindingness of this provision on the parties, notwithstanding the use of the compulsory "shall" seems unclear owing to employment of the word "guidance". Rajamani thinks that the use of "guidance" may deflate any contention that the provision is binding, but that much will depend on

[290] Art. 13.12
[291] Rajamani, above n 45, 498.
[292] Decision 1/CP.21, para. 29
[293] Art. 4.9
[294] Art. 4.8.
[295] Bodansky, above n 221, at 146; Rajamani, above n 45, at 499.
[296] Art. 4.13

whether any guidance issued by the COP is couched in a mandatory or permissive language.[297]

Furthermore, the Paris Agreement provides for progression in successive NDCs submitted by parties. Article 4.3 stipulates that "Each Party's successive nationally determined contribution will represent a progression beyond the Party's then current nationally determined contribution and reflect its highest possible ambition, reflecting its common but differentiated responsibilities and respective capabilities, in the light of different national circumstances". Again, "each party" is used, signifying that the provision creates an individual obligation as against a general one. However, the provision employs "will" as against "shall" which raises the question as to the extent the provision binds parties. Thus, it has been opined that although the provision may not have created an imperative obligation, it does reveal a strong expectation that parties should do better in their successive NDCs.[298] This provision has been linked to a conception termed "no-backsliding", put forward by most developing countries to ensure that developed countries did not undertake less onerous mitigation commitments compared with their Kyoto obligations.[299] Moreover, the Agreement's progressive NDC framework has been said to owe its origin to Brazil's "concentric differentiation" proposal which advocated piecemeal progression towards higher mitigation commitments for all parties.[300]

Voigt and Ferreira have pointed out "progression" and "highest possible ambition" as the two new principles embodied in the Paris Agreement, noting that the principles will go a long

[297] Rajamani, above n 45, at 499
[298] Ibid, 500.
[299] Ibid, 501.
[300] UNFCCC, 'Views of Brazil on the Elements of a New Agreement under the Convention Applicable to all Parties' (November 6, 2014), online at: <http://www4.unfccc.int/submissions/Lists/OSPSubmissionUpload/73_99_130602104651393682-BRAZIL%20ADP%20Elements.pdf> See Rajamani, above n 35, at 501.

way in determining the extent of parties' ambition.[301] Progression can take various forms, such as "more stringent numerical commitments of the same form, i.e., a decrease in emissions intensity from a base year over a previous intensity target, or an increase in absolute reductions over an earlier absolute reduction target".[302] The Paris Agreement's provision on progression has been criticised as being ambiguous with respect to who determines progression, resulting in parties being left to self-determine progression in successive NDCs by implication.[303]

It should be noted that the Agreement does not only envisage progression with respect to mitigation only. It extends the progression requirement to other vital areas such as adaptation, finance, technology and capacity-building, considering its provision that "the efforts of all Parties will represent a progression over time... recognizing the need to support developing country Parties for the effective implementation of this Agreement".[304] It has been observed that this provision differs from progression in mitigation in two material ways.

One, its application extends to "all Parties" not "each Party" leading to the conclusion that it could be construed as being directed to parties collectively, rather than individually.[305] Two, it rightly employs the word "efforts" rather than NDCs, considering that "efforts" encompass mitigation,[306] adaptation,[307] and financial[308] and technological[309] assistance to developing countries.[310] However, both provisions enjoy similarity owing to the fact that "will" and not "shall" was employed, thereby making the provisions non-imperative but rather reflects a reasonable expectation that the parties should undertake progressively ambitious actions in

[301] Voigt and Ferreira, above n 44, at 72.
[302] Rajamani, above n 45, 501.
[303] Ibid.
[304] Art. 3.
[305] Rajamani, above n 45, at 501
[306] Art. 4.2
[307] Art. 7
[308] Art. 9.
[309] Art. 10.
[310] Rajamani, above n 45, at 501.

the course of time.[311] It has been submitted that with "the rigorous system of oversight and the expectation of good faith implementation, Parties will be constrained to comply with these provisions",[312] notwithstanding their discretionary character.

Having evaluated the core provisions operationalizing the NDC in the Paris Agreement, I shall now look at the expected impact of contributions made by parties so far,[313] in line with the long-term global average temperature goal of the Agreement in Article 2. Prior to the Paris conference, the UNFCCC Secretariat considered the aggregate effect of 119 INDCs submitted by 146 Parties by October 2015.[314] The resulting report stated that the aggregate effect of the INDCs submitted will result in aggregate global emission level of 55.2 gigatonnes in 2025 and 56.7 in 2030,[315] which does not correspond with the goal of holding global average temperature to below 2°C or 1.5°C above pre-industrial levels. Following this report by the UNFCCC Secretariat, COP 21 decision acknowledged the inherent gap between the efforts of parties at that point and what is required to attain the long-term global temperature goal by deciding that the Conference of the Parties:

Notes with concern that the estimated aggregate greenhouse gas emission levels in 2025 and 2030 resulting from the intended nationally determined contributions do not fall within least-cost 2 ˚C scenarios but rather lead to a projected level of 55 gigatonnes in 2030, and also notes that much greater emission reduction efforts will be required than those associated with the intended nationally determined contributions in order to hold the increase in the global average temperature to below 2 ˚C above pre-industrial levels by reducing emissions to

[311] Ibid.
[312] Ibid.
[313] As at 22 November 2016, 163 parties have submitted their NDC. See UNFCCC, 'INDCs as communicated by Parties', online at: <http://www4.unfccc.int/submissions/indc/Submission%20Pages/submissions.aspx
[314] UNFCCC, Synthesis report on the aggregate effect of the intended nationally determined contribution (30 October 2015), FCCC/CP/2015/7, online at: <http://unfccc.int/resource/docs/2015/cop21/eng/07.pdf>
[315] Ibid, para. 33.

40 gigatonnes or to 1.5 ˚C above pre-industrial levels by reducing to a level to be identified in the special report referred to in paragraph 21 below.[316]

Following this acknowledgement, the Paris COP requested the Secretariat to update the synthesis report in 2016 to cover the NDCs submitted by parties as of April 4 2016.[317] The Secretariat released the updated version on May 2 2016.[318] The updated report covered 161 NDCs submitted by 189 parties by the effective date of April 4 2016.[319] The updated report made no difference to the earlier one notwithstanding the additional NDCs from parties which were not covered in the 2015 report. The 2016 report stated that the implementation of the NDCs submitted by parties as of the cut-off date of April 4 2016 will yield aggregate global emission level of 55.0 gigatonnes in 2025 and 56.2 gigatonnes in 2030,[320] compared to the estimated 40 gigatonnes level required to peg increase in global average temperature to below 2°C, or the expected lower benchmark needed to achieve the unquestionably ambitious goal of holding the average global temperature to 1.5°C.[321]

It should be noted that the Paris COP invites the IPCC to prepare a special report in 2018 on the likely effects of increase in the global average temperature of 1.5°C above pre-industrial levels and the corresponding emission pathways.[322] In more categorical terms, it has been reported that the NDCs submitted by the parties to the Paris Agreement as of 1 November

[316] Decision 1/CP.21, para. 17. Moreover, a 2015 report by the International Energy Agency (IEA) found that parties' intended nationally determined contributions for COP 21 "would be consistent with an average global temperature increase of around 2.7 degrees Celsius (°C) by 2100, falling short of limiting the increase to no more than 2 °C". See the IEA World Energy Outlook, Energy and Climate Change – Special Briefing for COP 21, 4. Avaialble online at: <https://www.iea.org/media/news/WEO_INDC_Paper_Final_WEB.PDF>

[317] Ibid, para. 19

[318] UNFCCC, Aggregate effect of the intended nationally determined contributions: an update. Synthesis report by the Secretariat (2 May 2016), FCCC/CP/2016/2, online at: <http://unfccc.int/resource/docs/2016/cop22/eng/02.pdf>

[319] Ibid.

[320] Ibid, para. 34

[321] Decision 1/CP.21, para. 17.

[322] Ibid, para. 21.

2016 will result in limiting global average temperature to 2.8 – 3.1 °C above pre-industrial levels.[323]

The revelation from the foregoing analysis of the NDCs submitted by the parties and their likely impacts in achieving the ultimate long-term temperature goal of the Paris Agreement is that a substantial gap still exists between what parties have put forward as their national contributions compared with the emission pathways relevant to realizing the emission reduction goal of the Paris Agreement. Moreover, considering that all the major emitters have submitted their NDCs, the question arises as to whether the Paris Agreement's NDC framework is not bad, or incurably bad, for that matter. Although, considering the diplomatic and human resources invested in making the Paris conference a success, the rooting of every concerned global citizen is for the Agreement to be fit for purpose in addressing the climate change problem, however, the present author strongly thinks that the NDC framework of the Agreement is likely to pose a challenge of an insurmountable degree, if allowed in its current form.

While, arguably, the Agreement's provisions on "progression",[324] "highest possible ambition",[325] "transparency",[326] "global stocktake",[327] and compliance and implementation,[328] should in themselves serve some usefulness in overcoming the inherent weakness of the Agreement in leaving sovereign states to nationally and capriciously determine what they would like to contribute towards solving a global problem of a gargantuan and pressing nature, however, the provisions may not be adequate to overcome the deficiencies of the NDC framework. NDC framework based on emission budget would

[323] Climate Action Tracker (CAT), Effect of current pledges and policies on global temperature, global consequences for (I)NDCs, online at: <http://climateactiontracker.org/global.html> Accessed 23 November 2016.
[324] Arts. 3 and 4.3.
[325] Art. 4.3.
[326] Art. 13.
[327] Art. 14.
[328] Art. 15.

have served the mitigation goals of the Paris Agreement better. This idea will be expounded further in the final chapter - "Strengthening the Paris Agreement".

Moreover, the Paris Agreement has been criticised for lack of any clear formula for bridging the emissions gap arising from current inadequate NDCs of parties.[329] Patently, whether the Agreement provides a solid international legal and normative basis for solving the climate change problem – a typical collective action problem[330] - will continue to be hotly contested.[331] However, one take-away from such contestation is the inherent difference between emission targets jointly negotiated by countries based on a specific pre-agreed reduction threshold and a bottom-up nationally volunteered mitigation contribution.[332] Thus, it has been submitted that the latter representing the Paris-type architecture is "less likely to be sufficiently ambitious, in the aggregate, to meet global goals.[333]

To justify this conclusion, the mitigation gap resulting from NDCs as submitted by parties to the Paris Agreement and the level of effort required to attain the long-term temperature goal of the Agreement as enshrined in Article 2, is further stressed.[334] Consequently, it has been suggested that further agreements between major emitters need to be negotiated to close the emission gap.[335] However, this does not envision jettisoning the Paris Agreement completely for such minilateral approach, as it has been acknowledged that the Agreement contains the flexibility to accommodate such "bilateral or plurilateral agreements.[336] Thus, even before the implementation of the Paris Agreement commences, there is already a look further up towards finding solutions to its inevitable weaknesses, especially its NDC framework.

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[329] Doelle, above n 248, at 9.
[330] See Paul G. Harris, "Collective Action on Climate Change: The Logic of Regime Failure" (2007) 47 *Natural Resources Journal*, 195-224.
[331] Streck *et al*, above n 248, at 28.
[332] Ibid.
[333] Ibid.
[334] Ibid.
[335] Ibid.
[336] Ibid.

Having evaluated the NDC framework of the Paris Agreement, I shall now undertake the evaluation of the other important provisions of the Agreement. The Paris Agreement provides for cooperation and markets. However, the extent the market mechanism of the Agreement mirrors Kyoto's flexibility mechanisms remains uncertain. The Paris Agreement recognises that "...Parties choose to pursue voluntary cooperation in the implementation of nationally determined contributions to allow for higher ambition in their mitigation and adaptation actions and to promote sustainable development and environmental integrity".[337]

The Agreement further states that Parties, in any event they choose to engage in voluntary cooperative undertakings that entail utilization of "internationally transferred mitigation outcomes towards nationally determined contributions", must "promote sustainable development and ensure environmental integrity and transparency..."[338] The Agreement also established a mechanism to contribute to mitigation, support sustainable development, and facilitate public-private participation in mitigation.[339] Part of the proceeds accruing from the mechanism shall be channelled towards defraying administrative costs and assisting vulnerable developing countries meet the costs of adaptation.[340] It also recognises the need for non-market approaches to be available to parties in the implementation of their NDCs, "in the context of sustainable development and poverty eradication, in a coordinated and effective manner, including through, inter alia, mitigation, adaptation, finance, technology transfer and capacity-building..."[341] A framework for non-market approaches geared towards sustainable development is defined to promote non-market approaches.[342]

[337] Art. 6.1.
[338] Art. 6.2
[339] Art. 6.4
[340] Art. 6.6
[341] Art. 6.8
[342] Art. 6.9

It has been observed that the Paris Agreement creates different flexibility tracks thereby giving parties a middle-way course of action in their mitigation responsibilities.[343] However, the expression 'internationally transferred mitigation outcomes" has been described as awkward and a reflection of the "cumbersome atmosphere of the market discussion, and that it leaves some guesswork as to what the nature of such 'outcomes' might be".[344] It should be noted that the flexibility framework under Article 6.2 differs from the idea of joint NDCs provided for under Article 4.16 -18 of the Agreement, considering that under Article 6.2 there can be linkage of parties NDCs via the utilization of transferred mitigation outcomes, whilst joint NDCs are encompassed within the common accounting structure.[345]

With respect to sustainable development arm of Article 6, the Paris outcome links its mechanism to the flexibility mechanisms of the Kyoto Protocol, especially joint implementation and the clean development mechanism, by calling for the experience and lessons learned from extant mechanisms to be taken into account in adopting rules and modalities for the Article 6.4 mechanism.[346] Channelling part of the proceeds from the new mechanism to adaptation in developing countries that will suffer most from the adverse effects of climate change may create a new source of funding for Kyoto's adaptation fund.[347] A striking difference between the new mechanism under the Paris Agreement and Kyoto's CDM is that the new mechanism is not an offsetting mechanism, considering that it must "deliver an overall mitigation in global emissions",[348] thereby producing a net emission reduction effect.[349] The overall effect of Article 6 mechanism will depend on the robustness

[343] Streck, *et al*, above n 248, at 15.
[344] Ibid, 16.
[345] Ibid.
[346] Decision 1/CP.21, para. 38(f)
[347] Streck, *et al*, above n 245, at 16.
[348] Art 6.4(d).
[349] Streck, *et al*, above n 245, at 17.

of rules and modalities adopted by the CMA pursuant to COP 21 decision.[350] However, it has been submitted that little will be achieved under the mechanism if "Parties do not seek the opportunity of complementary action and do not show the willingness to link domestic action with action under the provisions of the PA" [Paris Agreement].[351]

Adaptation and loss and damage are also covered by the Paris Agreement. The Agreement establishes "the global goal on adaptation of enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to contributing to sustainable development..."[352] Adaptation to climate change is recognised as a global challenge facing people around the world.[353] Recognition will be accorded adaptation efforts of developing countries based on modalities to be set by the CMA.[354] The extent of adaptation to be undertaken will be dependent on efforts placed on mitigation considering that higher mitigation levels can reduce the need for further adaptation.[355] The Agreement further provides that "continuous and enhanced international support shall be provided for developing countries Parties" to enable them implement provisions on adaptation, finance, technology, and capacity-building,[356] while recognising the need to pay particular attention to the adaptation needs of developing countries that are most vulnerable to the adverse impacts of climate change,[357] and to ensure that additional burden is not foisted on developing countries with respect to periodic reporting on adaptation.[358] Global stocktake under Article 14 shall cover adaptation efforts of parties.[359]

[350] Decision 1/CP.21, para. 38(a)-(f)
[351] Streck, *et al*, above n 245, at 17.
[352] Art. 7
[353] Art. 7.2.
[354] Art. 7.3.
[355] Art. 7.4.
[356] Art. 7.13.
[357] Art. 7.6.
[358] Art. 7.10.
[359] Art. 7.14.

Notably, the Paris Agreement has now established a causal link between mitigation and adaptation under Article 7.4, which invariably calls for a balance between efforts and funding made available for mitigation and adaptation.[360] However, while developing countries preferred the global goal on adaptation to be captured in quantitative commitments while opposing the qualitative option,[361] developed countries wanted it to be qualitative. The global goal on adaptation under the Agreement is of qualitative nature; hence the conclusion that developed countries prevailed.[362] Nonetheless, the view has been expressed that "although the notion of a quantifiable adaptation goal did not garner sufficient support, the Paris Agreement recognizes the critical inter-linkages inherent in the achievement of the long-term goals, including in relation to temperature, and efforts related to mitigation, adaptation, and means of implementation".[363] The adaptation provisions of the Paris Agreement has been criticised as focusing "on procedural aspects of adaptation planning, and does not mandate concrete areas of action or provide quantifiable commitments of support for developing countries".[364]

With respect to loss and damage,[365] parties to the Agreement appreciate the need to avert, reduce, and address loss and damage arising from the adverse impacts of climate change, "including extreme weather events and slow onset events, and the role of sustainable

[360] Doelle, above n 248, at 12.
[361] See, for example, Submission by Swaziland on behalf of the African Group on adaptation in the 2015 Agreement (October 8, 2013), online at: <https://unfccc.int/files/documentation/submissions_from_parties/adp/application/pdf/adp_african_group_workstream_1_adaptation_20131008.pdf>
[362] Streck, *et al*, above n 248, at 18.
[363] The relevant provision of the Agreement in this regard is Article 14. See Rajamani, above n 45, at 497.
[364] Streck *et al*, above n 248, at 18.
[365] See Decision 1/CP.21; 2/CP.21 and Art. 8, Paris Agreement. See M.J Mace and Roda Verheyen, "Loss, Damage and Responsibility after COP21: All Options Open for the Paris Agreement" (2016) 25(2) *Review of European Community & International Environmental Law*, 197-214; Maxine Burkett, "Reading Between the Red Lines: Loss and Damage and the Paris Outcome" (2016) 6 *Climate Law*, 118-129; Birsha Ohdedar, "Loss and Damage from the Impacts of Climate Change: A Framework for Implementation" (2016) 85 *Nordic Journal of International Law*, 1-36; Maxine Burkett, "Loss and Damage" (2014) 4 *Climate Law*, 119-130. For a recent articulation of the concept of damage in relation to climate change, see Christina Voigt, "Climate Change and Damages" in Cinnamon P. Carlarne, Kevin R. Gray and Richard G. Tarasofsky (eds.,) *The Oxford Handbook of International Climate Change Law* (Oxford University Press, Oxford, 2016), 464-494.

development in reducing the risk of loss and damage".[366] Loss and damage under the Agreement are to operate through the Warsaw mechanism, subject to the authority and guidance of the CMA.[367] The loss and damage provision of the Paris Agreement "does not involve or provide a basis for any liability or compensation".[368]

Loss and damage forming part of the agenda of the UNFCCC parties over the past couple of years can be attributed to the insistence of countries that are likely to face severe threat from the adverse effects of climate change, especially the LDCs and the SIDs.[369] At COP 19, a mechanism for loss and damage was established within the UNFCCC adaptation framework, with a relatively "narrow investigative mandate that excluded financial support".[370] At the Paris conference, interested parties pressed for a provision in the Agreement that separates loss and damage from adaptation, and with a more extensive mandate.[371]

Although some developed countries, especially Australia and the United States, made efforts to remove loss and damage from the text of the Paris Agreement, or subsume it under adaptation with its characteristic restrictive mandate under the Warsaw mechanism, majority of parties eventually favoured loss and damage as a distinct provision, independent of adaptation, and with a relatively larger mandate.[372] However, developed countries did succeed in making the provision relating to loss and damage a toothless one on issues relating

[366] Paris Agreement, Art. 8.1.
[367] Ibid, Art. 8.2. See Decision 2/CP.19, Warsaw International Mechanism for Loss and Damage Associated with Climate Change Impacts. FCCC/CP/2013/L.15.

[368] Decision 1/CP.21, para. 52.
[369] Meinhard Doelle, "The Birth of the Warsaw Loss and Damage Mechanism: Planting a Seed to Grow Ambition?" (2014) 8 *Carbon and Climate Law Review*, 35.
[370] Doelle, above n 248, at 12.
[371] Ibid.
[372] Ibid.

to liability and compensation for climate change, albeit codified not in the Agreement itself, but in the COP decision.[373]

Specifically, extending of the mandate for loss and damage can be seen in the Agreement's provisions relating to early warnings, emergency, adverse events of a slow nature, events occasioning irreversible and permanent loss or damage, risk assessment and management, insurance, losses of non-economic nature, and resilience.[374] It has been observed that "the new mandate would appear to turn the predominantly reactive mechanism established in Warsaw into a more proactive one".[375] Nevertheless, critically, the Agreement's provision on loss and damage made no mention of funding as one of the ways of assistance or support, nor was loss and damage mentioned as one of the areas for parties to cover in their nationally determined contributions.[376]

The early implementation phase of the Agreement will offer interesting clues as to how ready parties, especially developed countries, are to undertake responsibilities towards fulfilling the broader mandate on loss and damage created under the Agreement. The fact that most developed countries have always been against the recognition of loss and damage arising from climate change under the UNFCCC makes one to guess that a rocky relationship between developing and developed countries lies ahead in this respect.

The Paris Agreement also covers the fundamental issue of climate finance and financial assistance to developing countries.[377] Although the provisions of the Agreement relating to financial assistance will be comprehensively and critically examined in chapter four, at this juncture, the core provisions are worth highlighting. Under the Agreement, developed countries are obligated to provide finance to assist developing countries' mitigation and

[373] Ibid. See also Streck *et al*, above n 248, at 18-19, and Decision 1/CP.21, para. 52.
[374] Paris Agreement, Art. 8.4
[375] Doelle, above n 248, at 13
[376] Ibid.
[377] See Decision 1/CP.21, paras. 53-65; Decision 5/CP.21; Paris Agreement, Art. 9.

adaptation measures as an extension of their existing obligation,[378] while "other parties" are encouraged to provide financial support voluntarily.[379] Developed countries should also continue to take the lead in the mobilization of climate finance, and such mobilization should be in addition to previous efforts.[380]

Additional financial resources provided should aim to strike a balance between adaptation and mitigation, taking into account the need of developing countries, especially those particularly vulnerable to climate change.[381] Developed countries are obligated to report on financial resources provided to developing countries biennially, while other parties may report voluntarily.[382] Reporting on climate finance by developed countries shall form part of the information to be taken into account in global stocktake. The Agreement aims "to ensure efficient access to financial resources" by developing countries "through simplified approval procedures".[383]

It should be noted that the Agreement's provision on finance creates no new obligation for developed countries, as reflected in Article 9.1 expression - "in continuation of their existing obligations under the Convention". This lack of new financial obligation for developed countries has been pointed out as one of the reasons why the United States accepted the obligatory language of the provision.[384] The Paris Agreement's provisions on finance has been said to "lack a concrete, time-bound commitment".[385] Although the accompanying decision to the Agreement reiterates the fact that developed countries intend to continue their collective finance mobilization effort through 2025, and that the CMA will set a new

[378] Art. 9.1.
[379] Art. 9.2.
[380] Art. 9.3.
[381] Art. 9.4.
[382] Decision 9/CP.21; Art. 9.5 Paris Agreement.
[383] Art. 9.9.
[384] Rajamani, above n 45, at 512.
[385] Streck *et al,* above n 248, at 20.

collective finance goal starting from a floor of USD 100 billion per year in 2025,[386] the Paris outcome in relation to climate finance is relatively weak and unambitious. Moreover, the up to USD 100 billion long-term climate finance per year from 2013-2020 agreed to by developed countries at COP-16[387] remains unattained.[388] An OECD report that developed countries mobilized up to USD 62 billion in public and private finance toward the USD 100 billion in 2014 has been impugned by developing countries.[389]

Technology development and transfer also form part of the Paris Agreement.[390] Like the provisions on finance, technology development and transfer under the Paris Agreement will be evaluated in detail in chapter four. Summarily, parties to the Agreement "share a long-term vision on the importance of fully realizing technology development and transfer in order to improve resilience to climate change...;"[391] while taking note of the relevance of technology in implementing mitigation and adaptation provisions under the Agreement.[392]

The Agreement is to be serviced by the technology mechanism established under the UNFCCC,[393] and a technology framework is established under the Agreement to guide the work of the technology mechanism in promoting technology development and transfer.[394] The Agreement further underlines the importance of technology innovation and research and development in achieving long-term global response to climate change and the promotion of

[386] Decision 1/CP.21, para. 54.
[387] Decision 1/CP.16.
[388] See OECD (2015), "Climate finance in 2013-14 and the USD 100 billion goal: A report by the Organisation for Economic Co-operation and Development (OECD) in collaboration with Climate Policy Initiative (CPI), available online at: <http://www.oecd.org/env/cc/Climate-Finance-in-2013-14-and-the-USD-billion-goal.pdf>
[389] Streck *et al*, above n 248, 20. The OECD report in question is the one referenced supra.
[390] Decision 1/CP.21, paras. 66-71; Decision 12/CP.21; and Art. 10.
[391] Art. 10.1
[392] Art. 10.2
[393] Art. 10.3.
[394] Art. 9.4.

sustainable development,[395] and the need to provide financial support to developing countries to enable them implement the technology provisions of the Agreement.[396]

While the Paris Agreement cannot be said to have registered any new remarkable ground-breaking provision on technology development and transfer to developing countries, elaboration of the new technology framework of the Agreement remains a work in progress. Following COP 21 decision,[397] the Subsidiary Body for Scientific and Technological Advice (SBSTA) convened in May 2016 to begin elaboration of the technology framework established under Article 10.4 of the Agreement.[398] Parties to the Paris Agreement were to submit their views on the elaboration of the framework to the SBSTA by 15 September 2016.[399]

With respect to capacity-building, the Paris Agreement emphasises the importance of capacity-building in developing countries,[400] especially developing countries with least capacity, such as the LDCs, SIDs and those mostly vulnerable to climate change.[401] Building capacity in developing countries will enable implementation of mitigation and adaptation measures, technology development and transfer, facilitate access to finance, etc.[402] While all parties are enjoined to cooperate in enhancing the capacity-building of developing countries, the Agreement specifically states that developed countries should enhance capacity-building in developing countries.[403]

[395] Art. 9.5.
[396] Art. 9.6
[397] Decision 1/CP.21, para. 68.
[398] UNFCCC, Report of the Subsidiary Body for Scientific and Technological Advice on its forty-fourth session, held in Bonn from 16-26 May 2016, FCCC/SBSTA/2016/2, section IV, paras. 22-27 (Agenda item 4)
[399] Ibid, para. 26.
[400] See Decision 1/CP.21, paras. 72-84; Decision 14/CP.21; and Article 11 of the Paris Agreement.
[401] Art. 11.1
[402] Ibid.
[403] Art. 11.3.

The Agreement also provides for regular reporting of actions and measures taken towards implementation of the capacity-building provisions by all parties, while particularly requesting developed countries to regularly report on progress on implementing capacity-building plans, policies, actions or measures to implement the Agreement.[404] It also provides for institutional arrangement to enhance implementation of capacity-building under the Agreement, including those already established under the UNFCCC, while stating that the CMA should at its maiden session adopt a decision on institutional arrangements for capacity-building.[405] Moreover, the accompanying decision to the Agreement establishes the Paris Committee on Capacity-building, with a mandate to "address gaps and needs, both current and emerging, in implementing capacity-building in developing country Parties..."[406]

From the foregoing, it is deducible that although developed countries are to continue to assist in building capacity in developing countries, especially those with the least capacity to undertake mitigation and adaptation activities, the Agreement seems to gravitate more towards capacity-building as the collective responsibility of all parties, based on the employment of the expression "all parties" in some sub-sections of the Article.[407] Hence, capacity-building under the Agreement cannot be said to be restricted to support from developed countries only. It is submitted that the provision arguably captures developing countries with relatively reasonable capacity, such as the emerging economies, as possible contributors to capacity-building in other developing countries with weak capacity.

Finally, the Paris Agreement also provides for transparency,[408] review[409] and compliance.[410] The transparency framework of the Agreement is conceived "in order to build mutual trust

[404] Art. 11.4.
[405] Art. 11.5.
[406] Decision 1/CP.21, para. 72.
[407] Arts. 11.3 and 4.
[408] Decision 1/CP.21, paras. 85-99; Paris Agreement, Art. 13.
[409] Ibid, paras. 100-102; Art. 14.

and confidence and to promote effective implementation, with built-in flexibility which takes into account Parties' different capacities and build upon collective experience".[411] Under the transparency framework, flexibility is to be provided to developing countries in the implementation of the Agreement in line with their differing capacities.[412] The transparency framework shall be founded on, and enhance the transparency arrangements of the Convention, while according due regard to the special needs of LDCs and SIDs, "and be implemented in a facilitative, non-intrusive manner, respectful of national sovereignty, and avoid placing undue burdens on parties".[413]

The primary purpose of the transparency framework is to make for clear understanding of climate change and action taken in line with the objective set in Article 2 of the UNFCCC, including NDCs and adaptation actions clarity and tracking, with a view to informing global stocktake;[414] and to further provide clarity on support provided and received by parties pursuant to Articles 4, 7, 9, 10, and 11, in contribution to the global stocktake.[415] The aforementioned Articles are those relating to achievement of the long-term temperature goal of the Agreement, adaptation, finance, technology development and transfer, and capacity-building, respectively.

The transparency framework also covers national communications and reporting on emissions by sources and removals by sinks of greenhouse gases;[416] provision of information relating to impacts of climate change and adaptation;[417] provision of information by developed countries on financial assistance, technology transfer, and capacity-building,

[410] Ibid, para. 103-104; Art. 15.
[411] Art. 13.1.
[412] Art. 13.2.
[413] Art. 13.3
[414] Art. 13.5.
[415] Art. 13.6.
[416] Art. 13.4 and 7.
[417] Art. 13.8.

rendered to developing countries under Articles 9, 10 and 11 of the Agreement;[418] provision of information by developing countries on financial, technology and capacity-building support needed and received;[419] technical expert review of certain information provided by parties and a multilateral, facilitative consideration of progress;[420] support for developing countries to implement the transparency provision;[421] and for building capacity in relation to transparency in developing countries.[422] The CMA, at its first session, shall elaborate and adopt modalities, procedures and guidelines, for the transparency framework, building on transparency experience of the UNFCCC,[423] and such new modalities to be developed by 2018 will replace existing transparency arrangements and take effect upon the Agreement entering into force.[424]

It should be noted that the transparency framework of the Paris Agreement applies to all parties, albeit with flexibility for developing countries. It was reported that during the Paris conference, developing countries, especially the LMDCs, contended for a bifurcated arrangement with differentiated transparency obligations for developing and developed countries, however, the EU and other developed countries eventually reached an understanding with the LMDCs, leading to a transparency framework that applies to all parties.[425] The transparency framework is a relevant addition considering the inherent bottom-up character of the mitigation framework of the Agreement.

Through transparency, parties will be able to track progress and make necessary adjustments required to attain the set objectives of the Agreement.[426] The intricate difference in the legal

[418] Art. 13.9.
[419] Art. 13.10.
[420] Art. 13.11 and 12.
[421] Art. 13.14.
[422] Art. 13.15.
[423] Art. 13.13
[424] Decision 1/CP.21, paras.96-99.
[425] Rajamani, above n 45, at 502.
[426] Doelle, above n 248, at 21.

character of the provisions dealing with requirement for information is worth stressing. Whilst it is individually mandatory for every party to the Agreement to supply information with respect to mitigation pursuant to the expression ("Each party shall") in Article 4.2, the requirement for information with respect to finance is couched as a compulsory collective obligation for developed countries as a result of the expression ("Developed country Parties shall"), and for developing countries, it is expressed in a permissive or recommendatory term ("Developing country Parties should").[427] Permissive, discretionary, or recommendatory language also characterises information requirement for adaptation owing to the use of ("each party should") and ("as appropriate").[428]

The transparency framework provision relating to expert review and facilitative multilateral assessments have been criticised as being unclear "how these processes will be conducted, who will conduct them, what its outputs will be, and how these outputs will feed into the global stocktake".[429] Controversy surrounded the issue of the method to be adopted in verifying or reviewing achievement of a party's NDC, with most countries preferring institution of an independent review system.[430] However, big developing countries were not comfortable with any form of third party review, culminating in a compromise for a technical expert group with a mandate to review information provided and point out areas for future improvement.[431] Thus, while the Agreement's transparency framework encompasses third party review process, such review must be conducted in a "facilitative, non-intrusive, non-punitive manner, respectful of national sovereignty".[432]

[427] Rajamani, above n 45, at 503.
[428] Ibid. See Articles 7.9 (chapeau) and 7.10 of the Paris Agreement.
[429] Ibid.
[430] Streck *et al*, above n 248, at 21.
[431] Ibid.
[432] Art. 13.3. See Streck *et al*, above n 248, at 21.

It is submitted that this qualification is so wide and ambiguous to the extent that it could constitute a *Trojan horse* undermining the transparency and review framework of the Paris Agreement. It arguably accords states the latitude to apply restrictive standards and behaviour to the work of the expert review body, and in any situation of conflict between states' interests and the *modus operandi* of the expert review body, the interests of states would likely prevail, as states would not face much difficulty bringing their reservations under one of the *forbidden* zones for the expert group as listed in Article 13.3. Proceeding from this line of reasoning, I would argue that the transparency framework of the Paris Agreement may bear the seed of its own destruction.

Notwithstanding the foregoing reservation, it has been stated that "the fact that the new transparency framework will for the first time review the emissions of all Parties can be considered a significant step towards improving data and increasing transparency around national and global emissions and mitigation actions".[433]

With respect to global stocktake, the Agreement provides that the CMA "shall periodically take stock of the implementation of this Agreement to assess the collective progress towards achieving the purpose of the Agreement and its long-term goals".[434] The CMA shall undertake such stocktaking "in a comprehensive and facilitative manner, considering mitigation, adaptation and the means of implementation and support, and in the light of equity and the best available science".[435] The first global stocktake is to take place in 2023 and thereafter every five years subject to the decision of the Conference of the Parties.[436]

However, a form of stocktake – "facilitative dialogue among Parties" is to take place in 2018 for the purpose of taking stock of parties' collective efforts and progress towards the long-

[433] Streck *et al*, above n 248, at 21.
[434] Art. 14.1
[435] Ibid.
[436] Art. 14.2.

term goal in Article 4.1 and preparation of NDCs under Article 4.8 of the Agreement,[437] in line with the report of the Intergovernmental Panel on Climate Change on pathways for global warming of 1.5°C, as requested by COP 21.[438] Thus, it can rightly be said that the 2018 facilitative dialogue does not cover adaptation and finance. However, it has been observed that the mention of NDCs leaves the door open for deliberation on issues other than mitigation.[439] There was a rather disappointing outcome regarding further discussion on the 2018 facilitative dialogue following a report that parties could not make progress on what should constitute the rules of operation and engagement at COP 22 in Marrakech.[440]

Global stocktake complements the transparency framework, and has been described as a "crucial system of oversight".[441] Barring it, it will be difficult to ascertain what exactly the bottom-up NDC framework is contributing towards the long-term temperature goal.[442] Without global stocktake, assessing states' overall contribution to the implementation of the Agreement taking into account their responsibilities and capabilities will also be practically impossible.[443]

However, a *lacuna* exists in the Agreement with respect to the reach of the global stocktake – whether the coverage goes beyond extant contributions of parties and extends to the ambition of future contributions.[444] Rajamani opines that it should encompass both.[445] Furthermore, a close look reveals some interpretative uneasiness as to what constitutes the "long term goals" of the Agreement - the second arm of the purpose of the global stocktake; the first being "to

[437] Decision 1/CP.21, para. 20. See generally, Doelle, above n 248, at 15.
[438] Ibid, para. 21.
[439] Doelle, above n 248, at 15.
[440] Sophie Yeo, "COP 22: Key outcomes agreed at the UN climate talks in Marrakech" Carbon Brief, 19 November 2016, online at: <https://www.carbonbrief.org/cop22-key-outcomes-agreed-at-un-climate-talks-in-marrakech>
[441] Rajamani, above n 45, at 503.
[442] Ibid.
[443] Ibid, 504.
[444] Ibid.
[445] Ibid.

assess the collective progress towards achieving the purpose of this Agreement".[446] The "long-term goals" of the Agreement are neither expressly stated nor do they lend themselves to easy discovery. Practically-speaking, while the goals of the Agreement on mitigation[447] and adaptation,[448] although qualitative, are identifiable in the Agreement, the same conclusion cannot be reached with respect to financial support, technology development and transfer, and capacity-building.[449]

How this inherent ambiguity in the provision will be approached in the implementation years of the Agreement remains to be seen, however, it surely "introduces an element of uncertainty into the assessment of progress".[450] The stocktake has been criticised for covering only assessment of collective progress, which invariably excludes the review of individual contributions made by parties with a view to ascertaining their adequacy or otherwise.[451]

Furthermore, the inclusion of the expression "in the light of equity and best available science"[452] in the stocktake provision has been described as a "negotiating coup for several developing countries, in particular the Africa Group, that had long championed the need to consider Parties' historical responsibilities, current capabilities and development needs in setting expectations for nationally determined contributions."[453] However, the lack of a workable definition of "equity"[454] in the climate regime poses questions as to how the term will be operationalized in global stocktake, nonetheless, its inclusion surely lays a solid

[446] Art. 14.1. Rajamani, above n 45, at 504.
[447] Art. 4.1.
[448] Art. 7.1.
[449] Rajamani, above n 45, at 504.
[450] Ibid.
[451] Ibid.
[452] Art. 14.1.
[453] Rajamani, above n 45, 504. (Footnotes omitted).
[454] See generally, Christina Voigt, "Equity in the 2015 Climate Agreement: Lessons from Differential Treatment in Multilateral Environmental Agreements" (2014) 4 *Climate Law*, 50-69, 51.

foundation for discussion on burden sharing for climate change mitigation and adaptation from equitable perspectives.[455]

The Paris Agreement also sets up a mechanism "to facilitate implementation of and promote compliance".[456] The mechanism on compliance shall comprise a facilitative expert-based committee, whose functions shall be carried out in a "transparent, non-adversarial and non-punitive" manner.[457] The committee shall accord due regard to parties' national capabilities and circumstances.[458] Rules to guide the expert committee are to be set at the first session of the Paris Agreement COP (CMA 1 - which has now taken place at COP 22, Marrakech 2016) and the committee shall report annually to the COP.[459] Further modalities and procedures on the operation of the committee are to be developed by the Ad Hoc Working Group on the Paris Agreement (APA).[460] The compliance committee shall be made up of 12 members, to be elected by the COP taking into account equitable geographical representation and gender balance.[461]

The ambitious mitigation framework and the wider scope of participation of countries under the Paris Agreement will count for nothing if countries fail to comply with their commitments.[462] The effectiveness of an international treaty or agreement lies on the tripod elements of ambition, participation and compliance.[463] While, arguably, the Paris Agreement cannot be said to lack in the first two elements, the architecture for compliance with the Agreement remains an unfinished business.[464] The controversy that surrounded negotiation

[455] Rajamani, above n 45, at 504.
[456] Art. 15.1.
[457] Art. 15.2.
[458] Ibid.
[459] Art. 15.3.
[460] Decision 1/CP.21, para. 104.
[461] Ibid, para. 103.
[462] Christina Voigt, "The Compliance and Implementation Mechanism of the Paris Agreement" (2016) 25(2) *Review of European Community & International Environmental Law*, 161-173, 161.
[463] Ibid.
[464] See Decision 1/CP.21, para. 104.

with respect to instituting a compliance framework for the Agreement at COP 21 is expected to survive into the deliberations of the APA on developing the rules and procedures to be followed by the expert committee in performing its facilitative duties.[465] However, the fact that parties, notwithstanding the tumultuous deliberations on the issue in Paris, established the compliance and implementation mechanism has been lauded as a no mean achievement.[466] Questions as to what should constitute points of reference on further work towards bringing the compliance and implementation mechanism of the Agreement into operation has been painstakingly explored elsewhere – ranging from possible questions relating to architecture, procedures, triggers and outcomes.[467]

The guidance as to the nature and function of the expert-based committee of the Paris Agreement's compliance mechanism – "facilitative in nature and function in a manner that is transparent, non-adversarial and non-punitive"[468] differs from the compliance arrangement under the Kyoto Protocol. It has been stated that the guidance operated to allay the fears of parties, both developing and developed, who dreaded the possibility of the Paris Agreement instituting a compliance mechanism akin to Kyoto Protocol's compliance committee, with an enforcement arm clothed with power to sanction parties for non-compliance.[469] Thus, in contradistinction with Kyoto, the compliance mechanism of the Paris Agreement is not expected to cancel privileges - for instance, parties' rights to transfer mitigation outcomes; or apply punitive actions - for example, banning parties from utilising emission reductions in achieving targets.[470] However, it has been noted that the Agreement's compliance mechanism is modelled after the facilitative branch of Kyoto's compliance committee, and that it can also

[465] Voigt, above n 462, 165.
[466] Ibid.
[467] Ibid, 165-173
[468] Art. 15.2.
[469] Rajamani, above n 45, at 505.
[470] Streck *et al*, above n 248, at 22.

be said to follow the facilitative consultative design anticipated under Article 13 of the UNFCCC.[471]

Considering that the international assessment and review (IAR) and the international consultation analysis (ICA) as facilitative compliance designs have proven weak and ineffective under the Convention,[472] caution and tamed expectation should underline any projected outcome or effect of the facilitative compliance architecture of the Paris Agreement. Moreover, it has been opined that the Agreement employing facilitative soft law procedures to enforce its provisions may be adjudged counter-intuitive at first sight, but that the same procedure can be said to accord with the structure of the Agreement in blending targets set voluntarily by parties with a compulsory review processes.[473]

On a possible comparison between the enforcement outcomes of a Kyoto-style compliance procedure and the facilitative approach of the Paris Agreement, it has been observed that while punishment for non-compliance with emission reduction target under Kyoto entailed reduction in emission allowance in the next commitment period, such punishment was mostly of no practical relevance considering, for example, how easy it was for non-compliant Canada to withdraw from the Kyoto Protocol.[474] Conversely, it may be less attractive for a country to withdraw from the Paris Agreement for non-compliance, where no actual punitive measures apply other than the encouragement and assistance to perform better in subsequent periods.[475]

Having evaluated the legal character and the fundamental provisions of the Paris Agreement, which traverses mitigation, adaptation, finance, technology development and transfer,

[471] Ibid.
[472] Ibid. See also Sebastian Oberthur, "Option for a Compliance Mechanism in a 2015 Climate Agreement" (2014) 4 *Climate Law*, 30-49.
[473] Streck *et al*, above n 248, at 22.
[474] Ibid, 23.
[475] Ibid.

capacity-building, and transparency and review, I shall now briefly undertake an assessment of the relationship between the UNFCCC and the Paris Agreement generally, but with particular emphasis on the relevance or otherwise of the annexes to the UNFCCC in the interpretation of the Paris Agreement.

2.5.3 The Connection between the Paris Agreement and the UNFCCC: Are the annexes to the UNFCCC still relevant?

The Paris Agreement states *inter alia*: "This Agreement, in enhancing the implementation of the Convention, including its objectives..." then proceeded to set out its purpose and overarching objectives.[476] For the purposes of the academic exercise that will be undertaken in this sub-chapter, the key word in the above quoted text is "enhancing". "Enhance" has been defined, among other things, as "to improve the quality, amount or strength of something".[477] Thus, the relationship or connection between the Paris Agreement and the UNFCCC can be literally construed to be that the Agreement should improve the quality, amount and strength of the UNFCCC. With this conclusion in mind, I will proceed to look at how the conception of the Agreement's enhancing role came about, before taking a position on the relevance or otherwise of the UNFCCC annexes in the interpretation of the Paris Agreement, especially in relation to grouping of parties – developing and developed countries – under the climate change regime generally.

It has been rightly stated that the UNFCCC "is unabashedly favourable to developing countries – from the recognition in its preamble that the share of emissions from developing countries will grow to meet their social and development needs to the annex-based differentiation that exempts developing countries from emission reduction obligations".[478]

[476] Art. 2.
[477] Cambridge Dictionary, (online edition).
[478] Rajamani, above n 45, at 506, referring to para. 3 of the Preamble, Art. 4 and the Annexes to the UNFCCC

The natural fallout from this state of affairs within the UNFCCC was that developed countries struck a deal in Durban to make the Paris Agreement apply to all parties,[479] whereas, on their part, developing countries elicited the understanding that the Paris agreement will be negotiated and implemented under the Convention.[480] In keeping faith with this position of developing countries, it has been reported that during the Paris negotiation, China insisted on the Paris Agreement being titled "Paris Agreement under the UN Framework Convention on Climate Change".[481] The characteristic internecine disaffection between developing and developed countries in negotiations under the UNFCCC spilled over from the Paris pre-negotiation meetings to the actual conference itself, and has been masterly captured thus:

Developed and developing countries were pitched against each other in Paris. While the former envisioned the Paris Agreement as containing a distinct vision, representing a paradigm shift from the FCCC, the latter were keen to ensure that the Paris Agreement flows from the FCCC, and is guided by and interpreted in the light of it. This disagreement rippled through the negotiations on the entire text, but was in evidence in particular in the negotiations on the chapeau to the purpose of the agreement... Parties disagreed on whether the Paris Agreement should enhance the implementation of the Convention, as most developing countries argued it should, or just the objective of the Convention, as most developed countries favoured. The former would engage the entirety of the Convention, including its conceptual architecture of which differentiation is such an important part. The latter would only engage the GHG stabilization objective of the Convention, thus implicitly permitting a different set of arrangements, including on differentiation, in service of the objective of the Convention. The final resolution... is cloaked in ambiguity".[482]

Thus, the inherent ambivalence in construing the phrase "in enhancing the implementation of the Convention, including its objective" has been underlined.[483] Other the one hand, it can be construed as according with the position of developing countries that the Agreement should

[479] Decision 1/CP.17, (Durban Platform), para. 5. See Rajamani, above n 45, at 506.
[480] Rajamani, above n 45, at 506. See also Voigt and Ferreira, above n 44, at 63.
[481] Ibid.
[482] Ibid.
[483] Ibid.

operate to "enhance" the implementation of the Convention, implying that the whole of the Convention's provisions are germane in the application and interpretation of the Agreement.[484] On the other hand, the phrase could be explicated as meaning that the Agreement, in so far as it "enhances" the Convention's implementation, does not portend engaging the whole of the Convention's provisions, to the extent that such provisions are not specifically referred to in the Agreement.[485] I tend to disagree with this latter suggestion for reasons adduced below.

The ordinary meaning of the word "enhance" as highlighted above supports the view that the Paris Agreement should be interpreted to improve the quality, amount or strength of the Convention as a whole, arguably entailing the engagement of all of its provisions. However, to the extent that a particular provision of the Convention is not invoked by any party to the Paris Agreement in a bid to implement the Agreement in the light of the Convention, such *irrelevant* provision should be allowed to lay redundant. Thus, not all provisions of the Convention will be relevant in interpreting the Agreement, to the extent that they are either not expressly mentioned in the Agreement, or invoked by any of the parties in a bid to construe relevant provisions of the Agreement.

Viewed from the prism of apparent inequality of bargaining power between developed and developing countries, as underlined by the need for financial, technology and capacity assistance from the former to the latter, as recognised in the Convention as well as in the Paris Agreement, any interpretation of the chapeau to Article 2 of the Agreement that precludes developing countries from invoking relevant provisions of the UNFCCC in furtherance of implementation of the Agreement will likely create an environment that will make the Agreement unrealistic and impossible to implement. Although the international law

[484] Ibid.
[485] Ibid.

principle of *pacta sunt servanda* implies that developing countries should keep their part of the bargain in Paris, the totality of the Agreement not being interpreted in the light of its parent instrument – the Convention, may result in developing countries being demanded to do the impossible. Traditionally, the law does not ask of any man, or country for that matter, an action which is impossible to perform. *Lex non cogit ad impossibilia.*

With respect to financial assistance, technology transfer and capacity-building, developing countries would face impossible or near-to-impossible situations regarding implementation of their obligations under the Paris Agreement, if precluded from invoking relevant provisions of the UNFCCC which underpin their 'claims' against developed countries, Article 4.7 of the UNFCCC which makes the effective implementation by developing countries' commitments conditional on developed countries effectively implementing their obligations relating to financial and technology support, being a good example. Although Article 4.7 is not specifically referred to in the Agreement, it remains relevant to developing countries in the spirit of the Paris Agreement "enhancing the implementation of the Convention".

Although the *common responsibility* of all countries to contribute meaningfully and equitably in response to the problem of climate change should now be taken to attain the same level of importance as the *differentiated responsibility* to meet relevant internationally set goals and objectives pertaining to climate governance, be it in respect of mitigation, financial assistance, technology development and transfer, capacity-building etc., there still exists a chasm between developing and developed countries in terms of resources and capacity. Thus, while the Paris Agreement mirrors much of common responsibility to deal with climate change compared to the UNFCCC and the Kyoto Protocol, which heavily differentiated between developing and developed countries mostly on the basis of historical responsibility, capacity and ability to pay; the extent to which the Paris architecture complements or derogates from the UNFCCC will be practically dependent on how far parties to the

Agreement will go in relying on the relevant portions of the UNFCCC to drive their points home on what their legitimate expectations were in setting forth the chapeau to Article 2 of the Agreement in Paris in 2015.

The question as to whether the annexes to the UNFCCC are still relevant in construing relevant provisions of the Paris Agreement is a case in point. The fact that the UNFCCC annexes were not expressly referred to in the Paris Agreement has generated views questioning the relevance of the annexes in the Paris architecture.[486] In accordance with my interpretation and conclusion on the effect of the chapeau to Article 2 of the Agreement above, I posit that the annexes to the UNFCCC remain relevant in the construction of the provisions of the Paris Agreement, notwithstanding that there were not specifically referred to in the Agreement. As a take-off point, although the Paris Agreement refers to "developed" and "developing" countries,[487] it offers no definition of who they are. Thus, it can be argued that to the extent that the Paris Agreement does not define a "developed" or "developing" country, the annexes to the UNFCCC provides a rough definition, or at most, offers a working guide as to which country belongs to either group.

Although the categorization under the annexes may not be exhaustive or acceptable in all questions pertaining to partitioning of parties under the climate change regime, especially in the twenty-first century, they remain part and parcel of the regime. Moreover, if the postulation above that the Agreement in *enhancing* the implementation of the Convention entails the engagement of the provisions of the Convention in their totality, then the annexes being part of the Convention cannot be excised or excluded.

Practically-speaking, whether the annexes will assume greater or diminished role in the interpretation of the distributive provisions of the Paris Agreement will depend on what

[486] See Voigt and Ferreira, above n 44, 65; Maljean-Dubois, above n 44, 154
[487] See, for example, Arts. 4, 5, 7, 9, 10, 11, and 13 of the Paris Agreement.

extent countries in the two groupings deem it relevant to emphasise their status. This will be mostly obtainable with respect to developing countries. However, in real terms, while nothing legally precludes bigger, richer and emerging developing countries from still relying on the Convention's annexes to prove the fact that they are still "developing" countries due to lack of definition of the term by the Paris Agreement, they may not succeed *de facto*. Response to climate change anchored on common responsibility, differentiated responsibility based on capacity and ability to pay, will morally or ethically preclude such relatively well-to-do developing countries from hiding under the UNFCCC annexes to evade responsibility.

More so, the phrase "in the light of different national circumstances" in Article 2 of the Paris Agreement which qualifies the application of the CBDRRC principle can be legitimately employed to foreclose high greenhouse gas emitting and relatively capable developing countries from continuing to 'hide' under the generic grouping of non-Annex I countries. For capacity and resource constrained developing countries, the categorisation of parties in the UNFCCC annexes remains relevant for their survival. As it was before the Paris Agreement for developing countries, so will the annexes continue to play a role even inside the Agreement. It will all be down to the extent a party deems it necessary to rely on the annexes for the purposes of construing relevant provisions of the Agreement.

On a final note, in order to meet the expectation of the international community in addressing climate change, and the need not to undermine the ultimate objective of the UNFCCC as enshrined in Article 2, the Paris Agreement and the UNFCCC must be construed as an organic piece. The Paris Agreement must be viewed as having been negotiated to further, add to, and contribute towards attaining the objectives of the UNFCCC, in the light of developments since 1992. Proceeding from this premise, whatever disagreements that may arise between the parties in the future will not be insurmountable.

Moreover, according to the Vienna Convention on the Law of Treaties, "A treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose".[488] Thus, to the extent that the object and purpose of the Paris Agreement derives from, or intends to enhance the implementation of the UNFCCC, the former must be interpreted in good faith to give effect to the latter. In any event that relying on the ordinary meaning of any provision of the Paris Agreement will occasion implementation hardship on developing countries, contextual construction taking relevant provision(s) of the Convention into account is recommended.

Having undertaken a detailed assessment of the provisions of the Paris Agreement, the effectiveness criterion applied by this thesis in the review of the fundamental provisions of the UNFCCC and the Kyoto Protocol will not be extended to the Paris Agreement by virtue of the fact that the implementation of the Agreement has not commenced. That said, considering some of the points highlighted in the assessment of the Agreement, it remains unclear whether the Agreement has what it takes to move the global society towards attaining the stabilisation objective of the UNFCCC, which the Agreement has now firmly codified in Article 2.

2.6 Conclusion

In this chapter, it was found that the international legal regime governing climate change has not been effective. The chief shortcoming of the regime remains the failure to attain the ultimate objective of the UNFCCC as enshrined in Article 2: "to stabilise greenhouse concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system".

[488] Vienna Convention on the Law of Treaties, Vienna, 23rd May 1969, 1155 U.N.T.S 331, 8 I.L.M 679. Article 31.1.

While the UNFCCC represented a 'rallying' treaty with no binding emission reduction obligation for the parties, the Kyoto Protocol which imposed legally binding emission reduction commitments on developed countries fell short of achieving the objective of the UNFCCC. Although, individually and collectively, developed countries that participated in the first commitment period of Kyoto till the end achieved their targets, the first commitment period produced no impact on reduction of emissions globally. The overall result was that of reasonable increase in global emission of GHGs over the last two decades (IPCC, 2013-14).

Some of the reasons why the Kyoto Protocol has not been effective include non-inclusion of major greenhouse gas emitting countries, for instance, the USA and China; flexibility mechanism bedevilled with significant shortcomings – such as surplus emission allowances and excessive reliance on importation of carbon credits by some countries; and, a flawed enforcement and compliance mechanism.

While the adoption of the Paris Agreement, and the Agreement taking effect late 2016, represent positive developments in the international governance of climate change, whether the Agreement will solve the deficiencies of the Kyoto Protocol remains largely unknown. Although the Agreement broke new grounds in a number of ways, especially the NDC framework applying to all parties in contradistinction with the Kyoto Protocol which applied only to developed countries, the NDC framework may also end up being the weakest point of the Paris Agreement, considering the gap between the national contributions so far submitted by the parties and what is required to attain the temperature goal of the Agreement. This inherent weakness of the NDC has led to a call for further minilateral agreement to be negotiated within the Paris Agreement by major emitters of greenhouse gases.

CHAPTER 3

THE RELATIONSHIPS BETWEEN DEVELOPING AND DEVELOPED COUNTRIES UNDER THE INTERNATIONAL CLIMATE CHANGE REGIME

3.1 Introduction

In the previous chapter, the international legal regime governing climate change was evaluated with a view to establishing its effectiveness in line with the research question underpinning this thesis. It was found that the desire for a better and effective regime governing climate change remains, considering that the Kyoto Protocol has failed to live up to the ultimate greenhouse gas stabilisation objective of the UNFCCC. While certainly the negotiation and adoption of the Paris Agreement is a landmark achievement, it is still not clear what contribution the Agreement will make towards attaining the stabilisation objective of the UNFCCC, which now finds expression in the long term temperature goal of the Agreement. How have the relationships between developing and developed countries in terms of treaty obligations and commitments engendered or impeded the realisation of the stabilisation objective of the UNFCCC and the overall scheme for transfer of technology, financial assistance and sustainable development of developing countries? This question relates to the principle of common but differentiated responsibilities and respective capabilities (CBDRRC) which has formed the main basis for defining the relationships between developing and developed countries under the climate change regime.

In this chapter, a detailed analysis of the relationships between developing and developed countries will be undertaken. The principle of common but differentiated responsibilities and respective capabilities will be the focal point, especially how the principle has evolved over the years in defining the obligations of the parties under the UNFCCC and the Kyoto Protocol on the one hand, and the Paris Agreement on the other hand. The overall aim is to

establish at the end of the chapter to what extent the CBDRRC principle has engendered the attainment of the stabilisation objective of the UNFCCC through provision of technology and financial support by developed countries to developing countries. The reach and implication of CBDRRC as reflected in the Paris Agreement will be critically examined with a view to establishing how future interpretation of the qualifier "in the light of different national circumstances" may impact the relationship between developing and developed countries, especially with respect to technology and financial assistance.

The structure of the chapter will be as follows. The chapter consists of three main sub-chapters. The first sub-chapter will evaluate the origin of the CBDR principle in international environmental law on the one hand, and the climate change regime on the other hand. The second sub-chapter with further three sub-divisions will assess CBDRRC under the climate change regime adopting the following methods: differentiation between developing and developed countries under the UNFCCC and the Kyoto Protocol with respect to central or main treaty obligations, obligations relating to implementation, and obligations on technology and financial assistance; differentiation between developing and developed countries under the Paris Agreement with respect to obligations relating to mitigation, adaptation, capacity-building, finance, technology and transparency; and, the different interpretations of and perspectives on CBDRRC put forward by developing and developed countries in the past as represented by the UNFCCC and the Kyoto Protocol, and the present, as shown during the negotiation of the Paris Agreement. The final part of the chapter is the conclusion sub-chapter.

3.2 Relationships between Developing and Developed Countries in International Environmental Law: An Historical Perspective

In a recent publication, Rafiqul Islam captures the origin of the relationships between developing and developed countries in international law from the prism of North-South divide thus:

> *International law is a product of an evolutionary process . . . An examination of its historic origin, subsequent development, and contemporary manifestation reveals the decisive influence of asymmetric power and economic inequality . . . It is this quest for power and economic clout that has resulted in conflicts of competing interests dubbed variously over history as "uncivilized" and "primitive," "west" and "east," "developing," and "developed," and "clash of civilizations." This division is currently called the North-South divide, in reference to the geostrategic and economic power imbalances, including the digital divide in the context of technology. The "North" is a group of developed, industrialised, and technologically advanced states, often known as the First World, and the "South" represents developing, least developed, and technologically impoverished states, also called the Third World. International relations are littered with conflicts of interest between these two groups. The root of this North-South divide lies in the very creation, nature, features, and orientation of international law from its antiquity to the present context.*[1]

The relationships between developing and developed countries in international environmental law generally, and specifically the climate change regime, are founded on the principle of differentiation as evolved, and later enshrined in Principle 7 of the Rio Declaration.[2] Principle 7 was built on the tripod structure of global partnership, common responsibility and differentiated responsibility. First, it recognises that global partnership is imperative if global environmental problems are to be effectively addressed, underlining the importance of collaboration between developing and developed countries towards attaining the ultimate

[1] M. Rafiqul Islam, "History of the North-South Divide in International Law: Colonial Discourses, Sovereignty, and Self-Determination" in Shawkat Alam, Samudu Atapattu, Carmen G. Gonzalez and Jona Razzaque (eds) *International Environmental Law and the Global South* (Cambridge University Press, New York, 2015), 23.
[2] Principle 7, Rio Declaration on Environment and Development, UN Doc. A/CONF.151/26, reprinted in ILM 874 (1992).

objective of protecting the global environment.[3] Solidarity, considered as a principle of international law,[4] pre-supposes that the international community ought to act in partnership through cooperation to address problems affecting the totality of the community.[5] It has been submitted that "the principle of global partnership in Principle 7 reflects the ecological interdependence of all states, and the necessity for broad North-South cooperation and compromise to find solutions to global environmental problems."[6] Second, Principle 7 postulates that common responsibility needs to take into account different circumstances, resources and capabilities, and contributions to a particular environmental problem.[7]

Principle 7 of the Rio Declaration later metamorphosed into what is now referred to as the principle of common but differentiated responsibilities and respective capabilities, which primarily defines the relationships between developing and developed countries under the UNFCCC,[8] the Kyoto Protocol,[9] and the Paris Agreement.[10]

3.3 The Principle of Common but Differentiated Responsibilities and Respective Capabilities (CBDRRC): An Overview

In international law, differential treatment constitutes derogation from the principle of sovereign equality.[11] The principle of sovereign equality[12] is indifferent to political and other

[3] Samudu Atapattu *Emerging Principles of International Environmental Law* (Transnational Publishers, New York, 2006) at 386

[4] See generally, Article 55 of the UN Charter which refers, among other things, to promotion of economic and social progress among states.

[5] Philippe Cullet *Differential Treatment in International Environmental Law* (Ashgate, England, 2003) at 42.

[6] David Hunter, James Salzman and Durwood Zaelke, *International Environmental Law and Policy* (2nd ed, Foundation Press, New York, 2002) at 403.

[7] See Svitlana Kravchenko, Tareq M.R Chowdhury and Md Jahid Hossain Bhuiyan, "*Principles of International Environmental Law"* in Shawkat Alam, Md Jahid Hossain Bhuiyan, Tareq M.R Chowdhury and Erika J. Techera (eds) *Routledge Handbook of International Environmental Law* (Routledge, Oxford, 2013) at 54.

[8] Art. 3.

[9] Arts. 2 and 3

[10] Art. 2

[11] Lavanya Rajamani, *Differential Treatment in International Environmental Law* (Oxford University Press, Oxford, 2006), 2. See generally James Crawford, "'Sovereignty' as a distinctive attribute of the state" in James Crawford and Martti Koskenniemi (eds.) *The Cambridge Companion to International Law* (Cambridge University Press, Cambridge, 2012), 117-133.

empirical inequalities between states.[13] Every state, big or small, rich or poor, powerful or weak, is deemed to enjoy equal rights and obligations in international law based on the principle of sovereign equality. However, although juridical equality continues to be the cornerstone upon which modern nation-states co-exist, decolonisation brought about structural transformation of the international community.[14] Following decolonisation, the international community became more heterogeneous boasting a handful of newly independent states facing diverse political, economic and social challenges. Resultantly, the need for differentiation became unavoidable in some areas of international law.[15] In the words of Abi-Saab:

"It became, for instance, more and more evident that a strict reliance on the concept of legal equality could not be upheld in all circumstances within a growing community whose members had different economic, political and military capacities. These changes and the ensuing developments reflected to a certain extent the broader forces influencing international law whose function slowly changed from that of ensuring peaceful coexistence of states to ensuring broad-ranging cooperation on a number of social-economic issues".[16]

Thus, international law of cooperation, as opposed to international law of coexistence, affords states the benefit of negotiating for unequal or special treatment owing to political, economic, social, environmental, and other substantive disparities which might result in inequity if not taken into account.[17] In a definitional sense, "differential treatment refers to instances where because of pervasive differences or inequalities among states, the principle of sovereign

[12] Article 2(1) of the UN Charter states that the "Organisation is based on the principle of sovereign equality of all its members".
[13] Rajamani, above n 11, at 2.
[14] Atapattu, above n 3, at 380
[15] Ibid.
[16] Cullet, above n 5, at 59, citing Georges Abi-Saab, "Whither the International Community?" (1998) 9(2) *European Journal of International Law* 248-265.
[17] Ibid.

equality is side-lined to accommodate extraneous factors, such as divergences in levels of economic development and unequal capacity to tackle a given problem."[18]

Equity considerations necessitate differential treatment. Differential treatment applies to dilute the impacts of formal equality of states, considering that states cannot be said to be equal in the actual sense, and that substantive injustices may result if judicial equity is not employed in determining states' rights and obligations on certain global issues.[19] Equity provides answers to questions pertaining to how to approach peculiar situations where the outcome of applying formally established rules of behaviour may culminate in perpetration of injustice owing to characteristic differences in the circumstances of parties.[20] Differential responsibilities, obligations, or treatment conceptually underscores the need for the world's poor and weak not to be placed on the same footing as the wealthy and powerful.

Differential treatment in international law cannot be said to be new.[21] For instance, differentiation can be said to operate in the UN Security Council – the five permanent members of the Security Council are clothed with power of veto which is not applicable to the other members.[22] Some financial institutions adopt weighted voting system which is dependent on the financial strength of a state.[23] In the area of human rights law, the notion of affirmative or positive discrimination offers another example of differentiation in

[18] Ibid, 15.
[19] Ibid, 14.
[20] Ibid.
[21] Christopher D. Stone "Common But Differentiated Responsibilities in International Law" (2004) 98 *American Journal of International Law*, 276, 278, citing examples of differential demands in Article 427 of the Constitution of the International Labour Organisation (ILO) by recognising that "differences of climate, habits and customs, of economic opportunity and industrial tradition, make strict uniformity in the conditions of labour difficult of immediate attainment", and the inclusion by Contracting Parties of the General Agreement on Tariffs and Trade (GATT) in 1965 and 1979 of "provisions to encourage nonreciprocal trade concessions in favour of developing countries".
[22] Article 27(3) of the UN Charter provides that "Decisions of the Security Council on all other matters shall be made by an affirmative vote of nine members including the concurring votes of the permanent members" All other matters as mentioned is taken to mean non-procedural matters. See Atapattu, above n 10, at 381.
[23] Cullet, above n 5, at 74. See also Atapattu, above n 3, at 381.

international law.[24] Affirmative action is employed to redress past injustices and to give equal treatment and opportunity to every player within an area of interest. Through the instrumentality of affirmative action, individuals or groups who have been subjected to discrimination or other forms of injustices have been accorded special treatment and protection under the law.[25] Women, individuals with disability, indigenous or ethnic groups may be accorded special treatments which are not deemed to be inconsistent with formal principle of equality.[26]

With respect to the environment, the Stockholm Declaration led the way by recognising the need for "taking into account the circumstances and particular requirements of developing countries and any costs which may emanate from their incorporating environmental safeguards into their development planning and the need for making available to them, upon their request, additional international technical and financial assistance for this purpose".[27]

Practically-speaking, the formal evolution of the principle of common but differentiated responsibility in international environmental law can be traced to the Rio Declaration which provides that:

"States shall cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem. In view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility they bear in

[24] See generally, Thomas Sowell, *Affirmative Action Around the World: An Empirical* Study (Yale University Press, New Haven, 2003); J. Edward Kellough, *Understanding Affirmative Action: Politics, Discrimination, and the Search for Justice* (Georgetown University Press, Washington, D.C, 2006).
[25] Atapattu, above n 3, at 382
[26] See Atapattu, above n 3, at 383; Cullet, above n 5, at 34, for detailed instances of affirmative action in practical terms.

[27] Stockholm Declaration, Principle 12. See also the United Nations Convention on the Law of the Sea which accords differential treatment to developing countries, especially under Arts. 61.3, 62.3, 69.4, 70.5, 82, 140, 144, 148, 150 and 152.

the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command."[28]

In addition to the call for global partnership, Principle 7 also stipulates that while protection of the global environment is the common responsibility of all states, states have differentiated responsibilities in relation to the means of attaining set objectives to that effect. This represents a deviation from universalism.[29] Resultantly, developing countries must be assigned different and less onerous responsibilities considering their special circumstances and developmental needs, while developed countries are to bear greater burdens owing to their contribution to global environmental problems, and their comparative advantage in the areas of finance and technology.[30] It has been rightly observed that while "CBDR as articulated in Rio Principle 7 is linked directly to the contributions to global environmental harm... insofar as the last clause in Rio Principle 7 refers to finance and technology, it anticipates the concept of capability that finds expression in the UNFCCC..."[31]

It should be noted that controversy surrounded the negotiation of Principle 7,[32] especially the proposal by developing countries that developed countries should accept legal responsibility for past environmental harm on the basis of the Principle.[33] However, the proposal by

[28] Rio Declaration on Environment and Development, Principle 7. Prior to the Rio Declaration, the Ozone regime implicitly recognised and applied the CBDR principle. While the Vienna Convention for the Protection of the Ozone Layer recognised the need to take into account the circumstances and particular requirements of developing countries in its Preamble, the Montreal Protocol contains elaborate provisions giving effect to the CBDR principle in Art. 5, although no express mention of the principle is contained in the Protocol. See the Vienna Convention for the Protection of the Ozone Layer, 26 ILM 1529 (1985), 1513 UNTS 293, opened for signature 22 March 1985, entered into force 22 September 1988; Montreal Protocol on Substances that Deplete the Ozone Layer, 26 ILM 1541 (1987), 15 UNTS 3, opened for signature 16 September 1987, entered into force 1 January 1989.

[29] Duncan French, Developing States and International Environmental Law (2000) 49 *International and Comparative Law Quarterly*, 35-60, 35

[30] Atapattu, above n 3, at 397.

[31] Harald Winkler and Lavanya Rajamani, "CBDR&RC in a Regime Applicable to All" (2014) 14(1) *Climate Policy*, 102-121, 104.

[32] French, above n 29, at 36-38

[33] For instance, the Principle 7 text proposed by the G77 Group, which was rejected by developed countries, read: "The major cause of the continuing deterioration of the global environment is the unsustainable patterns of production and consumption, particularly in developed countries . . . In view of their main historical and current responsibility for global environmental degradation and their capability to address this common

developing countries was vehemently opposed by developed countries leading to complete omission of legal responsibility for past environmental harm in the text of Principle 7. To further reiterate its stand on the issue, the United States while signing the Rio Declaration attached an interpretative statement to the effect that:

"The United States understands and accepts that Principle 7 highlights the special leadership role of the developed countries, based on our industrial development, our experience with environmental protection policies and actions, and our wealth, technical expertise and capabilities. The United States does not accept any interpretation of Principle 7 that would imply a recognition or acceptance by the United States of any international obligations or liabilities, or any diminution in the responsibilities of developing countries" [34]

Nonetheless, it has been pointed out that it is difficult to reconcile the United States' interpretative statement with the text of Principle 7 as adopted, considering that the only possible construction of the reference to "common but differentiated responsibilities" in the text implies that developing countries have different, and to an extent, diminished obligations compared to developed countries.[35] Corroboratively, the United Nations Framework Convention on Climate Change, to which the United States is a party, in applying the CBDRRC principle granted developing countries diminished or less onerous obligations while developed countries were given significantly more comprehensive obligation.[36] Therefore, it has been concluded that it "seems somewhat strange that the US would object to a principle that it itself endorsed in the Climate Change Convention".[37]

While it remains arguable whether Principle 7 is a legal or a guiding principle, little doubt exists as to its legal implications considering that a number of environmental treaties have

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concern, developed countries shall provide adequate, new and additional financial resources and environmentally sound technologies on preferential and concessional terms to developing countries to enable them to achieve sustainable development". See UN Doc. A/CONF.151/PCfWG.IIL.20/REV.1 (1992): (Proposal submitted on behalf of the Group of 77).

[34] UN Doc. A/CONF.151/26 (Vol.IV) 1992, 20.

[35] French, above n 29, at 37.

[36] Ibid.

[37] Ibid.

incorporated differentiated responsibilities in their operative provisions.[38] Moreover, it is a truism that the two elements of differentiation in Principle 7 (responsibility for causing environmental harm and the capacity to address a given environmental problem), form the philosophical basis for international cooperation in the areas of environment and development.[39] Thus, it has been stated that "it is a basis that allows the characterization of the transfer of resources from developed to developing countries as "obligation" rather than as "aid" or assistance and provides a theoretical basis to justify different environmental standards, in view of the different capacities of States and their different contributions to environmental degradation".[40]

Reflecting on the importance of adoption of Principle 7 in the Rio Declaration, John Dernbach noted that:

"Recognition of differentiated responsibilities was at the political heart of the UNCED synthesis because developing countries were unwilling to have global environmental problems impede their development. Differentiated responsibilities also reflect equitable norms concerning the use of resources and the treatment of nations with varying capabilities" [41]

Following the Rio Declaration, the first multilateral environmental treaty to explicitly incorporate the CBDRRC principle is the UNFCCC by stipulating that:

"Acknowledging that the global nature of climate change calls for the widest possible cooperation by all countries and their participation in an effective and appropriate international response, in accordance with their common but differentiated responsibilities and respective capabilities and their social and economic conditions . . ."[42]

[38] Atapattu, above n 3, 387
[39] Hunter*, et al,* above n 6, at 403
[40] Ibid.
[41] John Dernbach, "Sustainable Development as a Framework for National Governance (1998) 49 (1) *Case Western Law Review*, 1, 43
[42] UNFCCC, Preamble. It should be noted that the Paris Agreement has added a qualifier to the CBDR principle: "in the light of different national circumstances". See Paris Agreement, Preamble and Article 2(2). For views on

Furthermore, the UNFCCC provides that:

"Parties should protect the climate for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibility and respective capabilities; and that accordingly, developed country Parties should take the lead in combating climate change and the adverse effects thereof".[43]

It can be discerned that under the climate change regime, the CBDRRC principle is composed of two main elements: common responsibility and differentiated responsibility. First, the concept of 'common responsibility' emanates from the "notions of 'common concern', 'common heritage of mankind' and 'province of mankind".[44] 'Common responsibility' finds expression in the principle of cooperation, which enjoins states, in the spirit of solidarity, to cooperate in deserving situations in order to prevent or alleviate environmental harm.[45]

Ecological and economic interdependence between states characterised by divergent political, economic, technological and social conditions have made global environmental issues subjects of international concern, justifying concerted efforts of all the states comprising the international community.[46] Thus, under the international climate change regime, an acknowledged global environmental problem, it is the common responsibility of states to cooperate in mitigation and adaptation activities in order to avoid catastrophic climate change. Second, the concept of 'differentiated responsibility' takes into account differing

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the effects of this new element, see Christina Voigt and Felipe Ferreira, "Differentiation in the Paris Agreement" (2016) 6 *Climate Law* 58, at 65; Sandrine Maljean-Dubois "The Paris Agreement: A New Step in the Gradual Evolution of Differential Treatment in the Climate Regime" (2016) 25 (2) *RECIEL* 151, 153; Joyeeta Gupta, "The Paris Climate Change Agreement: India and China" 2016 6 *Climate Law*, 171, 178; Lavanya Rajamani, "Ambition and Differentiation in the 2015 Paris Agreement: Interpretative Possibilities and Underlying Politics" (2016) 65 (2) *International and Comparative Law Quarterly*, 493 - 514. This new aspect of the CBDR principle as reflected in the Paris Agreement will be explored in detail subsequently.

[43] UNFCCC, Art. 3.1

[44] Rajamani, above n 11, at 134.

[45] Ibid.

[46] Edith B. Weiss, "Environmental Equity: The Imperative for the Twenty-first Century" in Winfried Lang (ed.), *Sustainable Development and International Law* (Graham and Trotman /Martinus Nijhoff, London; Boston, 1995), 17.

contributions of states to a particular environmental problem and differing capacities of states to address the problem.[47]

Differentiated responsibility underlines the need for variation in standards applicable to parties to a treaty based on a number of considerations, ranging from historical contribution to a particular environmental problem, developmental needs, special needs and vulnerabilities.[48] Thus, differentiated responsibility operates to balance rights and duties between developing and developed countries in order to attain the objective of substantive equality in the implementation of MEAs. Under the climate change regime, developed countries are to assume leadership in combating climate change due to their historical contributions to atmospheric concentration of greenhouse gases and their comparative economic and technological advantage over developing countries.[49] Resultantly, developed countries are to transfer technology and render financial assistance to developing countries to enable the latter to effectively undertake climate change mitigation and adaptation activities.[50]

Fundamentally, in relation to climate change, two philosophical notions of equity underscore the CBDRRC principle.[51] The first notion as articulated by Henry Shue is summarised thus:

when a Party has in the past taken unfair advantage of others by imposing costs upon them without their consent, those who have been unilaterally put at a disadvantage are entitled to demand that in the future the

[47] Lavanya Rajamani, "The Principle of Common But Differentiated Responsibility and the Balance of Commitments under the Climate Regime" (2000) 9 (2) *Review of European Community & International Environmental Law*, 120 at 121.
[48] Philippe Sands, Jacqueline Peel, Adriana Fabra and Ruth MacKenzie *Principles of International Environmental Law* (3rd ed, Cambridge University Press, Cambridge, 2012), 235.
[49] UNFCCC, Preamble and Art. 3.1; Paris Agreement, Preamble.
[50] UNFCCC, Art. 4.3, 4.5; Kyoto Protocol, Art 10(c) and 11.2 (a) and (b); Paris Agreement, Arts. 9 and 10, Decision 1/CP.21, paras. 53 and 54.
[51] Rajamani, above n 47, at 122. See also Atapattu, above n 3, 390-392.

offending party shoulder burdens that are unequal at least to the extent of the unfair advantage previously taken, in order to restore equality.[52]

To further expatiate on this notion, Shue rationalises that:

if whoever makes a mess receives the benefits but does not pay the costs, not only does he have no incentive to avoid making as many messes as he likes, but he is also unfair to whoever does pay the costs. He is inflicting costs upon other people, contrary to their interests and presumably without their consent. By making himself better off in ways that make others worse off he is creating an expanding inequality.[53]

This notion of equity derives from considerations relating to historical responsibility of developed countries for the accumulation of greenhouse gases in the global atmosphere that is responsible for climate change. Thus, if developed countries benefited disproportionately from economic industrialisation leading to atmospheric concentration of greenhouse gases while foisting costs and damage on other countries, then equity would demand that those who derived most benefits from the conduct culminating in a problem should bear greater burden in solving the problem. The equity in CBDRRC takes into account this measure of historical responsibility.[54] Moreover, this aspect of CBDRRC also mirrors the polluter-pays principle.[55]

The second notion of equity applicable to CBDRRC is the one enunciated by Judge Jimenez de Arechaga in the *Tunisia-Libya* case:

To resort to equity means, in effect, to appreciate and balance the relevant circumstances of the case, so as to render justice, not through the rigid application of general rules and principles and of formal legal concepts, but through an adaptation and adjustment of such principles, rules and concepts to the facts, realities and circumstances of each case. In other words, the judicial application of equitable principles means that a court

[52] Henry Shue, "Global Environment and International Inequality" (1999) 75(3) *International Affairs*, 531
[53] Ibid, 533.
[54] Rajamani, above n 47, at 123.
[55] Ibid, 122. See also The Rio Declaration on Environment and Development, Principle 16 ; Kravchenko, above n 7, at 50-53; Phillip Cullet, "Equity and Flexibility Mechanisms in the Climate Change Regime: Conceptual and Practical Issues" (1999) 8(2) *Review of European Comparative & International Environmental Law*, 168, 169; Peter Sands, "International Law in the Field of Sustainable Development: Emerging Legal Principles" in Winfried Lang (ed.), *Sustainable Development and International Law* (Graham and Trotman /Martinus Nijhoff, London; Boston, 1995), 53, 66.

should render justice in the concrete case, by means of a decision shaped by and adjusted to the relevant 'factual matrix' of that case. All the relevant circumstances are to be considered and balanced; they are to be thrown together into the crucible and their interaction will yield the correct equitable solution of each individual case.[56]

This notion of equity demands that the special circumstances of developing countries, the inequality in the balance of power among states comprising the international community, disparities in terms of economic and technological development, and the inherent differing capacities of states to deal with the climate change problem, be given due consideration. Thus, this second notion of equity underscores the 'respective capability' aspect of CBDRRC in the context of climate change regime.[57]

Although the overall effect of CBDRRC in the application and implementation of multilateral environmental treaties, especially from the standpoint of developing countries participation, is quite discernible,[58] the legal status of CBDRRC in international law remains unclear.[59] The question then is: Is the CBDRRC a principle of customary international law? According to the Statute of the International Court of Justice, for a concept or practice to be admitted as a customary international law, it must satisfy two conditions – state practice and *opinio juris*.[60] For the these conditions to be satisfied, the principle or concept aspiring to be recognised as a

[56] 1983 I.C.J 106, 109. See also the separate opinion of Judge Weeramantry in the *Maritime Delimitation in the Area Between Greenland and Jan Mayen (Denmark v. Norway) Case,* 1993 I.C.J 38, where the Judge poured over equitable principles, equitable procedures, equitable methods, equitable results, and the different origins of the principle of equity. Weeramantry discussed various means through which equity operates – through balancing of interests of parties; through an equitable interpretation of a rule of law or of a treaty or set of facts; through the choice of an equitable principle; through the use of judicial discretion; through filling in gaps and interstices in the law; through following equitable procedures; through the application of equitable principles already embedded in the law; and through its use in a negative fashion to test a result.

[57] Rajamani, above n 47, at 123.

[58] Atapattu, above n 3, at 416.

[59] Rajamani, above n 11, 158-162; Stone, above n 21, at 281; Daniel Bodansky, "Customary (and Not so Customary International Environmental Law" (1995-1996) 3 *Indiana Journal of Global Studies*, 105-119; Sands, above n 48, 384; Thomas Deleuil, "The Common but Differentiated Responsibilities Principle: Changes in Continuity after Durban Conference of Parties" (2012) 21 *Review of European Community and International Environmental Law*, 271 – 281; Patricia W Birnie, Alan E. Boyle, and Catherine Redgwell, *International Law and the Environment* (3rd ed., Oxford University Press, Oxford; New York, 2009) 132.

[60] Statute of the I.C.J, Art 38. See also the *Case Concerning Military and Paramilitary Activities in and Against Nicaragua (Nicaragua v. United States of America)* 1986 I.C.J Rep 14, 108 109.

customary international law must: be of a fundamentally norm-creating character to be deemed as forming the basis of a general rule of law; be widespread and representative of participation in the convention or state practice, including the participation of states whose interests were directly affected; be extensive and virtually uniform, and deemed as a practice required by law.[61]

Thus, has there been sufficient diffusion of state practice with respect to CBDRRC to warrant the elevation of the principle as a customary international law principle, with the implication that even states that have not ratified a treaty incorporating CBDRRC would be obligated to observe it? In 2006, Atapattu concluded that "state practice in relation to the common but differentiated responsibility principle has been anything but uniform or widespread"; noting then that "the general consensus seems to be that the practice of differentiating responsibilities has not, despite occasional claims by its proponents, been elevated to the status of a customary principle of international law".[62] It is submitted that eleven years after the preceding assertion by Atapattu, the reach and implications of CBDRRC remain hotly contested between developing and developed countries to be anywhere near garnering the level of widespread or uniform practice among states necessary to elevate the principle to a customary international law. For instance, issues pertaining to incorporation and application of CBDRRC nearly stalled the negotiation of the Paris Agreement in 2015.[63]

The foregoing conclusion notwithstanding, CBDRRC has proven indispensable in the international regime governing climate change as long as delineation of responsibilities

[61] *North Sea Continental Shelf Cases (Federal Republic of Germany/Denmark, Federal Republic of Germany/Netherlands),* 1969 I.C.J Rep 3.
[62] Atapattu, above n 3, at 426.
[63] Voigt and Ferreira, above n 42, at 62; TWN,' Differentiation under the Paris Agreement – a tough fight', *Paris News Update*, no. 23, Third World Network (TWN), Penang, December 2015; Rajamani, above n 42, at 507,508. For a pre-negotiation analysis of what should guide incorporation of equity and differentiation in the Paris Agreement, see Christina Voigt, "Equity in the 2015 Climate Agreement: Lessons from Differential Treatment in Multilateral Environment Agreements" (2014) 4 Climate Law, 50 – 69; Winkler and Rajamani, above n 31, 102 – 121.

between developing and developed countries is concerned. According to Rajamani, referring specifically to the climate change regime, ". . . Even though this principle [CBDRRC] does not assume the character of a legal obligation in itself, it is of sufficient legal weight to form the legal and philosophical basis for the interpretation of existing obligations and the elaboration of future international legal obligations within the context of the existing instruments in the ongoing regime-building process."[64]

3.3.1 CBDRRC in the International Climate Change Regime

Under the international climate change regime, differential treatment can be applied through three broad means:

- Differentiation between developing and developed countries with respect to the main or central obligations of an agreement or treaty, for instance, greenhouse gas mitigation targets;
- Differentiation between developing and developed countries with regard to implementation; and,
- Differentiation with respect to provision of financial and technological assistance.[65]

At this juncture, common but differentiated responsibilities under the climate change regime will be evaluated based on the three broad categories listed above. First, I will examine the reflection and operationalization of CBDRRC under the UNFCCC and the Kyoto Protocol. Second, the CBDRRC provisions of the Paris Agreement will be identified and evaluated.

[64] Rajamani, above n 47, at 124.
[65] Rajamani, above n 11, at 93 – 128; 191 – 215.

3.3.2 Differentiation between Developing and Developed Countries under the UNFCCC and the Kyoto Protocol

Differentiation with respect to central obligations of a treaty is not a ubiquitous occurrence.[66] 'Central obligation' means obligation that is crucial to the realisation of the primary objective of a treaty.[67] The UNFCCC states its ultimate objective as the "stabilization of greenhouse gas concentration in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system".[68] Thus, it can rightly be said that mitigation of greenhouse gases is one of the main obligations of parties under the international climate change regime. Under the UNFCCC and the Kyoto Protocol, greenhouse gas mitigation commitments applied exclusively to developed countries.[69]

The starting point on differentiation between developing and developed countries with respect to central obligation under the UNFCCC is Article 4.2(a) and (b). Article 4.2(a) provides that each developed country Party listed in Annex I "...shall adopt national policies and take corresponding measures on the mitigation of climate change, by limiting its anthropogenic emissions of greenhouse gases and protecting and enhancing its greenhouse gas sinks and reservoir... 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..." Additionally, Article 4.2(b) provides that each developed country shall communicate within six months of entry into force of the Convention detailed information on policies and measures to limit emissions with the aim of returning individually or jointly by 2000, to the 1990 levels of anthropogenic emissions of

[66] Ibid, 94.
[67] Ibid.
[68] Art. 2. See generally, Daniel Bodansky, "The United Nations Framework Convention on Climate Change: A Commentary" (1993) 18 *Yale Journal of International Law*, 451 – 558, 499.
[69] UNFCCC, Art 4.2(a); Kyoto Protocol Art. 3. See Rajamani, above n 11, at 192

carbon dioxide and other greenhouse gases. There is no corresponding central mitigation obligation for developing countries.[70]

However, it has been observed that "while the obligation to undertake policies and measures and to communicate information is couched in an obligatory language (Parties 'shall'), the obligation to mitigate emissions within the context of a framework treaty is characterized as an 'aim' and therefore has been termed a 'quasi-target' and quasi-timetable'".[71] Following from relevant provisions of the UNFCCC, the central greenhouse gas mitigation obligations of the Kyoto Protocol apply exclusively to developed countries as well. The overarching mitigation obligation under the Kyoto Protocol is provided for in Article 3 to the effect that developed countries listed in Annex 1 of the UNFCCC "shall individually or jointly ensure that their aggregate anthropogenic carbon dioxide equivalent emissions of the greenhouse gases listed in Annex A do not exceed their assigned amounts, calculated pursuant to their quantified emission limitation and reduction commitments inscribed in Annex B..., with a view to reducing their overall emissions of such gases by at least 5 per cent below 1990 levels in the commitment period 2008 to 2012".

Furthermore, the Protocol provides that each developed country is required to have achieved demonstrable progress towards achieving its commitment by 2005.[72] The operative language employed in Articles 3.1 and 3.2 are deemed obligatory (Parties 'shall').[73] This commitment set out in Article 3 is usually referred to as the first commitment period of the Kyoto Protocol, from which developing countries were completely excluded.

The provisions of the Kyoto Protocol centred mostly on the obligations of developed countries, except for mentioning of developing countries with respect to the clean

[70] See UNFCCC, Art. 4.2(a) and (b).
[71] Rajamani, above n 11, at 192, quoting Bodansky above n 68, 516.
[72] Art. 3.2
[73] Rajamani, above n 11, at 192 – 193.

development mechanism (CDM).[74] As an illustration, the Kyoto Protocol provides that: "commitments for subsequent periods for Parties included in Annex I shall be established in amendments to Annex B to this Protocol...";[75] "each Party included in Annex I shall have in place, no later than one year prior to the start of the first commitment period, a national system for the estimation of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol...";[76] "each party included in Annex I shall incorporate in its annual inventory of anthropogenic emissions by sources and removal by sinks of greenhouse gases not controlled by the Montreal Protocol..., the necessary supplementary information for the purposes of ensuring compliance with Article 3...";[77] and that "the information submitted under Article 7 by each Party included in Annex I shall be reviewed by expert review teams..."[78]

It can be discerned that the preceding highlighted provisions of the Kyoto Protocol are couched in obligatory language (Each Party 'shall'). It is also noteworthy that the obligations created by these provisions apply only to developed countries, in reflection of the differentiation principle of the UNFCCC[79] as re-echoed in the Berlin Mandate,[80] which set the stage for the negotiation of the Kyoto Protocol.

Furthermore, two out of the three flexibility mechanisms created by the Kyoto Protocol apply exclusively to developed countries. The flexibility mechanisms of the Kyoto Protocol were conceived to assist developed countries meet their mitigation commitments in a cost-effective

[74] Art 12. See Rajamani, above n 11, at 193.
[75] Art. 3.9.
[76] Art. 5.
[77] Arts. 7.1; 7.2.
[78] Art. 8. See Rajamani, above n 11, at 193.
[79] Art. 3.1.
[80] United Nations Framework Convention on Climate Change, Report of the Conference of the Parties on its First Session, held at Berlin from 28 March to 7 April 1995, FCCC/CP/1995/7/Add.1, Decision 1(a)/CP.1.

manner.[81] With respect to joint implementation, the Kyoto Protocol provides that in order to meet its commitments under Article 3, "any Party included in Annex I may transfer to, or acquire from, any other such Party emission reduction units resulting from projects aimed at reducing anthropogenic emissions by sources or enhancing anthropogenic removals by sinks of greenhouse gases in any sector of the economy...[82] With regard to emissions trading, the Kyoto Protocol provides that "...the Parties included in Annex B may participate in emissions trading for the purposes of fulfilling their commitments under Article 3...[83] Kyoto Protocol also created the CDM through which developed countries may further meet their mitigation commitments, and assist developing countries achieve sustainable development and contribute towards the realization of the ultimate objective of the Convention.[84]

It has been submitted that 'the sphere of responsibility' for developing countries under the CDM exists within the realm of the UNFCCC, considering that sustainable development is a commitment assumed by developing countries under the UNFCCC.[85] Thus, the involvement of developing countries in the CDM, coupled with whatever greenhouse gas mitigation that may result from a CDM project, counts towards their UNFCCC commitment, whereas the participation of developed countries in the CDM represents a furtherance of their Kyoto Protocol targets.[86]

From the foregoing it is deducible that differentiation with respect to the central obligation of mitigating greenhouse gases under the UNFCCC and the Kyoto Protocol is structured to favour developing countries as a reflection of the acknowledgement in 1992 that the largest share of historical and current emissions originated in developed countries, that per capita

[81] Rajamani, above n 11, at 193. See generally, David Freestone and Charlotte Streck (eds.) *Legal Aspects of Implementing the Kyoto Protocol Mechanisms* (Oxford University Press, Oxford, 2005).
[82] Art. 6.
[83] Art. 17. Parties listed in Annex B of the Kyoto Protocol are developed countries and countries undergoing the process of transition to a market economy.
[84] Art. 12.
[85] Rajamani, above n 11, at 193 – 194.
[86] Ibid.

emissions in developing countries remained relatively low and that emissions in developing countries will increase to meet their social and development needs.[87] These considerations informed the incorporation of CBDRRC which takes into account the global partnership needed to address the climate change problem as a common concern of humankind, responsibility for the concentration of greenhouse gases in the global atmosphere, and the respective capabilities of states to take measures and adopt policies necessary to address the problem.[88]

Differentiation between developing and developed countries with respect to the implementation of the provisions of the UNFCCC and the Kyoto Protocol will be discussed from the perspectives of provisions in the preamble, functional or operational provisions, and provisions permitting flexibility.[89]

The Preamble to the UNFCCC is replete with provisions underlining the need for differentiation between developing and developed countries with respect to the implementation of the Convention. It sets out by "noting that the largest share of historical and current global emissions has originated in developed countries...";[90] and then proceeded to acknowledge "that the global nature of climate change calls for the widest possible cooperation by all countries... in accordance with their common but differentiated responsibilities and respective capabilities and their social and economic conditions...";[91] while further recognizing "the need for developed countries to take immediate action ... as a first step towards comprehensive response strategies at the global, national and regional levels...[92] Based on the preceding preambular provisions of the UNFCCC, it has been

[87] UNFCCC Preamble, para. 3.
[88] UNFCCC Preamble, para. 6 and Art. 3.
[89] See Rajamani, above n 11, at 194 – 204.
[90] UNFCCC Preamble, para. 3
[91] Ibid, para. 6.
[92] Ibid, para. 18.

correctly observed that the Preamble "establishes a certain degree of culpability in industrial countries for the current GHG problem", but that the "culpability element appears independent of any corresponding responsibility".[93]

The preambular and operational provisions of the UNFCCC recognising CBDRRC mirror, to an extent, the understanding between developing and developed countries following the proposal by the former to include the 'main responsibility principle' which formed part of the General Assembly Resolution 44/228 summoning the UNCED,[94] largely founded on the polluter pays principle - "which posits that since the climate change problem results primarily from the profligate lifestyles of industrial countries, they should bear the main responsibility for combating it".[95] However, the references to CBDRRC in the Preamble of the UNFCCC lack information as to whether differentiation between developing and developed countries is based on capability or culpability, or both.[96] Of course, this vagueness as to the meaning, content and reach of CBDRRC as it pertains to the relationships between developing and developed countries remains the *Achilles' heel* of the international instruments governing climate change. This explains why issues relating to incorporation and application of CBDRRC has always been, and will continue to be a flashpoint between developing and developed countries.

Furthermore, the Preamble to the UNFCCC accords special consideration to developing countries in reflection of the CBDRRC principle. It notes then "that per capita emissions in developing countries are still relatively low and that the share of global emissions originating in developing countries will grow to meet their social and economic development needs".[97]

[93] Rajamani, above n 11, at 194.
[94] United Nations General Assembly A/RES/44/228, United Nations Conference on Environment and Development, 85th Plenary Meeting, 22 December 1989. See also UNFCCC Preamble, Para. 11.
[95] Rajamani, above n 11, at 194-195.
[96] Ibid, 195.
[97] UNFCCC Preamble, para. 3.

Rajamani while noting that the mention of 'per capita emissions' in the UNFCCC Preamble can be traced to the proposal by India that state parties to the UNFCCC should consider a framework for convergence of emissions at a common per capita level, observed that:

The reference to emissions growth was originally proposed as a principle and couched in mandatory terms. Nevertheless, the acknowledgement that a per capita vision has some place in the galaxy of possible ideological visions to tackle the climate change problem is significant. The acknowledgement that emissions from developing countries will grow is also significant. In the context of the ultimate objective of the FCCC, stabilization of greenhouse gas concentrations in the atmosphere, such an acknowledgement can be interpreted as a recognition, broadly, of what has come to be known as the 'contraction and convergence' vision. This vision envisages as a first step convergence over time in per capita GHG emissions or entitlements, such that emissions from developing countries will grow, while those from industrial countries will decrease. After convergence, all countries would contract their GHG emissions equally until the necessary contraction limit is reached. No inflation of national budgets in response to rising populations would be permitted after an agreed set date.[98]

The Preamble further acknowledges that "recognizing that States should enact effective environmental legislation, that environmental standards, management objectives and priorities should reflect the environmental and developmental context to which they apply, and that standards applied by some countries may be inappropriate and of unwarranted economic and social cost to other countries, *in particular developing countries*".[99] Particularly, this preambular acknowledgement derives from the inherent wide gap that exists between environmental standards and administration in developing and developed countries. While the former continues to contend with social and economic development priorities vis-à-vis policies on the protection of the environment, the latter boasts better capacity and

[98] Rajamani, above n 11, at 195. 'Contraction and Convergence' concept was developed originally by the Global Commons Institute (GCI). The GCI termed the concept 'a well tempered climate accord relating to compliance with the objectives and principles of the UNFCCC'. See Contraction & Convergence (C & C): Climate Truth & Reconciliation, Global Commons Institute, London, United Kingdom. Online at: <http://www.gci.org.uk/>

[99] UNFCCC Preamble, para 10 (emphasis added).

resources to undertake policies on environmental management and protection more effectively.

The foregoing position on capacity to effectively undertake environmental management was valid in 1992 when the UNFCCC was adopted, as well as today, hence the acknowledgement in the Preamble to the Paris Agreement that: "…Parties may be affected not only by climate change, but also by the impacts of the measures taken in response to it".[100] The UNFCCC Preamble also recognises the crucial nature of economic development and poverty eradication to developing countries by stating "that responses to climate change should be coordinated with social and economic development in an integrated manner with a view to avoiding adverse impacts on the latter, *taking into full account the legitimate priority needs of developing countries for the achievement of sustained economic growth and the eradication of poverty*.[101]

Without doubt, international environmental law and regulation cannot be said to be restricted to just the protection of the global environment, it also traverses issues pertaining to economic development and the distribution of wealth, from a global perspective. Finding the necessary balance between protection of the environment and economic development has given rise to a "major fault-line in international environmental lawmaking [which] separates the North (the developed world) from the South (the developing world)".[102] Thus, the array of conflicts precipitating this fault-line can be termed environmental as well as economic.[103]

It should also be noted that the UNFCCC Preamble does not specifically categorise developing countries as one group devoid of differences.[104] It recognises the inherent

[100] Preamble, para. 7.
[101] Preamble, para. 21 (emphasis added)
[102] Mark A. Drumbl, "Northern Economic Obligation, Southern Moral Entitlement, and International Environmental Governance" (2002) 27(2) *Columbia Journal of Environmental Law*, 363-382, 363
[103] Ibid.
[104] See Rajamani, above n 11, at 195-196.

characteristics differentiating developing countries, ranging from "low-lying and other small island countries, countries with low-lying coastal, arid and semi-arid areas or areas liable to floods, drought and desertification, developing countries with fragile mountainous ecosystems that are particularly vulnerable to the adverse effects of climate change";[105] and "developing countries whose economies are particularly dependent on fossil fuel production, use and exportation…"[106]

Differentiation between developing and developed countries with respect to the implementation of the UNFCCC and the Kyoto Protocol is also reflected in the functional or operational provisions. A handful of main provisions in the UNFCCC refer to the special needs and specific circumstances of developing countries. However, it has been observed that of all provisions, "the provision containing the CBDRRC principle and highlighting industrial countries' leadership, has been the most controversial".[107]

The UNFCCC adumbrates its guiding principles under Article 3. It sets out by stating that "The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities";[108] then it tasks developed countries to "take the lead in combating climate change and the adverse effects thereof";[109] and then proceeded to request that "The specific needs and special circumstances of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change, and of those Parties, especially developing country Parties, that would have to bear a disproportionate or abnormal burden under the Convention, should be given full

[105] Preamble, para. 19.
[106] Ibid, para. 20.
[107] Rajamani, above n 11, at 196.
[108] Art. 3
[109] Ibid.

consideration".[110] The controversy generated by the wording and content of Article 3 during the negotiation of the UNFCCC and how developed countries' delegation master-minded the watering down of the provisions has been captured thus:

Most industrial countries opposed the inclusion of Article 3 as it could, as an operational rather than a preambular provision, introduce a note of uncertainty into the context of the FCCC obligations. The US delegation, concerned that this Article could create specific commitments beyond those set out in Article 4, introduced various amendments to circumscribe the legal potential of Article 3: a chapeau was added, specifying that the principles were to 'guide' the parties in their actions under the FCCC; the term 'states' was replaced by 'Parties'; and the term 'inter alia' was added to the chapeau to indicate that the Parties may take into account principles other than those listed in Article 3 in implementing the FCCC… These three modifications were intended to forestall arguments that the principles in Article 3 are part of customary international law and binds states generally. Instead, the principles clearly apply only to the parties and only in relation to the FCCC, not as general law. The United States also removed any reference to the term 'principles' in the FCCC. As a result, the term appears only in the title of Article 3 and, at the suggestion of the United States, a footnote was added stating that '[t]itles of articles are included solely to assist the reader' [111]

The resulting effect of the preceding quoted paragraph is that the concepts of "common but differentiated responsibilities and respective capabilities" and "developed countries leadership" bear discretionary or permissive tones, rather than a prescriptive one, and can only be construed in the context of parties' obligations under the UNFCCC.[112] This notwithstanding, it has been persuasively asserted that:

While these notions are neither legally binding nor indeed, as some claim, customary international law, they still constitute a significant force within the climate regime… The notion of common but differentiated responsibilities has significant legal gravitas. It is the context within which international environmental law functions, such that this principle, inter alia, forms the bedrock of the burden-sharing arrangements crafted in different environmental treaties. And it is part of the conceptual apparatus of the climate regime such that it

[110] Art. 3.2.
[111] Rajamani, above n 11, 196-197. See also Bodansky above n 68, at 502.
[112] Ibid, 197.

forms the basis for the interpretation of existing obligations and the elaboration of future international legal obligations within the regime. It is in short, the overarching principle guiding the future development of the climate regime.[113]

The UNFCCC and the Kyoto Protocol further contain provisions on differentiation deriving mostly from the lack of or, less capability of developing countries to respond to climate change,[114] leading to provisions requiring developed countries to render financial assistance,[115] and transfer technology[116] to developing countries, assist in building capacity in developing countries through education and training, strengthening of national institutions and training of experts,[117] and provision of assistance by the UNFCCC Secretariat to developing countries in the area of compilation and communication of information.[118] Taking into account the special needs and situations of some developing countries, the UNFCCC also provides that "…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…";[119] and that "parties shall take full account of the specific needs and special situations of the least developed countries in their actions with regard to funding and transfer of technology".[120]

Following the preceding provisions of the UNFCCC with respect to the developing countries of interest, the Kyoto Protocol provides that developed countries listed in Annex I "shall strive to implement the commitments… in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties, especially those

[113] Ibid.
[114] See generally, Rajamani, above n 11, at 197.
[115] UNFCCC, Arts. 4.3 & 11.5.
[116] Ibid, Art. 4.5.
[117] Ibid, Arts. 5(c) and 6(b)(ii)
[118] Ibid, Art. 8.2(c).
[119] Art. 4.4.
[120] Art. 4.9.

identified in Article 4, paragraphs 8 and 9, of the Convention"[121] (that is: small island countries; countries with low-lying coastal areas; countries with arid and semi-arid areas, forested areas and areas liable to forest; countries with areas prone to natural disasters; countries with areas liable to drought and desertification; countries with areas of high urban atmospheric pollution; countries with areas with fragile ecosystems, including mountainous ecosystems; countries whose economies are highly dependent on fossil fuels and associated energy-intensive products; and landlocked and transit countries; and then, the least developed countries).[122] Both the UNFCCC and the Kyoto Protocol also recognize the special needs and circumstances of countries undergoing transition to a market economy (EITs), by allowing such countries some degree of flexibility in the implementation of their commitments.[123]

Moreover, the UNFCCC accords special treatment or consideration to a group of developed countries. For instance, it provides that "The parties shall… take into consideration in the implementation of the commitments of the Convention the situation of Parties, particularly developing country Parties, with economies that are vulnerable to the adverse effects of the implementation of measures to respond to climate change. This applies notably to Parties with economies that are highly dependent on income generated from the production, processing and export, and/or consumption of fossil fuels and associated energy-intensive products and/or the use of fossil fuels for which such Parties have serious difficulties in switching to alternatives".[124]

It has been submitted that considering that developing countries that mainly depend on fossil fuels are already accorded special consideration under Article 4.8 of the UNFCCC, the provisions of Article 4.10 of the UNFCCC may be construed to apply to developed countries

[121] Arts. 3.14 and 2.3
[122] See the UNFCCC, Arts. 4.8 & 4.9. See also Article 4.1(e). See generally, Rajamani, above n 11, at 198.
[123] UNFCCC Art. 4.6; Kyoto Protocol Art. 3.6.
[124] UNFCCC, Art. 4.10

that produce fossil fuels (such as Australia, Russia, and the United States), although such construction may not avail such developed countries with respect to their mitigation responsibilities.[125]

In disagreement, I argue that this sort of interpretation would not have been intended by the framers of the UNFCCC and, if it is to succeed, will be defeatist of the 'special consideration' notion of the UNFCCC in particular, and the wider underpinnings of the UNFCCC informing differentiation between developing and developed countries, especially developing countries that are highly dependent on the exploitation of natural resources, coupled with acute problems relating to economic diversification. Moreover, Article 4.10 is qualified by the fact that "…such Parties have serious difficulties in switching to alternatives". This qualification should automatically disqualify wealthy and capable developed countries like the United States and Australia, and other developed countries of similar status, from the ambit of the Article as they cannot be said to suffer the same economic diversification difficulties as the developing countries targeted under Articles 4.8 and 4.10. The key to expanding or restricting the ambit of parties targeted under Article 4.10 lays in determining which party can rightly be adjudged to "have serious difficulties in switching to alternatives" to fossil fuel.

At this juncture, I will briefly outline the provisions that differentiate between developing and developed countries by according or permitting flexibility to either, or both, in the implementation of their commitments.[126] The UNFCCC provides that "All parties, taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances,"[127] shall implement the general commitments listed under Article 4.[128] Developed countries are accorded flexibility

[125] Rajamani, above n 11, at 198-199.
[126] See Rajamani, above n 11, at 199 – 205.
[127] Art. 4.1.
[128] Art. 4.1(a) – (j). See also Arts. 12.1(a) and 12.1(c).

in the implementation of their obligation to transfer technology to developing countries due to the use of the terms "take all practicable steps" and "as appropriate".[129]

The Kyoto Protocol provides that parties included in Annex I shall implement their mitigation commitments by adopting measures and policies that suit their national circumstances,[130] notwithstanding that their mitigation commitments are expressed in mandatory terms.[131] The Kyoto Protocol also provides for general commitments that apply to all parties: "All Parties, taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances, without introducing any new commitments for Parties not included in Annex I, but reaffirming existing commitments under Article 4, paragraph 1, of the Convention, and continuing to advance the implementation of these commitments in order to achieve sustainable development, taking into account Article 4, paragraphs 3, 5 and 7, of the Convention, shall…".[132]

Rajamani has described the provisions of Article 10 of the Kyoto Protocol as a "case of study in delightful vagueness",[133] while noting further that "the precise implication of the term CBDRRC is yet to be determined, and that 'the reference to specific national and regional development priorities, objectives and circumstances is uncertain in its import".[134] Furthermore, the author observed that "there are neither standards to judge the legitimacy of national and regional development priorities or objectives, nor are there methods to determine which circumstances might be relevant".[135] Notwithstanding the awkward expression of Article 10 of the Kyoto Protocol, developing countries ensured that the CBDRRC principle is

[129] Art. 4.5. See also Kyoto Protocol Art. 10(c).
[130] Art. 2(a)(i)-(viii).
[131] Art. 3.1
[132] Art. 10(a)-(g)
[133] Rajamani, above n 11, at 200.
[134] Ibid.
[135] Ibid.

incorporated into the Article, especially the inclusion of the phrase "without introducing any new commitments for Parties not included in Annex I", a phrase which first appeared in the Berlin Mandate.[136] Article 10 has been described as reflecting the links between the commitments of developing and developed countries, following the contention by developing countries that the advancement of their commitments should also entail the advancement of implementation of the financial commitments of developed countries; that is, the need for increased financial support from developed countries to enable developing countries implement their commitments.[137]

Some degree of flexibility is also present in the provisions dealing with the financial mechanism under the Kyoto Protocol. Article 11.2(b) of the Kyoto Protocol provides that "The implementation of these existing commitments shall take into account the need for adequacy and predictability in the flow of funds and the importance of appropriate burden sharing among developed country Parties…" It has been observed that "the lack of precision in these terms provides Parties with considerable flexibility: no rules exist to guide what constitutes an adequate and predictable flow of funds; and, no formula exists to determine what might be an appropriate sharing of the burden".[138] The Kyoto Protocol also requires the COP/MOP to undertake regular review of the implementation of the Protocol, and in doing so, "take into account the differing circumstances, responsibilities and capabilities of the Parties and their respective commitments under this Protocol".[139] Flexibility in the implementation of parties' commitments may also take the form of flexible time frames for

[136] Ibid. See also Decision 1/CP.1, (The Berlin Mandate).
[137] Ibid.
[138] Ibid, 201.
[139] Art. 13.4(d).

implementation / delayed compliance schedules; permission to adopt subsequent base years; delayed reporting schedules; and, a soft approach to non-compliance.[140]

The last part in the consideration of differentiation between developing and developed countries under the UNFCCC and the Kyoto Protocol relates to provision of financial assistance, transfer of technology, and capacity-building in developing countries. Financial assistance and transfer of technology from developed to developing countries to enable the latter effectively implement their treaty commitments remain indispensable if the ultimate objective of the climate regime is to be actualized. Under the UNFCCC and the Kyoto Protocol, provisions dealing with financial assistance, transfer of technology and capacity-building in developing countries, are primarily founded on the CBDRRC principle.

I will now undertake discussion of provisions on financial assistance. Three categories of costs may be covered under financial assistance: "costs in fulfilling reporting obligations; costs in complying with more general commitments such as with respect to mitigation, education, and awareness; and, costs incurred in adapting to the adverse effects of climate change".[141] Article 4.3 of the UNFCCC provides that: "The developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1… The implementation of these commitments shall take into account the need for adequacy and predictability in the flow of

[140] Rajamani, above n 11, at 201 – 205. For flexible time frames, see Article 3.1 of the Kyoto Protocol. Rajamani notes that the UNFCCC and the Kyoto Protocol opted for a time-dependent commitment, while pointing out that the first commitment period for developed countries under Kyoto was to run from 2008-12, ten years after the adoption of the Kyoto Protocol. For permission to adopt subsequent base years, see Article 4.6 of the UNFCCC; Article 3.5 of the Kyoto Protocol. Regarding delayed reporting schedules, see Articles 12.2; 12.3; 12.4; 12.5 and 12.7 of the UNFCCC. On soft approach to non-compliance, see Rajamani's views about the Kyoto Compliance Committee, especially in reference to non-compliance with Article 4.7 of the UNFCCC.

[141] For the first two categories, see Article 4.3 of the UNFCCC, and for the last category, see Article 4.4 of the UNFCCC. Rajamani, above n 11, at 205.

funds and the importance of appropriate burden sharing among the developed country Parties".

Note should be taken of the fact that this provision is expressed in a mandatory language ('Developed country Parties … shall'), contrary to the contention by the United States that provisions on financial assistance to developing countries should be couched in a permissive or voluntary language.[142] However, while financial contribution by developed countries under the UNFCCC is a mandatory obligation, the exact contribution by each developed country is not specified, leading to the conclusion that the UNFCCC prefers each developed country to determine its level of contribution.[143] Uncertainty remains as to the meaning of the terms 'new and additional financial resources"; "agreed full costs"; and, "agreed full incremental cost". The concern surrounding the controversy as to the non-definition of the first relates to developing countries' intention to ensure that any such new and additional resources are indeed 'additional' to aid accruing from the overseas development assistance (ODA) framework.[144] The last two has been attributed to developed countries unwillingness to bear certain kinds of costs arising from developing countries' implementation of their treaty obligations, thus:

The terms 'agreed full costs' and 'agreed full incremental costs' are left undefined. The terms and their placement in this article however are a reflection of the industrial countries' reluctance to underwrite indeterminate costs. Industrial countries were willing to underwrite developing countries reporting obligations as the costs involved are determinate, but they were unwilling to underwrite the implementation of more general

[142] Rajamani, above n 11, at 205.
[143] Ibid.
[144] Ibid, 206. However, there is still not a clear distinction between ODA and climate finance. It has been stated that "of the USD 35 billion of FSF [Fast Start Finance] climate finance, 80% of it was also reported as ODA grants or ODA-eligible loans. About 25% of total ODA commitment by Japan was counted as FSF". See Michael I. Westphal, "Lessons Learned from Climate Finance for Post-2015 Sustainable Development", World Resources Institute, 2014, at 3; citing Fransen, T. Nakhooda, S., Kuramochi, T. Caravani, A., Prizzon, A., Shimizu, N., Tilley, H., Halimanjaya, A. and Welham, B., "Mobilising international climate finance: lessons from the Fast-Start Finance period". Overseas Development Institute, World Resources Institute, Institute for Global Environmental Strategies, Open Climate Network. London, UK, Washington, DC, Tokyo, Japan, 2013.

commitments under Article 4(1) and elsewhere, as they were indeterminate and could cover, for instance, costs that developing countries might incur in converting from coal to nuclear plants. The term 'incremental' implies something added. However, to determine what might be added, it is essential to establish a benchmark or a baseline. Since no such baseline is available the focus of this provision is on the term 'agreed' such that whatever the nature of the cost an agreement would have to be entered between industrial and developing countries to ensure that it is covered.[145]

A golden opportunity to revisit the problems presented by the lack of clarity and the non-definition of these terms was presented by the negotiation and adoption of the Paris Agreement; however, these terms remain undefined, even under the Paris Agreement.

Additionally, the UNFCCC provides for financial assistance with respect to adaptation by stipulating 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 those adverse effects".[146] However, this provision even though it is couched in mandatory language differs from the commitment arising from Article 4.3 of the UNFCCC. Whereas under Article 4.3 Parties are to 'provide', Article 4.4 requires Parties to 'assist', leading to the conclusion that neither full costs nor full incremental cost may be covered under the latter.[147]

Differentiation under the UNFCCC and the Kyoto Protocol also entails transfer of technology by developed to developing countries. The UNFCCC provides that: "The developed country Parties and other developed Parties included in Annex II shall take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other Parties, particularly developing country Parties, to enable them to implement the provisions of the Convention. In this process, the developed

[145] Ibid.
[146] Art. 4.4
[147] Rajamani, above n 11, at 206.

country Parties shall support the development and enhancement of endogenous capacities and technologies of developing country Parties. Other Parties and organizations in a position to do so may also assist in facilitating the transfer of such technologies".[148] Although this provision is framed in mandatory terms, it is also tainted with ambiguity. Such ambiguity relates to the "identification of the donors and recipients of technology transfer".[149]

While there is no doubt that Annex II parties are donors of technology and developing countries the recipients, the role of EITs poses some questions. Going by the provisions of Article 4.5, the parties with commitment to transfer technology are 'developed country Parties and other developed country Parties included in Annex II', leading to the conclusion that Parties listed in both Annexes I (includes EITs) and II bear the duty to transfer technology.[150] Curiously, however, the same provision states the recipients of technology as 'other Parties', particularly developing country Parties'. Thus, it has been submitted that the term 'other' can be construed to mean Parties excluding developed country Parties and other developed country Parties mentioned in Annex II, further leading to the conclusion that developed country Parties not mentioned in Annex II are not donors, but may be recipients of technology.[151] Resultantly, the EITs may qualify as donors and recipients of climate technology.[152]

Furthermore, differentiation between developing and developed countries under the UNFCCC and the Kyoto Protocol also captures the need for developed countries to assist in building capacity in developing countries.[153] By way of definition, "capacity building refers to initiatives to develop and improve national, sub-regional, and regional capacities and

[148] UNFCCC, Art. 4.5. See also Kyoto Protocol, Art. 10(c).
[149] Rajamani, above n 11, at 209.
[150] Ibid.
[151] Ibid.
[152] Ibid. Rajamani also observes that expressions like 'take all practicable steps' and 'as appropriate' employed in Article 4.5 accord developed countries some degree of flexibility in implementing their commitments.
[153] UNFCCC, Arts. 3.2, 4.8 and 4.9.

capabilities for sustainable development.[154] The importance of meeting the specific needs and concerns of developing countries points, among other things, to the fact that effectively mitigating and adapting to climate change requires robust institutional and resource-dependent measures and policies, especially at the national level. Most developing countries still lack the requisite resources and institutions, compared to developed countries.[155]

From the foregoing, it is deducible that differentiation between developing and developed countries under the UNFCCC and the Kyoto Protocol relies mostly on historical responsibility for the concentration of greenhouse gases in the atmosphere and the capacity to effectively deal with the climate change problem. From both standpoints, developed countries occupy primal position. Thus, it can be said that the operationalization of CBDRRC under the UNFCCC and the Kyoto Protocol justifiably favours developing countries, compared to developed countries.

Primarily, the epicentre of the controversy generated by CBDRRC, as codified in the UNFCCC and operationalized in the Kyoto Protocol, is the fact that the commitment to reduce emission of greenhouse gases under Kyoto first commitment period (2008-2012) applied only to developed countries listed in its Annex B.[156] This represents the core of what has been termed the Kyoto "firewall"[157] or "binary differentiation"[158] between developing and developed countries. It has been stated that the Kyoto Protocol may have failed in

[154] United Nations Conference on Environment & Development Rio de Janerio, Brazil, 3 to 14 June 1992, Agenda, Agenda 21, Chapter 37.
[155] Rajamani, above n 11, at 210.
[156] Kyoto Protocol, Art. 3.
[157] Geir Ulfstein and Christina Voigt, "Rethinking the Legal Form and Principles of a New Climate Agreement" in In Todd L. Cherry, Jon Hovi and David M. McEvoy (eds) *Toward a New Climate Agreement: Conflict, Resolution and Governance* (Routledge, Oxford, 2014), 191; Jutta Brunnee and Charlotte Streck, "The UNFCCC as a Negotiation Forum: Towards but More Common Differentiated Responsibilities" (2013) 13(5) *Climate Policy*, 589-607, 590.
[158] Voigt, above n 63, at 68; Maljean-Dubois, above n 42, at 154.

attaining the main mitigation objective of the UNFCCC due to the nature and content of the regime's CBDRRC.[159]

In fact, the exclusion of developing countries from the binding mitigation framework of the Kyoto first commitment was the main reason why the United States refused to ratify the Kyoto Protocol,[160] while citing other concerns as the likelihood of serious harm to the United States economy and the potential for United States manufacturing companies to move to developing countries to take advantage of less strict environmental policies resulting from non-committal of developing countries to cut emission of greenhouse gases.[161] However, it has been stated that the rejection of the Kyoto Protocol by the United States did not mean rejection of the CBDRRC principle in its entirety rather that the United States supported CBDRRC under the Kyoto Protocol, but differs from other countries with respect to its interpretation.[162] Following the United States concerns, especially the continued exclusion of developing countries, other developed countries, including Canada, Japan and Russia refused to commit to Kyoto second commitment period (2013-2020).[163]

Considering the interminable disagreement between developing and developed countries on what should constitute a fair content of CBDRRC in the international regime governing climate change, the period leading to the negotiation and adoption of the Paris climate

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[159] Stone, above n 21, at 295.

[160] See the Byrd-Hagel Resolution, S. Res. 98, 105th Cong. 143 CONG. REC. S8138-39 (July 25, 1997). See also George W. Bush, Letter to Members of the Senate on the Kyoto Protocol on Climate Change, March 13, 2001, in which the then President Bush stated, among other things, "…As you know, I oppose the Kyoto Protocol because it exempts 80 percent of the world, including major population centers such as China and India, from compliance, and would cause serious harm to the U.S economy…". Available online: <http://www.presidency.ucsb.edu/ws/?pid=45811> Accessed 03 August 2016

[161] Ibid.

[162] Paul G. Harris, "Common But Differentiated Responsibility: The Kyoto Protocol and United States Policy" (1999) 27(7) *New York University Environmental Law Journal*, 27-48, 35.

[163] Doha Amendment to the Kyoto Protocol, Annex B to the Kyoto Protocol, footnotes 13, 14 and 16. See also Greenpeace, 'what happened in Doha: analysis of the conduct and outcome of the COP 18 Climate Negotiations', 8 December 2012. Available online: <http://www.greenpeace.org/international/Global/international/briefings/climate/Doha2012/QandAoutcomeDoha.pdf> Accessed 03 August 2016

agreement presented a good opportunity for parties to the UNFCCC to revisit the divergent positions of countries. The Paris Agreement recognises and applies CBDRRC, but from a substantively different approach compared to the UNFCCC and the Kyoto Protocol. At this juncture, differentiation between developing and developed countries under the Paris Agreement will be evaluated.

3.3.3. Differentiation between Developing and Developed Countries under the Paris Agreement

Prior to the negotiation and adoption of the Paris Agreement in December 2015, signs existed that the CBDRRC principle as known and practiced under the UNFCCC and the Kyoto Protocol may not survive the Paris climate change negotiation. One of the initial scenarios offering clues as to the direction the wind may be destined to blow at the Paris conference with respect to the application of the CBDRRC principle has been presented thus:

In Durban, Parties agreed to negotiate a regime 'applicable to all', which sent a political signal that there should be greater symmetry between nations. The world has changed since the UNFCCC was negotiated in 1992. It is now less helpful to think only in terms of two groups of countries (e.g. Annex I and non-Annex I), and evident that there are significant differences between members states. This requires a more nuanced interpretation of the principles of equity and CBDR&RC, which is an integral part of the UNFCCC…[164]

Similar view was echoed by Voigt in 2014.[165] Effectively, the shift from the traditional differentiation under the UNFCCC can be said to have started in Bali in 2007.[166] The Bali Action Plan (BAP) enjoined parties to cultivate "A shared vision for long-term cooperative action, including a long-term global goal for emission reductions, to achieve the ultimate objective of the Convention, in accordance with the provisions and principles of the Convention, in particular the principle of common but differentiated responsibilities and

[164] Winkler and Rajamani, above n 31, at 102.
[165] Voigt, above n 63, at 52. See also Ulfstein and Voigt, above n 157, at 191.
[166] Brunnee and Streck, above n 157, at 594.

respective capabilities…"[167] Following from this decision, the BAP invited all parties to the UNFCCC, developing and developed, to take action towards emission reduction, in deviation from Kyoto's framework in which emission reduction was only being undertaken by developed countries.[168] The BAP also deviated from the Annex I / non-Annex I categorization by referring to parties as 'developed and developing' countries.[169] Nonetheless, the BAP maintained differentiation between the two groups by inviting developed countries to undertake mitigation commitment, while developing countries undertake mitigation action.[170]

Second, BAP invited parties to the UNFCCC to work towards adopting an 'agreed outcome' on long-term implementation of the UNFCCC up to and beyond 2012 at COP 15 in 2009.[171] Although negotiation at the Copenhagen conference did not live up to the expectation of the BAP in delivering a new climate agreement, the shift towards a more dynamic and nuanced form of differentiation in the climate regime continued to gain momentum.[172] Notwithstanding that the Copenhagen Accord could not be adopted by all the parties to the UNFCCC due to question regarding its legitimacy (having been created by an insignificant number of countries, including the United States, South Africa, India, China and Brazil – compared to 194 parties making up the UNFCCC), the COP decided to merely 'take note' of the Accord.

However, the Accord did confirm in some material respects the new context in which the CBDRRC principle was evolving, especially from the perspective of developed countries. Thus, the Copenhagen Accord provided that "Annex I Parties commit to implement

[167] Decision 1/CP.13, The Bali Action Plan, Report of the Conference of the Parties on its thirteenth session, held in Bali from 3 to 15 December 2007 (FCCC/CP/2007/6/Add.1).
[168] Ibid, Decision 1(b).
[169] Ibid.
[170] Ibid. See also Lavanya Rajamani, "From Berlin to Bali and Beyond: Killing Kyoto Softly" (2008) 57 International and Comparative Law Quarterly, 909–939.
[171] Decision 1/CP.13
[172] Brunnee and Streck, above n 157, at 594-595.

individually or jointly the quantified economy-wide emissions targets for 2020...”; that “Non-Annex I Parties to the Convention will implement mitigation actions…”; and, that “Least developed countries and small island developing States may undertake actions voluntarily and on the basis of support…”[173] Notably, unlike under the Kyoto Protocol in which non-Annex I countries had no emission reduction obligation, both Annex I and non-Annex I Parties are to undertake emission reduction exercise under the Accord, but to a different measure. Moreover, note should be taken of the fact that the Accord chose to utilize the bifurcated division of Annex I and non-Annex 1 as obtained under the UNFCCC and Kyoto, while distinguishing the least developed and small island developing countries.[174]

Third, the Cancun Agreements brought the emissions targets and actions of the Copenhagen Accord into the corpus of UNFCCC COP decisions considering that the Accord only qualified as a political agreement having failed formal adoption by all the parties.[175] The Cancun Agreements set up emission reduction framework for both developing and developed countries by deciding that parties “Agree(s) that developing country Parties will take nationally appropriate mitigation actions in the context of sustainable development, supported and enabled by technology, financing and capacity-building, aimed at achieving a deviation in emissions relative to ‘business as usual’ emissions in 2020”.[176]

Again, this marked yet another derogation from differentiation under the Kyoto Protocol in which non-Annex I (developing countries) were not to undertake emission reduction targets or actions. Furthermore, the Cancun Agreements deviated from differentiation under the Kyoto Protocol by emphasising “the need for deep cuts in global greenhouse gas emissions

[173] The Copenhagen Accord, Decisions 4 and 5/CP.15, Report of the Conference of the Parties on its fifteenth session, held in Copenhagen from 7 to 19 December 2010 (FCCC/CP/2009/11/Add.1).

[174] Ibid.

[175] The Cancun Agreements, Decision 1/CP.16, Report of the Conference of the Parties on its sixteenth session, held in Cancun from 29 November to 10 December 2010 (FCCC/CP/2010/7/Add.1).

[176] ibid, para. 48.

and early and urgent undertakings to accelerate and enhance the implementation of the Convention by *all Parties*, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities".[177]

Fourth, the most outstanding effort towards moving away from the differentiation style of the Kyoto Protocol was recorded in Durban. The Durban Platform for Enhanced Action (ADP) launched "a work-plan on enhancing mitigation ambition to identify and to explore options for a range of actions that can close the ambition gap with a view to ensuring the highest possible mitigation efforts by *all Parties*".[178] Of note is the fact that the ADP did not contain any reference to differentiation between developing and developed countries owing to the position of developed countries that any such reference must be accompanied by a qualification. The fierce controversy that ensued between developing and developed countries has been captured thus:

The Durban Platform decision does not contain a reference to equity or common but differentiated responsibilities. This is no benign oversight. Through the two weeks of the conference, developed countries were unanimous in their insistence that any reference to common but differentiated responsibilities must be qualified with a statement that this principle must be interpreted in the light of contemporary economic realities. They were also insistent that the future regime must be applicable to all. India, among other developing countries, argued in response that this would tantamount to amending the Framework Convention on Climate Change. The only way out of this impasse was to draft the text such that it was rooted in the Convention thereby implicitly engaging its principles, including the principle of common but differentiated responsibilities. This, it was believed, would hold efforts to reinterpret and qualify this principle at bay. Nevertheless, the fact that the divisions on the application of this principle are such as to preclude even a rote invocation of it, signals a likely recasting of differentiation in the future climate regime.[179]

[177] Ibid, para. III (A) (emphasis added).

[178] Decision 1/CP.17, Report of the Conference of the Parties on its seventeenth session, held in Durban from 28 November to 11 December 2012 (FCCC/CP/2011/9/Add.1).

[179] Lavanya Rajamani, Deconstructing Durban, The India Express, (December 15, 2011) Available online at: <http://indianexpress.com/article/opinion/columns/deconstructing-durban/> Accessed 25 July 2016.

Although the ADP opted not to make any reference to the core language reflecting the CBDRRC principle as previous COP decisions, such lack of clear-cut reference did not mean that the principle had been completely side-lined. Moreover, since the ADP was established under the UNFCCC, the ordinary implication would be that CBDRRC as one of its principles would apply to the work of the ADP. Following from this conclusion, it was reported that most developing countries, especially India, stressed the centrality of the UNFCCC and its principles to the work of the ADP, while staunchly maintaining that any attempt to re-write or renegotiate the UNFCCC will be vehemently opposed.[180]

Furthermore, most developing countries emphasized that the 'universality of application' of any new climate agreement would not mean 'uniformity of application', which further underlined the fact that the term 'applicable to all Parties' employed in the ADP did not portend an erosion of CBDRRC, nor did it signal a shift from the balance of responsibilities as enshrined in the UNFCCC.[181] Nonetheless, the fact that CBDRRC applied to the work of the ADP was corroborated by the outcome of COP 18 following an acknowledgement that the work of the ADP "shall be guided by the principles of the Convention".[182] At COP 19 in Warsaw, the trend towards a new form of differentiation continued as COP decision only referred to the "principles" of the Convention without categorically referring to CBDRRC.[183]

Moreover, COP 19 accepted the idea of a mitigation framework based on "intended nationally determined contributions" which would apply to all parties.[184] Notwithstanding, a

[180] UNFCCC: Views on a Work-plan for the Ad Hoc Working Group on the Durban Platform for Enhanced Action (FCCC/ADP/2012/MISC.3), 34. Available online at: <http://unfccc.int/resource/docs/2012/adp1/eng/misc03.pdf > Accessed 24 July 2016.

[181] Ibid.

[182] Decision 2/CP.18, Report of the Conference of the Parties on its eighteenth session, held in Doha from 26 November to 8 December 2012, FCCC/CP/2012/8/Add.1

[183] Preamble, para. 9, Decison-/CP.19, Report of the Conference of the Parties on its nineteenth session, held in Warsaw from 11 to 23 November 2013, FCCC/CP/2013/10/Add.1.

[184] Decision 1/CP.19.

categorical reference to CBDRRC was made in the Lima Call for Climate Action by parties' committing to a 2015 agreement that "reflects the principle of common but differentiated responsibilities and respective capabilities, in light of different national circumstances".[185] This decision by the Lima COP may have allayed the lingering concerns of developing countries regarding the place of CBDRRC in the work of the ADP. However, notwithstanding the well-known conflict of interests between developing and developed countries that characterised the Durban conference and the subsequent negotiation under the ADP, especially with respect to CBDRRC, it could be gleaned that insistence on Kyoto-type differentiation in any new climate agreement would be a recipe for a stalemate, reminiscent of COP-15 in Copenhagen in 2009.

Eventually, the ADP concluded its negotiation at COP 21 leading to the adoption of the Paris Agreement[186] in December 2015. The Paris Agreement recognises the CBDRRC principle.[187] However, the Agreement's differentiation framework differs from differentiation under the UNFCCC and the Kyoto Protocol in a number of respects. The Agreement adopts a dynamic and nuanced form of differentiation which cuts across mitigation, adaptation, capacity-building, finance, technology and transparency.[188]

At this point, differentiation between developing and developed countries under the Paris Agreement will be evaluated. Considering the distinct nature of the Agreement, the style

[185] Decision 1/CP.20, Report of the Conference of the Parties on its twentieth session, held in Lima from 1 to 14 December 2014, FCCC/CP/2014/10/Add.1. It should be noted that the qualifier "in the light of different national circumstances" first appeared in a statement jointly issued by the United States and China in 2014. See the White House, US-China Joint Announcement on Climate Change, Beijing, China, November, 2014. Available online at: <https://www.whitehouse.gov/the-press-office/2014/11/11/us-china-joint-announcement-climate-change> Accessed 26 July 2016.

[186] UNFCCC, 'Decision 1/CP.21 Adoption of the Paris Agreement' (29 January 2016) FCCC/ CP/2015/10/Add.1, Annex (Paris Agreement) art 2(1).

[187] The Paris Agreement contains references to the CBDR principle the Preamble (Para. 3); Arts. 2.2; 4.3 and 4.19.

[188] See generally, Voigt and Ferreira, above n 42, 58-74; Maljean- Dubois, above n 42, 151-159; Rajamani, above, n 42, 493-514.

employed in evaluating differentiation under the UNFCCC and the Kyoto Protocol may not be suitable here. Consequently, differentiation under the Paris Agreement will be approached from four main perspectives – application of differentiation in mitigation, adaptation, finance and technology, and transparency and review.

It has been stated that the Paris Agreement's nuanced approach to differentiation is most evident in the provisions dealing with mitigation.[189] The Paris Agreement provides for the means of achieving the long-term temperature goal set out in its Article 2,[190] especially with respect to what should underpin the relationship between developing and developed countries in pursuit of the purpose of the Agreement. To that effect, the Agreement provides that "Each Party shall prepare, communicate and maintain successive nationally determined contributions...";[191] that "Each Party's successive nationally determined contribution will represent a progression..., reflecting its common but differentiated responsibilities and respective capabilities, in the light of different national circumstances";[192] that "Developed country Parties should continue taking the lead by undertaking economy-wide absolute emission reduction targets. Developing country Parties should continue enhancing their mitigation efforts, and are encouraged to move over time towards economy-wide emission reduction or limitation targets in the light of different national circumstances".[193]

Furthermore, the Agreement provides that "Support shall be provided to developing country parties for the implementation of this Article, in accordance with Articles 9, 10 and 11, recognizing that enhanced support for developing country Parties will allow for higher ambition in their actions";[194] that "Parties shall take into consideration in the implementation of this Agreement the concerns of Parties with economies most affected by the impacts of

[189] Voigt and Ferreira, above n 42, at 67.
[190] Art. 4.1
[191] Art. 4.2.
[192] Art. 4.3
[193] Art. 4.4.
[194] Art. 4.5.

response measures, particularly developing countries Parties";[195] and that "All Parties should strive to formulate and communicate long-term low greenhouse gas emission development strategies, mindful of Article 2 taking into account their common but differentiated responsibilities and respective capabilities, in the light of different national circumstances".[196] For the current purpose, the highlighted provisions represent the core of the provisions dealing with mitigation obligations of parties under the Paris Agreement. Evaluation of these provisions will now be undertaken.

Under Article 4, the Paris Agreement stipulates general provisions applicable to all parties, both developing and developed.[197] However, with respect to implementation, the Agreement accords flexibility to developing countries in general,[198] and the least developed countries and small-island countries in particular.[199] Thus, while the Agreement provides for a global emissions reduction trajectory that applies to all parties, peaking of emissions is deferred for developing countries, coupled with the fact that emissions trajectory will be determined on the basis of equity.[200] Moreover, while the central legally binding mitigation obligation of the Agreement applies to all parties,[201] the obligation to ratchet up ambition over time by developing countries is contingent upon developed countries providing support.[202] This underscores the centrality of financial assistance, technology transfer and capacity-building in the implementation of the Paris Agreement, especially from the perspective of developing countries. It is also provided that each party's nationally determined contributions will reflect its "highest possible ambition" in line with CBDRRC, in the light of different national

[195] Art. 4.15.
[196] Art. 4.19.
[197] Arts. 4.2, 4.3, 4.8, 4.9, 4.13, etc.
[198] Arts. 4.4, 4.5 and 4.15.
[199] Art. 4.6
[200] Art. 4.1
[201] Art. 4.2
[202] Art. 4.5

circumstances,[203] and that developed countries should continue to take the lead by reducing emissions across all the sectors of their economies, while developing countries are expected to assume similar responsibility when circumstances permit.[204]

It has been submitted that this provision evolved from the UNFCCC considering that it "did not contain prescriptive guidance on the type of mitigation effort expected of developing countries".[205] Furthermore, it has been observed that the provisions of Article 4.4 read in conjunction with Article 4.3 reveals "a nuanced and subtle differentiation, combining a common obligation to contribute to the long-term temperature goal of the Agreement, with the highest possible ambition of each party, taking into account the CBDRRC, capabilities and national circumstances".[206]

However, note should be taken of the fact that the provision of Article 4.4 creates no new obligation for the parties. Based on this fact, it has been stated that considering that NDCs are nationally determined, the provision of Article 4.4 represents at the best "a normative expectation that Parties will exercise a particular choice, not a requirement that they do so".[207] Moreover, it has been noted that the reason behind the United States accepting the Paris Agreement consists in the fact that the provision does not create any new obligation.[208]

It was reported that developed countries' mitigation obligation under Article 4.4 was initially expressed in mandatory terms by employing the modal verb "shall", while that of developing countries was conveyed using the recommendatory "should". However, the United States insisted on the "shall" being changed as it was not ready to assume any binding international

[203] Art. 4.3
[204] Art. 4.4
[205] Voigt and Ferreira, above n 42, at 68.
[206] Maljean-Dubois, above n 42, at 157.
[207] Rajamani, above n 42, at 510.
[208] Ibid.

obligation to reduce emissions. Eventually, the UNFCCC Secretariat declared the "shall" a typographical error and changed it to "should".[209]

From the foregoing, it can be discerned how the opportunity to get developed countries to commit to a binding mitigation obligation was lost at the instance of the United States. Thus, it can rightly be argued that the lowest common denominator still characterized negotiation of the Paris Agreement, and to an extent the final outcome. With this in view, it remains to be seen how resources required for the implementation of the NDCs of developing countries will be mobilized. The enormous financial commitment required in order to make implementation of the NDCs submitted by developing countries a reality is exemplified by a report that India asked for US$2.5 trillion to implement its [I]NDC by 2030,[210] an amount which outstrips the 'global' financial package of $100 billion per year by 2020 included in COP 21 decision.[211]

If, indeed, one developing country requires that much to implement its NDC, then the multiplier effect when the amount required by other developing countries is factored in leaves one wondering if the mitigation goals of the Paris Agreement will ever be attained. Moreover, if a developed country like the United States, more than two decades after adopting the UNFCCC, coupled with the progress made by climate science over this period in relation to certainty of climate change and its impacts, cannot commit to a mandatory obligation to reduce emissions, then how would it commit to the financial and technological undertakings required by developing countries to mitigate and adapt to climate change, and to move to sustainable economic development paths. This explains why a renowned developing country

[209] Ibid, 510-511. LMDCs stands for 'Like Minded Developing Countries' – a coalition of developing countries comprising Bolivia, China, Cuba, Dominica, Ecuador, Egypt, El Salvador, India, Iran, Iraq, Malaysia, Mali, Nicaragua, Philippines, Saudi Arabia, Sri Lanka, Sudan and Venezuela.

[210] Joydeep Gupta, 'India Promises 33-35% Emissions Intensity Drop by 2030' *India Climate Dialogue*, October 2, 2015. Online at: <http://indiaclimatedialogue.net/2015/10/02/india-promises-33-35-emissions-intensity-drop-by-2030/ > Accessed 25 July 2016

[211] Decision 1/CP.21, paras. 54 & 115.

scholar believes that financing and capacity-building support promised under the Paris Agreement will be largely unfulfilled.[212]

In relation to the qualifier to CBDRRC in the Paris Agreement: "in the light of different national circumstances",[213] it has been submitted that this revised form of the principle has the potential to shift more responsibility to developing countries. Gupta summarises the inherent concerns over the qualifier thus:

While it is reassuring for both countries that the CBDR principle was included, the Convention had added: "Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof". In the revised version, "in the light of different national circumstances" might seem innocent. However, it could be interpreted to imply that the historical differences between developed and developing countries are no longer central, even though the cumulative concentration of GHGs in the atmosphere was primarily caused by developed countries in the past; and it might also be seen to imply that rapidly emerging economies could be required to take on demanding measures, and rich countries could claim recession as a reason to do less in the light of different national circumstances, despite past emissions.[214]

It has also been stated that the qualifier portends broad repercussions, "including a change of course from a strict, explicit, differentiation, expressed in annexes",[215] and that it "introduces a dynamic and flexible element for interpreting responsibilities and capabilities, broadening the parameters of differentiation".[216] It expands the range of issues to be taken into account such as historical, present and future emissions, financial and technological advantages, human resources, concerns relating to population size and kindred issues, mitigation cost, etc.[217]

Undoubtedly, the qualifier will most likely modify how CBDRRC is construed from the perspectives of developing and developed countries. National circumstances being in a state

[212] Gupta, above n 42, at 180.
[213] Preamble para. 3 and Art. 2.2
[214] Gupta, above n 42, at 178.
[215] Voigt and Ferreira, above n 42, at 64.
[216] Ibid, 66. (Footnotes omitted).
[217] Ibid. (Footnotes omitted).

of flux, CBDRRC under the Paris Agreement is schemed to be evolutionary and dynamic to constant changes in the national circumstances of countries.[218] Moreover, the qualifier may be viewed as a form of understanding between developing and developed countries, taken into account the differences in parties' positions from 1992 to 2015, when the UNFCCC and the Paris Agreement were adopted respectively; especially the rising emissions in emerging developing countries. While, viewed from this standpoint, the qualifier may be adjudged desirable, the real interpretation of the qualifier by states will be discovered when the Paris Agreement comes into effect and its implementation gets underway. Of course, the qualifier will likely be interpreted diversely by developing and developed countries, depending on the aspect of the Agreement in relation to which it is being invoked. In this respect, the qualifier will likely be a recipe for controversy.

Second, differentiation under the Paris Agreement applies to adaptation.[219] Although the provisions on adaptation largely apply to both developing and developed countries,[220] developing countries and developing countries that are vulnerable to the adverse effects of climate change are accorded differential treatment.[221] The Agreement recognizes "the importance of support for and international cooperation on adaptation efforts and the importance of taking into account the needs of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change".[222] It also recognises the enormous need for adaptation and the fact that higher mitigation efforts will reduce the need for increase in adaptation efforts of parties.[223] Furthermore, the Agreement appreciates the need for communication on the implementation of adaptation provisions to be executed in

[218] Rajamani, above n 42, at 508.
[219] Art. 7.
[220] Arts. 7.1, 7.2, 7.4, 7.5, 7.7, 7.9, 7.11, 7.12 and 7.14
[221] Arts. 7.2, 7.6, 7.9 and 7.13.
[222] Art. 7.6.
[223] Art. 7.4.

such a way to avoid additional burden on developing countries.[224] It also undertakes to provide continuous and enhanced international support to developing countries to enable them implement the adaptation provisions, especially those mentioned in subsections 7, 9, 10 and 11 in line with Articles 9, 10 and 11.[225]

Moreover, the Paris Agreement also broke a new ground by providing for loss and damage in recognition of the "importance of averting, minimizing and addressing loss and damage associated with the adverse effects of climate change, including extreme weather events and slow onset events, and the role of sustainable development in reducing the risk of loss and damage".[226] However, the provision on loss and damage does not "involve or provide a basis for any liability or compensation".[227]

It has been observed that although the Paris Agreement made ample reference to the respective vulnerabilities and capacities of states in adapting to the adverse effects of climate change, it falls short by not defining which countries fall within the relevant categories. In the absence of such definition, it has been suggested that in relation to vulnerability to climate change, the least developed countries (LCDs) and the small-island developing countries (SIDS) are likely to be included in the primal vulnerable groups.[228] Moreover, the present author strongly believes that in all other provisions of the Paris Agreement where 'developing' or 'developed' is mentioned with respect to parties, resort must be made to the annexes of the UNFCCC since the Agreement does not define the relevant categories. This is so, especially in relation to which country is termed a "developed" country for the purposes of applying CBDRRC under the Paris Agreement.

[224] Art. 7.10
[225] Art. 7.13
[226] Art. 8. See also Decision III/CP.21, paras. 48-52. The loss and damage provisions of the Paris Agreement from the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts established at COP-19 in Warsaw, Poland (November 2013).
[227] Decision 1/CP.21, para. 52.
[228] Maljean-Dubois, above n 42, at 157.

Third, with respect to finance the Paris Agreement clearly differentiates between developing and developed countries in some conventional respects.[229] From the outset the Agreement recognises the need to provide support to developing countries to enable them effectively implement their obligations.[230] The Agreement provides that "Developed country Parties shall provide financial resources to assist developing country Parties with respect to both mitigation and adaptation...";[231] that "Other Parties are encouraged to provide or continue to provide such support voluntarily";[232] that "As part of a global effort, developed country Parties should continue to take the lead in mobilizing climate finance...";[233] and that "Developed country Parties shall provide transparent and consistent information on support for developing country Parties... Other parties are encouraged to do so".[234]

With respect to technology, the Agreement provides that "Support, including financial support, shall be provided to developing country Parties for the implementation of this Article, including for strengthening cooperative action on technology development and transfer at different stages of the technology cycle..."[235]

It can be deduced that developed countries' obligation to provide financial support to developing countries is expressed in compulsory terms ('shall'). The COP decision accompanying the Paris Agreement mirrors the agreement between developing and developed countries in this regard by urging developed countries to increase their level of financial support with a view to attaining the goal of jointly providing USD 100 billion per year by 2020,[236] and that prior to 2025 the Conference of the Parties of the Paris Agreement

[229] See Voigt and Ferreira, above n 42, at 69; Rajamani, above n 45, at 512 and Maljean-Dubois, above n 45, at 157.
[230] Art. 3. See also Arts. 4.5 & 7.13.
[231] Art. 9.1
[232] Art. 9.2
[233] Art. 9.3
[234] Art. 9.7
[235] Art. 10.6
[236] Decision 1/CP.21, para. 54.

shall decide a new collective goal from a floor of USD 100 billion per year, needs and priorities of developing countries taken into account.[237] However, it has been submitted that while the Paris Agreement provides for financial assistance to developing countries to enable them implement their mitigation and adaptation obligations, it does not state that provision of support by developed countries is a condition precedent for developing countries fulfilling their obligations,[238] as is the case under the UNFCCC.[239]

Particularly, it has been stated that the Agreement clearly states that enhanced support for developing countries will entail corresponding greater efforts, and that Articles 3, 4.5 and 7.13 read in conjunction reveals a "strong link between support and the degree of effectiveness and ambition in developing countries' actions, without exempting them from fulfilling their obligations under the Agreement".[240] Arguably, the foregoing submission will only be sustained practically in the case of developing countries that command the resources to fulfil their obligations in the absence of support from developed countries. For developing countries that wholly or significantly depend on such support, the lack of, or inadequacy of support, will most likely succeed as a defence for non-compliance. Thus, while the Paris Agreement does not directly reflect the provision of Article 4.7 of the UNFCCC, the philosophical underpinning of Article 4.7 may still be implied in any event that developed countries default in providing the financial support mandated by the Agreement. Moreover, such default by developed countries will amount to a breach of mandatory provision of the Agreement which invariably should operate to exonerate developing countries that fail to fulfil their obligation as result of the breach.

[237] Ibid, para. 115
[238] Voigt and Ferreira, above n 42, at 70; Maljean-Dubois, above n 42, at 158.
[239] UNFCCC, Art. 4.7.
[240] Voigt and Ferreira, above n 42, at 70.

Furthermore, the provision that "other Parties are encouraged to provide or continue to provide such support voluntarily" introduces a new element to the CBDRCC regime which departs considerably from the UNFCCC. 'Other parties' as employed is presumed to be developing countries, especially the emerging economies. However, less stringent reporting obligation is placed on such other parties that provide financial support.[241] The controversy that greeted the proposal to expand the donor framework of the climate regime, contrary to the traditional practice under the UNFCCC and the Kyoto Protocol, as founded on differentiation, has been summarised thus:

In the lead-up to Paris, various options were explored for expanding the donor base, regarding the Parties it would apply to (in a 'position' or 'with capacity' to do so) and the expectations that would be placed on them ('shall' or 'should'). However such options were met with fierce resistance from many developing countries who believed that this would open the door to assessments of which countries were in a 'position' or had the 'capacity' to provide support. These countries would then be leaned on to provide support. Parties finally compromised on 'other parties', which was suitably neutral and language encouraging voluntary provision of support by these parties....[242]

Notwithstanding this significant departure from the UNFCCC and Kyoto on the provision of finance, the Paris Agreement centralized the issue of financial assistance to developing countries in view of the fact that enhanced support to developing countries will invariably beget higher efforts, and that such assistance is desirable if the Agreement is to be effectively implemented by developing countries.[243] The nature of differentiation employed by the Agreement with respect to core finance provision has been described as being relatively close to what obtained under the UNFCCC[244] – a "clear-cut, bifurcated, form of differentiation".[245]

[241] Arts. 9.5 and 9.7.
[242] Rajamani, above n 42, at 512-513.
[243] Ibid, 513.
[244] Ibid.
[245] This is mostly the case in respect to Article 9.1. See Voigt and Ferreira, above n 42, at 70

Moreover, Voigt and Ferreira submit that the Paris Agreement provides for "mobilization" of climate finance which portends a wider coverage than provision of financial resources, and that the fact that the Agreement described mobilization of finance as a "global effort" implies that it is a commitment that applies to all parties, although developed countries should continue to lead in that regard.[246] Furthermore, they conclude that Article 9 of the Agreement on finance "is more nuanced, mirroring to some extent the approach taken for mitigation..."[247]

With respect to technology development and transfer, the provisions on financial support are also relevant. Ability of developing countries to meet the mitigation and adaptation goals of the Paris Agreement will significantly depend on the extent endogenous capacity and technology are supported.[248] Enhanced financial support in this area on the part of developed countries is recognised by the Paris Agreement in furtherance of differentiation.[249]

Fourth, some degrees of differentiation exist in the transparency framework of the Paris Agreement.[250] However, while the Agreement primarily takes into account the differing capacities of parties in according flexibility, the transparency provision is one area where developing and developed countries assume relatively similar obligations. For instance, the Agreement provides that "parties shall account for their nationally determined contributions".[251] This mandatory obligation applies to both developing and developed countries. This blanket provision notwithstanding, the transparency framework recognises, and will consider capacities of parties.[252] It aims to avoid placing undue burden on least developed countries and small-island developing countries considering their relative

[246] Voigt and Ferreira, above n 42, at 70.
[247] Ibid.
[248] Decision 1/CP.21, paras. 66-71
[249] Art. 10.6
[250] Art. 13
[251] Art. 4.13
[252] Art. 13.1

capacities.[253] It provides that developed countries and other parties that provide support in relation to finance, technology transfer and capacity-building, shall furnish relevant information in relation to such support.[254]

The transparency framework aims to make the review process provide assistance in identifying capacity-building needs to developing countries that need it the light of their capacities.[255] It provides that "the review shall pay particular attention to the respective national capabilities and circumstances of developing country Parties.[256] Further, it aims to provide support to developing countries to enable them implement the transparency framework[257] and build transparency-related capacity.[258]

With respect to differentiation on global stocktake, the provision of the Agreement applies to all parties, although equity will be taken into account.[259] The implementation and compliance mechanisms of the Agreement also aim to take into consideration the respective national capabilities and circumstances of parties,[260] which invariably entail differentiation.

From the foregoing, it can be seen that, to a reasonable extent, flexibility rather than bifurcation[261] between developing and developed countries holds sway in the transparency provisions of the Paris Agreement. According to Voigt and Ferreira, "if finance is where differentiation is expressed more explicitly, transparency provisions are arguably where provisions for developed and developing countries converge most significantly".[262] However, it remains to be seen how the framework will work in practical terms, considering that the

[253] Art. 13.3
[254] Art. 13.9
[255] Art. 13.11
[256] Art. 13.12
[257] Art, 13.14
[258] Art. 13.15
[259] Art. 14.1
[260] Art. 15.2
[261] See Rajamani, above n 42, at 511; Maljean-Dubois, above n 42, at 158.
[262] Voigt and Ferreira, above n 42, at 70.

structure and composition of institutions relevant for the implementation of the provisions remain subjects of further negotiation.

Although on paper, the underlying transparency responsibilities of developing and developed countries seem to pose no patent problems, their implementation may be a different kettle of fish altogether. These concerns notwithstanding, the transparency and review frameworks of the Paris Agreement deserve applause. Not only will the frameworks assist in gauging the journey towards attaining the long-term temperature goal of the Agreement, they are also veritable tools in ascertaining the extent parties are executing their obligations, especially in view of CBDRRC, which anchors the obligations of parties relating to financial assistance, technology transfer, and sustainable development.

3.4 CBDRRC in the Regime Governing Climate Change: A Tale of Diverse Interpretations and Perspectives

CBDRRC continues to constitute the legal and philosophical foundation for construing extant climate change obligations and apportioning of future responsibilities to parties partaking in the regime.[263] However, the short but chequered history of the principle in the international regime governing climate change continues to be a subject of immense academic and policy discourse. CBDRRC can rightly be described as the hotspot of the discord that characterised the relationship between developing and developed countries ever since the climate regime officially kicked off in 1992. In the real sense, the controversy surrounding the interpretation of CBDRRC cuts across North-South, North-North and South-South realms.

Thus, within the larger groups of developing and developed countries lay further diverse interests and perspectives of individual countries, or of smaller group of countries, usually

[263] Rajaman, above n 11, at 236.

bound together by a common concern or ideology.[264] The culmination is that CBDRRC under the climate regime has been subjected to variegated definitions and constructions by parties. This section will undertake examination of the diverse interpretations of, and perspectives on the CBDRCC principle, with a view to painting a fuller picture of the conceptual and practical realities that have shaped the evolution of the principle. In order to attain this objective, I will undertake evaluation of the arguments underpinning the positions of selected parties and negotiating groups prior to the negotiation of the Paris Agreement, and their positions during the negotiation of the Agreement.

Under the UNFCCC and the Kyoto Protocol, the principal controversy that arose from the interpretation of CBDRRC concerned the "meaningful participation"[265] of developing countries in emissions reduction. The inception of the controversy can be traced to the negotiations that led to the adoption of the UNFCCC, where China and India relying on the argument that global environmental problems were mostly caused by developed countries, pushed for developing countries to be exempted from mitigation obligations, while maintaining that developed countries must lead the way in that respect.[266] Developing countries argued that taking up any commitment would be acceptable only if fulfilling such commitment is conditioned on financial assistance and transfer of technology.[267] Developed countries, with the United States at the forefront, declined to accept any nexus between

[264] See generally Rowena Maguire and Xiaoyi Jiang "Emerging Powerful Southern Voices: The Role of Basic Nations in Shaping Climate Change Mitigation Commitments" in Shawkat Alam, Samudu Atapattu, Carmen G. Gonzalez and Jona Razzaque (eds.) *International Environmental Law and the Global South* (Cambridge University Press, New York, 2015), 214-236.
[265] Rajamani, above n 11, at 217.
[266] Preamble, Chinese Non-Paper & Statement by the Leader of the Indian Delegation, 19 June 1991, Washington Session of the Inter-governmental Committee (INC). See Rajamani, above n 11, at 217.
[267] Delphine Borione and Jean Ripert, "Exercising Common but Differentiated Responsibility" in Irving M Mintzer and J. Amber Leonard *Negotiating Climate Change: The Inside Story of the Rio Convention* (Cambridge University Press, Cambridge: New York, 1994), 135

commitment and historical responsibility, noting that the way forward should be for countries to participate in the climate regime based on the resources and capabilities they command.[268]

This initial disagreement spilled over to the first conference of the parties in Berlin in 1995. At COP 1, developed countries raised the issue of different developing countries taking up different commitments;[269] however, this was vehemently rejected by the G-77/China, with a further counter from the Alliance of Small Island States (AOSIS) that developed countries' commitments at the time were still not adequate.[270] This culminated in a stalemate which led to the issue being relegated to the background and the Berlin Mandate adopted. However, in consonance with the position of developing countries, led by the G-77/China, the Berlin Mandate stipulated that no new commitments will be created for non-Annex I countries while reaffirming the strengthening of developed countries existing commitments.[271] Following this decision of the Berlin Mandate, the United States under Bill Clinton decided that it will not partake in any binding obligation without meaningful participation from major developing countries.[272]

Controversy relating to meaningful participation of developing countries continued at the third conference of the parties in Kyoto in 1997. Prior to COP 3, a proposal by some parties which included the United States, the EU, Japan, Poland, Switzerland, and the AOSIS, included an article on voluntary commitments by non-Annex I countries.[273] However, the G-77/China swiftly rejected the article and any proposal seeking to introduce any commitments,

[268] United States Submission to the INC 1991, No. 11 A/AC.237/Misc.1/Add.1. Preparation of a Framework Convention on Climate Change. Set of informal papers provided by delegations, related to the preparation of a Framework Convention on Climate Change.
[269] Summary of the First Conference of Parties to the UNFCCC, 28 March – 7 April, 12(21) Earth Negotiations Bulletin 11 (1995).
[270] Rajamani, above n 11, at 217
[271] Decision 1/CP.1. (The Berlin Mandate).
[272] Summary of the Meeting of the UNFCCC Subsidiary Bodies, 20-31 October 1997, 12(66) Earth Negotiations Bulletin 3 (1997).
[273] Article 10 of the Chair's draft negotiating text for the Kyoto Protocol. See Technical Paper, Tracing the Origins of the Kyoto Protocol: An Article-by-Article Textual History, FCCC/TP/2000/2, 80-83.

voluntary or otherwise, for developing countries.[274] At COP 3, China and India challenged the legal basis of formulating a new category of parties under the UNFCCC and what exactly the 'voluntary' commitments being proposed entailed.[275]

Moreover, a proposal by New Zealand that called for 'progressive engagement of developing countries according to their relative levels of development', including setting up a system of binding commitments for all parties, excluding the LDCs, by 2002 was not accepted either. The New Zealand proposal got the support of Australia, Canada, Japan, Poland, Slovenia, Switzerland and the United States.[276] While the EU rejected the proposal by New Zealand for contravening the Berlin Mandate,[277] the G-77/China stiffly resisted it and stated that it would withdraw from further discussions if the proposal was not thrown out.[278] Resultantly, the proposal was withdrawn. It has been observed, following this chain of events, that although the United States succeeded in a number of other respects during the negotiation of the Kyoto Protocol, it glaringly failed on the proposal for new commitments for developing countries.[279]

From the fourth conference of the parties in Buenos Aires in 1998, through to the fifth in Bonn in 1999, and to the sixth in The Hague in 2000, the issue of meaningful participation of developing countries in mitigation continued to be hotly contested between developing and developed countries.[280] Specifically, at COP 6 the United States attempted to condition financial assistance on exacting meaningful participation of developing countries by

[274] Above n 272, at 5.
[275] Summary of the Third Conference of Parties to the UNFCCC, 1-11 December, 1997, 12(76) Earth Negotiation Bulletin 13 (1997)
[276] Ibid. See Rajamani, above n 11, at 218.
[277] Ibid, at 6.
[278] Above n 273, 80-83. See Rajamani, above n 11, 218.
[279] Rajamani, above n 11, at 218-219.
[280] For a fuller account of the controversy, see Rajamani, above n 11, 219-222.

contending that it would not accept provision of new resources without discussing ways of widening the participation of developing countries.[281]

However, again, the G-77/China rejected the United States' proposal.[282] Similarly, the G-77/China challenged the same kind of offer by the Umbrella Group[283] which sought to establish new funds in the Global Environment Facility (GEF) covering adaptation and mitigation, by stating that the Group did not have to make finance available for mitigation as mitigation applied only to developed countries.[284] The G-77/China suspected that United States was still behind the proposal by the Umbrella Group. Eventually, reaching an agreement on the issue proved elusive at COP 6. Following the outcome of COP 6, United States rejected the Kyoto Protocol, with the then President Bush basing the rejection on "the incomplete state of scientific knowledge of the causes of, and solutions to, global climate change..." coupled with the fact that the Kyoto Protocol "exempts 80 percent of the world, including major population centers such as China and India, from compliance, and that the Protocol would cause serious harm to the US economy".[285]

The controversy relating to developing countries participation in mitigation raged on to the seventh conference of the parties in Marrakech in 2001, and continued up to the fifteenth conference of the parties in Copenhagen in 2009. At COP 7, with the United States having opted out of the Kyoto Protocol, agreement relating to meaningful participation of developing

[281] Ibid, 221.
[282] Sani Zangon Daura, Chair G-77/China, Opening Remarks (11 November 2000), cited in Rajamani above n 11, at 221.
[283] The Umbrella Group is a loose alliance of non-EU developed countries which came into existence following the adoption of the Kyoto Protocol, comprising Australia, Japan, Iceland, the United States, New Zealand, Russia, Norway, Canada and Ukraine. During the negotiation of the Kyoto Protocol, the Group used to operate under JUSSCANNZ, which stands for Japan, the United States, Switzerland, Canada, Australia, Norway and New Zealand.
[284] Rajamani, above n 11, at 221. See also Lavanya Rajaman, "Renegotiating Kyoto: A Review of the Sixth Conference of Parties to the UNFCCC" (2001) 12 Colombia Journal of International Environmental Law and Policy 201, 233-235.
[285] George W. Bush, Letter to Members of the Senate on the Kyoto Protocol, above n 160.

countries in mitigation activities could still not be reached.[286] At COP 8 in Delhi in 2002, the issue surfaced again, with developed countries and the OASIS emphasising the need for a futuristic approach that would widen commitments globally. However, this was rejected by most developing countries while relying on the CBDRRC principle to maintain that no arrangement introducing new commitments for developing countries would be countenanced.[287]

A defining moment for the G-77/China arose at the tenth conference of the parties in Buenos Aires in 2004. With the coming into force of the Kyoto Protocol becoming certain following Russia's decision to ratify the Protocol and the feeling that the climate regime would be put back on track again, and considering that efforts to discuss future mitigation responsibilities of parties had been consistently blocked by the G-77/China in the past, a couple of developing countries decided to break away from the G-77/China. Argentina, South Africa and the OASIS left the G-77/China in order to push forward their common views on future commitments.[288]

The most dramatic moment on the issue of developing countries participation in mitigation and the continued relevance of G-77/China came at COP 15, where China, India, Brazil and South Africa, negotiated under the newly formed block of 'BASIC' nations.[289] This new block then took on developed countries on diverse issues, including future mitigation commitments by developing countries, leading to COP 15 being plagued by divisions that proved detrimental to arriving at a common agreement amongst parties to the UNFCCC.[290] Although the content of the Copenhagen Accord, widely regarded as a political agreement

[286]UNFCCC, Report of the Conference of the Parties on its Seventh Session, FCCC/CP/2001/13 (2001).
[287] Rajamani, above n 11, at 222.
[288] Summary of the Tenth Conference of the Parties to the UNFCCC, 6-8 December, 2004, 12(260) Earth Negotiations Bulletin, 13-15 (2004).
[289] See Saleemul Huq, Achala Chandani and Simon Anderson 'COP-15 Review and Analysis' *International Institute for Environment and Development*, 21 January 2010.
[290] Ibid.

brokered between the United States, China, India, Brazil and South Africa, and a few other countries, could not be formally adopted by the COP,[291] the bottom-up style of mitigation formally introduced by the Accord shaped future negotiations between parties to the UNFCCC on the issue of future commitments to mitigate emission of greenhouse gases, especially the introduction of the bottom-up nationally determined contributions framework that now forms part of the Paris Agreement.[292]

Considering that the issue of participation of developing countries in mitigation from the sixteenth conference of the parties in Cancun in 2010 to the twentieth conference of the parties in Lima in 2015, especially from the perspective of CBDRRC, has been dealt with above, I will now turn to the controversy surrounding incorporation of CBDRRC into the Paris Agreement at COP 21.

It was reported that a 'tough fight' ensued between developing and developed countries with respect to differentiation at the Paris conference.[293] This view was corroborated by leading experts who participated in the negotiation of the Agreement.[294] The core of the controversy has been highlighted thus:

The issue of differentiation between developed and developing countries remained a key sticking point until the final hours of the climate talks on the UNFCCC's Paris Agreement. Parties remained firm in their respective positions and were deadlocked over how to reflect differentiation and to operationalize it in the different elements of the Paris Agreement, covering mitigation, adaptation, finance, technology development and transfer, capacity-building and transparency... With positions of parties on differentiation completely polarized, commentators and experts were of the view that the Paris talks could make or break over the issue. Central to the disagreement was whether the Agreement would retain differentiation by reflecting the principle of common but differentiated responsibilities (CBDR) as provisioned for in the Convention, a key demand of the Like

[291] The 15th COP merely 'took note' of the Copenhagen Accord. See Decision 2/CP.15, FCCC/CP/2009/11/Add.1
[292] See Decision 1/CP.21, paras. 12 - 21; 22 - 41. See also Articles 3 and 4 of the Paris Agreement.
[293] TWN, above n 63.
[294] Rajamani, above n 42, at 506; Voigt and Ferreira, above n 42, at 62.

Minded Developing Countries (LMDCs), or reflect 'dynamic differentiation' which the European Union (EU) called for, or 'self-differentiation' of which the United States (US) and its allies were proponents.[295]

Following from the preceding paragraph, the discordance lingered. While developed countries justified their stance on the need to move away from differentiation as reflected in the UNFCCC owing to the fact that parties' circumstances have evolved since the negotiation of the UNFCCC in 1992, developing countries countered by echoing the historical responsibility of developed countries in creating the climate change problem, the fact that developed countries have not lived up to their legally binding commitments under the UNFCCC and the Kyoto Protocol to provide financial assistance and transfer technology to developing countries, and that developing countries will not accept any arrangement that will culminate in their development space being compromised as the economic development landscape of the world has not really changed between developing and developed countries since the adoption of the UNFCCC in 1992.[296]

In line with the foregoing, Malaysia for the LMDCs agreed that the UNFCCC has been in place since 1992 but that developed countries have not fulfilled their obligations under the Convention, while noting that the LMDCs which contain two-thirds of the world's poor have been on the receiving end of climate extremes, and that differentiation under the Paris Agreement must be captured in a way to enhance the implementation of the UNFCCC, not to re-write it.[297] India and China, towing the same line as Malaysia, posited that "the purpose of the Agreement must clearly reflect that it is to enhance the implementation of the Convention

[295] TWN, above, n 63. The LMDCs is an alliance of developing countries consisting of Bolivia, China, Cuba, Dominica, Ecuador, Egypt, El Salvador, India, Iran, Iraq, Malaysia, Mali, Nicaragua, Philippines, Saudi Arabia, Sri Lanka, Sudan and Venezuela.

[296] Ibid. See also TWN, 'Differentiation between developed and developing countries still relevant, say developing countries' *Third World Network*, Issue 10, December 4 2016.
[297] TWN, above n 63.

and follow its principles, including equity and CBDR".[298] On the other side of the divide, the EU was reported to be of the view that the principles of the UNFCCC should be captured and applied in a manner that is and appreciable of contemporary and evolving realities, while underlining that differentiation under the Paris Agreement must be operationalized to reflect different national circumstances.[299]

The United States, while expressing support for CBDRRC maintained that it would not accept the annex-based differentiation of the UNFCCC in any form or guise, citing differentiation as applied under the UNFCCC as the reason why the Kyoto Protocol failed.[300] In response to the United States' position on the UNFCCC annexes, Singapore was reported to have incisively retorted that "even if you don't want to face the frontal nudity of the annexes, the fact is we have developed countries and developing countries. There are different roles played by these. Parties should stop scaring each other by invoking the spectre of bifurcation and firewalls".[301]

How then did the UNFCCC parties disagree in order to agree on the core parts of the Paris Agreement at COP 21, specifically mitigation, finance and transparency?

With respect to mitigation,[302] Malaysia posited that differentiation must form the bedrock of the Paris outcome, and that any attempt to dismantle the differentiation firewall of the UNFCCC will be unacceptable.[303] Furthermore, China stipulated that differentiation in mitigation can be formulated by provisions mandating developed countries to take the lead in mitigation and to adopt economy-wide absolute emission reduction targets, while developing countries' obligation should reflect a sustainable development framework, subject to

[298] Ibid.
[299] Ibid.
[300] Ibid.
[301] Ibid.
[302] See Voigt and Fereirra, above n 42, at 67-68; Rajamani, above n 42, at 509-511;
[303] TWN, above n 63.

provision of finance, technology and capacity-building by developed countries.[304] Ethiopia, speaking on behalf of the Africa Group, supported the views expressed by Malaysia and China, by maintaining that developed countries must assume frontal roles by adopting economy-wide emissions reduction, while developing countries take on different mitigation commitments.[305]

The LDCs supported developed countries taking the lead in mitigation actions, while stressing the importance of recognising the special needs of the LDCs in the final outcome.[306] Conversely, the EU rejected any attempt to introduce a bifurcated approach that will further entrench the divide between developing and developed countries. It submitted that mitigation actions should reflect each party's national circumstances, and that parties should demonstrate highest possible ambition in their mitigation actions by striving to reach emission-wide targets through successive NDCs.[307] On its part, the United States was reported to have stated that getting differentiation wrong would affect ambition negatively, while insisting that any category-based differentiation on mitigation founded on the UNFCCC annexes or developed and developing countries division will be rejected. It proposed a mitigation framework based on self-differentiation and nationally determined contributions.[308]

Eventually, parties agreed to differentiation between developing and developed countries with respect to mitigation. The provision of the Paris Agreement that mainly captures the agreement of the parties provides that:

"Developed country Parties should continue taking the lead by undertaking economy-wide absolute emission reduction targets. Developing country Parties should continue enhancing their mitigation efforts, and are

[304] Ibid.
[305] Ibid.
[306] Ibid.
[307] Ibid.
[308] Ibid.

encouraged to move over time towards economy-wide emission reduction or limitation targets in the light of different national circumstances".[309]

With respect to finance, negotiating differentiation between developing and developed countries was also controversial.[310] Developing countries objected to incorporation of any phrase in the final outcome that provision of climate finance should also apply to 'countries in a position to do so'.[311] Specifically, Malaysia termed such a phrase a potential 'legal minefield' considering the difficulty of arriving at a formula to determine which parties are in a position to do so. China was reported to have submitted that a phrase such as 'countries with capacity or in a position to do so' having not be defined earlier will militate against arriving at an agreement, while maintaining the view that Paris outcome must provide for developed countries to keep to their legal obligations of providing financial resources to developing countries post-2020, and that a provision encouraging other parties to voluntarily provide financial support to developing countries should be considered rather than parties in a position or with capacity to do so.[312]

On its part, India was said to have stated that it is imperative that differentiation recognises that developed countries must provide finance required for implementation to developing countries, and that developed countries having not satisfactorily met the commitment to provide finance under the extant arrangement should not seek to introduce further confusion by incorporating terms such as "parties willing to do so".[313] The LDCs stressed the need for developed countries to keep their promise of scaling up climate finance, especially with respect to SIDs, LDCs and Africa, but further noted that while any agreement reached in Paris must follow the Convention on the issue, parties should also explore the possibility of

[309] Art. 4.4.
[310] See generally Rajamani, above n 42, at 513-513; Maljean-Dubois, above n 42, at 157-158; Voigt and Fereirra, above n 42, at 69-70.
[311] TWN, above n 63.
[312] Ibid.
[313] Ibid.

South-South cooperation in the area of provision of climate finance, in line with current and emerging realities by the agreement encouraging parties willing to provide finance to so do.[314]

With respect to developed countries perspectives on finance, the EU favoured enhanced action by all parties toward provision and mobilization of finance in order to meet the enormous financial requirements arising from implementation, and the need to achieve climate resilient economies, thus supporting the view that parties in a position to provide climate finance should do so.[315] The United States was said to be in support of expanding the donor base of climate finance but opposed any quantified financial commitment for developed countries which will be scaled up periodically, while noting that "a legally binding agreement with respect to finance will be a killer for the agreement"; and then recommending a "voluntary, non-punitive action".[316]

Furthermore, Singapore submitted that the extant US$100 billion financial commitment per year by developed countries due to run till 2020 is not a donation by developed countries, but financial resources provided in fulfilment of an obligation.[317] It further asserted that "even if we hope other developing countries to support developing countries, these countries [developing countries] will not accept that these contributions and support are on the same terms as fulfilment of prior obligations by developed countries. That is why 'in a position to do so' is being opposed.[318]

The foregoing heated disagreement notwithstanding, parties agreed to provisions differentiating between developing and developed countries with respect to financial

[314] Ibid.
[315] Ibid.
[316] Ibid.
[317] Ibid.
[318] Ibid.

resources. The core provision of the Paris Agreement reflecting this differentiation provides, *inter alia*, that:

"*Developed country Parties shall provide financial resources to assist developing country Parties with respect to both mitigation and adaptation in continuation of their existing obligations under the Convention."*[319]

However, while the phrase "countries in a position to do so' did not survive negotiation fireworks in Paris, what appears to be a compromise outcome between developing and developed countries is reflected in the Paris Agreement thus:

"Other Parties are encouraged to provide or continue to provide such support voluntarily".[320]

With respect to differentiation on transparency,[321] Malaysia was reported to have insisted on recognition being accorded the various national and economic realities between developing and developed countries. It warned against foisting disproportionate burden on developing countries which invariably will result in no progress at all; opposed a common transparency system, noting the inherent difficulty that developing countries would face in relation to data collection to fulfil their obligations under any such common system; and, advocated differentiation which is not totally bifurcated that accords flexibility to developing countries only.[322]

China proposed that any agreed outcome should contain an enhanced system of transparency founded on the existing arrangement under the UNFCCC. While opposing a unified system that applies to developing and developed countries, it supported a system of transparency that differentiates between the two groups on issues such as institutions, methodology, reporting

[319] Art. 9.1.
[320] Art. 9.2.
[321] See Maljean-Dubois, above n 42, at 158; Rajamani, above n 42, at 511-512; Voigt and Fereirra, above n 42, at 70-71.
[322] TWN, above n 63.

frequency, etc.[323] On its part, India was said to have warned against compromising differentiation between developing and developing countries with respect to transparency by "changing the goalposts" considering that the current transparency and reporting system under the Convention have not been satisfactorily implemented.[324] The Africa Group underlined the importance of taking into account respective capacities of countries in building a transparency framework, particularly the need for flexibility for developing countries, while advocating that any transparency framework agreed must be based on the extant framework under the UNFCCC.[325]

On the side of developed countries, the EU was reported to have underscored the fact that differentiation on transparency has nothing to do with historical responsibility, and that all parties should be subject to the same reporting system, which may be nuanced to provide flexibility for developing countries, especially the LDCs, while terming the existing transparency system under the Convention as unfit for purpose.[326] Furthermore, the United States advocated a new credible and robust transparency system, which provides capacity-building support for developing countries with low capacity.[327]

This differing position of parties notwithstanding, a transparency framework was agreed. The Paris Agreement reflected the compromise reached by parties thus:

In order to build mutual trust and confidence and to promote effective implementation, an enhanced transparency framework for action and support, with built-in flexibility which takes into account Parties' different capacities and builds upon collective experience is hereby established.[328]

[323] Ibid.
[324] Ibid.
[325] Ibid.
[326] Ibid.
[327] Ibid.
[328] Art. 13.1.

The transparency framework shall provide flexibility in the implementation of the provisions of this Article to those developing country Parties that need it in the light of their capacities. The modalities, procedures and guidelines referred to in paragraph 13 of this Article shall reflect such flexibility.[329]

The transparency framework shall build on and enhance the transparency arrangements under the Convention, recognizing the special circumstances of the least developed countries and small island developing States, and be implemented in a facilitative, non-intrusive, non-punitive manner, respectful of national sovereignty, and avoid placing undue burden on Parties.[330]

However, Article 13.13 has been termed ambiguous in providing that the COP, building on the Convention experience from the transparency framework should adopt "common modalities, procedures and guidelines..."[331] What should inform arriving at such modalities, procedures and guidelines remains unknown. Arguably, this provision will likely throw the door wide open for another heated debate between developing and developed countries.

From the forgoing assessment, it can safely be concluded that CBDRRC will continue to be a contested principle of the climate regime subject to diverse interpretations from countries, developing or developed, depending on the perspectives and issues in relation to which the principle is being invoked. Although the Paris Agreement has taken a step further from differentiation under the UNFCCC and the Kyoto Protocol, it remains to be seen how the gamut of different manner of differentiations incorporated in the Agreement will be put into practice. While the nuanced approach to differentiation reflected in the Paris Agreement is undoubtedly the brainchild of the heated debate in relation to CBDRRC between developing and developed countries as captured in the above discussion, it is a welcome development considering that the circumstances of parties have evolved over the last two decades of the negotiation of the UNFCCC and the Kyoto Protocol, and will continue to evolve.

[329] Art. 13.2.
[330] Art. 13.3.
[331] TWN, above n 63.

However, the success of the nuanced and dynamic differentiation pattern of the Agreement will largely depend on parties fulfilling their commitments, especially with respect to provision of financial assistance, technology transfer and capacity-building. In this regard, developed countries will continue to occupy strategic and important position. Although the circumstances of the parties have changed from what they were in 1992, specifically the increased emissions arising from the emerging economies due to their economic expansion activities, not much has changed between developing and developed countries in other material respects. Similar view was put forward by the G77/China during consultation on climate finance at COP 21 thus:

As developing countries, we find ourselves confronted with a simplistic narrative that suggests that "the world has changed since the UNFCCC was adopted in 1992" due to the dramatic economic development gains of some of our members and hence that it is time to expand the pool of so-called "donors" of climate "aid" and to narrow the list of those eligible to receive this "support" to only the "poorest of the poor". This narrative serves narrow national interests of developed countries and says little about reality. If the world has really changed so much, we ask why it is that after all these decades all our members remain developing countries with little or no voice in global decision-making processes and institutions.[332]

While, admittedly, historical responsibility of developed countries for causing the climate change problem remains a vital consideration in shaping the contours of CBDRRC, other factors such as current and projected future emissions and evolving capabilities of parties ought to be taken into account in the light of climate change as a common concern of all countries. However, care must be taken to avoid foisting an unfair arrangement on developing countries, considering that economic development and eradication of poverty will continue to be of paramount importance to them. Of course, economic development and poverty eradication can be pursued in tandem with policies to address climate change;

[332] Statement by Ambassador Nozipho Mxakato-Diseko from South Africa on behalf of the Group of 77 and China, Open-ended Consultation on Finance Process, Paris, France, 2 December, 2015, Paragraph 7.

however, doing so successfully on the part of developing countries will entail strong commitment by developed countries to provide the needed support. Viewed from this prism, time will tell if the Paris Agreement has really succeeded in balancing the interests of developing and developed countries in a fair and equitable manner in accordance with the CBDRRC principle.

3.5 Conclusion

The relationships between developing and developed countries under the climate change regime are founded on the principle of differentiation as evolved, and later enshrined in Principle 7 of the Rio Declaration. Over time, Principle 7 of the Rio Declaration metamorphosed into the principle of common but differentiated responsibility and respective capabilities (CBDRRC), which primarily defines the relationships between developing and developed countries to the effect that: the global nature of climate change calls for the widest possible cooperation by all countries in accordance with their common but differentiated responsibilities and respective capabilities and their social and economic conditions. Accordingly, developed country parties should take the lead in combating climate change; and that the specific and special needs of developing country parties should be given full consideration.

CBDRRC underscores the vast disparity between developing and developed countries – economically, technologically, and otherwise. It also underscores the bigger contribution to global environmental problems by developed countries through past fossil fuel driven industrialisation. CBDRRC also recognises the fact that developed countries command far more resources to expend on environmental problems than developing countries; that developing countries require all the resources they can muster to tackle poverty and under-development; and that technology transfer and financial assistance from developed countries

to developing countries are indispensable if global environmental problems, especially climate change, are to be confronted effectively.

The justification for retaining CBDRRC in future climate change governance arrangements lays in the fact that the major reasons necessitating differentiation of responsibilities between developing and developed countries *ab initio* remains even today. To this end, the recognition of CBDRRC in the Paris Agreement is a welcome development. However, differentiation as practiced under the UNFCCC and the Kyoto Protocol no longer obtains following the nuanced and dynamic approach of the Paris Agreement. The Paris Agreement employment of the qualifier: "in the light of different national circumstances" represents the core of the Agreement's deviation from CBDRRC under the UNFCCC; however, caution has been advised in interpreting the qualifier in order to avoid untoward consequences, especially from the standpoint of developing countries. Thus, while it may be justified to interpret the qualifier strictly against big and high GHG emitting developing countries, especially the emerging economies, such justification would be unsustainable with respect to smaller and capacity-constrained developing countries that depend mostly on financial assistance and technology transfer from developed countries to be able to undertake mitigation and adaptation measures.

Although CBDRRC as the core principle underpinning the relationships between developing and developed countries continues to be controversial considering that its content and reach are yet to be explicitly delineated, and may even be adjudged not to have been effective in facilitating the attainment of the stabilisation objective of the UNFCCC and achieving an effective international framework for transfer of technology and financial assistance to developing countries, the principle continues to be central in defining the relationships between developing and developed countries in the international legal regime governing climate change.

CHAPTER 4

TRANSFER OF TECHNOLOGY, FINANCIAL ASSISTANCE AND SUSTAINABLE ECONOMIC DEVELOPMENT OF DEVELOPING COUNTRIES

4.1 Introduction

In the previous chapter, the CBDRRC as the fundamental principle underpinning the relationships between developing and developed countries was evaluated, especially with respect to central obligations, obligations relating to implementation, and obligations pertaining to financial and technological assistance. It was found that although the principle has neither succeeded in assisting parties attain the ultimate stabilisation objective of the UNFCCC, nor to form an effective regime for transfer of technology and financial assistance to developing countries, the principle continues to form the basis for defining the obligations of parties in the international legal regime governing climate change. While the qualifier to CBDRRC surely holds the key for more differentiation between parties to the Paris Agreement considering that the circumstances of the parties have evolved since 1992 when the UNFCCC was negotiated, its application may prove controversial considering that the Paris Agreement does not define what criteria to be considered in applying the qualifier.

In this chapter, the three main components that form the building-block of the research topic will be comprehensively and critically evaluated. The evaluation to be undertaken in the chapter will centre on discovering how effective the international regime governing climate change has been in attaining the important objectives of transfer of technology and financial assistance to developing countries to support mitigation and adaptation to climate change, and to enable them achieve sustainable development.

Achieving the stabilisation goal of the UNFCCC (and by extension the long-term temperature goal of the Paris Agreement) primarily depends on parties implementing their obligations. With respect to obligation of parties, pursuant to CBDRRC, developed countries are to, among other things, transfer technology and provide financial support to developing countries to enable the latter effectively implement their obligations, which includes undertaking policies and measures relating to mitigation and adaptation to climate change. Thus, transfer of technology and financial assistance are fundamentally important for developing countries to fulfil their obligations towards attaining the stabilisation goal of the UNFCCC.

Proceeding from this premise, this chapter will undertake an investigation into what technology has been transferred to developing countries by developed countries, and also examine what financial support has been rendered. It must be stated that inherent limitation exists in gathering available data relating to climate technology and climate finance flowing to developing countries due to existence of multiple channels and avenues which are not subject to any centralised reporting system. This limitation notwithstanding, the overall impact of the extent technology transfer and financial assistance have reduced emissions in developing countries, or supported adaptation to the adverse impacts of climate change, or contributed to sustainable development in developing countries, are also subjects susceptible to ordinary human perception.

The increasing emission of greenhouse gases in developing countries can, for example, be relied upon as an empirical evidence to arrive at a conclusion as to whether the regime governing transfer of technology and financial assistance to developing countries has been effective. Thus, while efforts will be made to mine available data subject to the limitations underlined above, whatever outcome arrived at in the bid to answer the overarching research question relating to technology and finance will be deemed valid and defensible based on the UNFCCC stabilisation objective criterion.

The structure of the chapter will be as follows. The chapter will be divided into four parts. The first part will assess the regime governing transfer of technology to developing countries, and will consist of six sub-chapters: research and development and technology development and transfer; the role of technology transfer in the implementations of multilateral environmental agreements (MEAs) in developing countries; review of the provisions dealing with transfer of technology under the UNFCCC, the Kyoto Protocol and the Paris Agreement; barriers to transfer of technology to developing countries; and the achievements and failures of the climate change regime in the area of transfer of technology to developing countries.

The second part will evaluate financial assistance to developing countries. It will consist of eight sub-parts: overview of evolution of financial assistance to developing countries in international environmental law; the role of financial assistance in the implementation of MEAs in developing countries; overview of global estimates on climate finance and discussion of available data on the actual finance supplied; review of the provisions and financial mechanisms of the UNFCCC, the Kyoto Protocol, and the Paris Agreement; climate finance coordination; impediments to implementation of financial assistance provisions of the climate regime; and, achievements and failures of the climate regime on financial assistance to developing countries.

The third part of the chapter will look at sustainable economic development of developing countries under the climate change regime. It will be made up of five sub-chapters covering evolution of sustainable development in international environmental law; definition of sustainable development; the ethical link between climate change, sustainable development and economic development; review of the sustainable development provisions of the UNFCCC, the Kyoto Protocol, and the Paris Agreement; and, future challenges posed to the climate regime by sustainable economic development of developing countries.

The last sub-chapter will be the conclusion.

4.1.1 Transfer of Technology to Developing Countries under the Climate Change Regime

4.1.2. Research and Development (R & D), Technology Development and Technology Transfer: An Overview

The adequacy or otherwise of available technologies to reduce greenhouse gas emissions continues to be a point of deliberation among climate experts and other stakeholders. If the problem of climate change is to be solved, net emissions of greenhouse gases ought to fall drastically over time, if not to a zero mark. Undoubtedly, net emissions falling to a level deemed safe can only be achieved through breakthrough in technology. However, leap in technological advancement is normally made through substantial investment of resources in research and development (R & D), especially at the early stage. Investment in the research and development of new technologies is essential to realising the objective of transferring technology to developing countries under the climate change regime, considering that environmentally-friendly technologies would have to be developed first, before their transfer or diffusion. Thus, R & D is of critical importance to international climate change regime.[1]

Technology transfer has been defined as "the intentional passing-on of technology or know-how from one party to another, commonly by purchase, investment or agreements for cooperation.[2] There are three distinct components of technology that can be transferred: physical assets - such as industrial plants, machinery, and equipment; information - both technical and commercial, relating to process know-how, choice of technology, engineering

[1] Valentina Bosetti, "A Perspective Paper on a Technology-led Climate Policy (Including an Analysis of Geological Carbon Sequestration as a Response to Climate Change)", Copenhagen Consensus on Climate Change, 5. Available online at: <www.copenhagenconsensus.com> Accessed 7 November 2013.
[2] Stephen O. Anderson, Madhava K. Sarma and Kristen N. Taddonio, *Technology Transfer for the Ozone Layer: Lessons for Climate Change* (Earthscan, London, 2007) at 5.

design and plant construction, organisation and operating methods, quality control and market characteristics; and, human skills - especially those possessed by specialised professionals and engineers."[3] Furthermore, the IPCC defines transfer of technology as a "broad set of processes covering the flows of know-how, experience and equipment amongst different stakeholders such as governments, private sector entities, financial institutions, non-governmental organisations and research or education institutions. It comprises the process of learning to understand, utilize and replicate the technology, including the capacity to choose it and adapt it to local conditions and integrate it with indigenous technologies."[4]

Stabilisation of atmospheric greenhouse gases requires development and deployment of low-carbon technologies on a wider scale. To attain this objective, a considerable global effort on technology development is required.[5] Financial assistance from developed to developing countries alone will not be sufficient to drive effective climate change mitigation and adaptation policies in the latter. Collaboration between developed and developing countries in the development and transfer of technology is imperative if the ultimate objective of stabilisation of emissions is to be attained.[6] However, while collaboration between developed and developing countries is required, it has been observed that "basic research and development of low-emissions technologies is an international public good requiring high levels of expenditure by developed countries,[7] considering their comparative economic advantage over developing countries.

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[3] Ibid, 6.

[4] Bert Metz, Ogunlade Davidson, Robert Swart and Jiahua Pan (eds.) *Climate Change 2001: Mitigation – Contribution of Working Group III to the Third Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, Cambridge, 2001), at 643. See also Intergovernmental Panel on Climate Change *"Methodological and Technological Issues in Technology Transfer: Special Report of the Intergovernmental Panel on Climate Change"* (Cambridge University Press, Cambridge, 2001).

[5] Nicholas Stern, *The Economics of Climate Change: The Stern Review* (Cambridge University Press, Cambridge, 2007), 394-395.

[6] Ross Garnaut, *The Garnaut Climate Change Review: Final Report* (Cambridge University Press, Melbourne, 2008), 226.

[7] Ibid, 422.

Innovation begets technological break-through that leads to development of low-carbon technologies.[8] Innovation has been defined as the "successful exploitation of new ideas".[9] With respect to technological change, four types of innovation have been identified: incremental innovations – which entails constant enhancement of an existing product to make for better quality and utility; radical innovations – which accounts for novel inventions that move away from previous means of production; transformation of technological systems resulting from a cluster of radical new ideas which affects multiple aspects of the economy; and, paradigm shift resulting from transformation of the technological system which influences every other aspect of the economy.[10] While innovative developments with respect to car engines represent an example of the first type; hybrid cars, shift to low-emission economy, and the technological change brought about by the internet represent examples of the second, third, and fourth respectively.[11]

Furthermore, three stages characterise the innovation process: "invention as the first practical demonstration of an idea; innovation as the first commercial application; and diffusion as the spreading of the technology or process throughout the market".[12] The invention stage may further be broadened to include basic R & D, applied R & D and demonstration.[13] Practically, this broadened invention stage involves early research - through which new knowledge is added to basic science; demonstration and commercialisation – where the new knowledge is applied and commercialised; market uptake – where the new knowledge finds expression in a product or service which is made available in the open market.[14]

[8] Ross Garnaut, *The Garnaut Review 2011: Australia in the Global Response to Climate Change* (Cambridge University Press, Melbourne, 2011), 113.
[9] Stern, above n 5, at 395
[10] Ibid.
[11] Ibid.
[12] Ibid, 396.
[13] Ibid.
[14] Garnaut, above n 6, at 425.

Innovation is indispensable if the costs of low-carbon technologies are to be affordable and controlled.[15] With respect to climate change, innovative ideas that culminate in the creation of new climate-friendly technologies by one country may result in a spillover of knowledge which then benefits other countries.[16] Such spillover, through pre-arranged schemes, must have been the natural intendment of the international climate change regime in instituting a framework for technology to be developed and transferred to developing countries to enable them mitigate and adapt to climate change, and at the same time develop sustainably.[17]

However, development of new technologies comes with economic costs, whether it is being undertaken publicly or by the private sector. Thus, enormous financial commitments are required to drive innovation that results in the development and diffusion of low-carbon technologies. Carbon price has been put forward as one means of generating resources needed to drive innovation necessary for the large scale development and diffusion of low-carbon technologies required to mitigate and adapt to climate change. Justifying the considerations behind carbon price, Garnaut submits thus:

Placing a price on emissions of greenhouse gases that reflects the damage that they do to other human activities is the economically efficient way to increase incentives for innovation in technologies that reduce greenhouse gas emissions. It will increase the expected profitability of all such activities, increase the levels of innovation, and speed it up. No useful area of innovation to reduce emissions will miss out on the encouragement. It will add to other motives for investing in innovation, and lead to higher levels of investment in innovation than the other motives alone… The carbon price will make it more profitable for firms and industries to invest in

[15] Stern, above n 5, at 395. See also David Ockwell and Rob Byrne, "Improving Technology Transfer through National Systems of Innovation: Climate Relevant Innovation System Builders (CRIBS)" (2016) 16 *Climate Policy*, 836 – 854.
[16] Garnaut, above n 8, at 113.
[17] See UNFCCC, Art. 4.5; Kyoto Protocol, Art. 10(c); Paris Agreement, Art. 10. See also Decision 1/CP-21, paras. 65-70.

research, development, demonstration and commercialisation of low-emissions technologies. It guides and provides incentives for investments in low-emissions technologies.[18]

In the absence of carbon price, the level of support required for R & D and innovations for development of new technologies will increase considerably.[19] Notwithstanding, it has been stated that carbon price alone will not be sufficient to attain the level of innovation and technology development required to address climate change globally.[20] Public subsidy or support is needed to generate the level of investments required to drive innovation in new technologies. Rationalising the need for public support in the research and development of low-emissions technologies, Garnaut opines as follows:

When a private firm invests in research, development, demonstration or commercialisation of new technologies, it takes large risks and spends money on discovering knowledge. If it is successful, it reduces risk and discovers knowledge from which it will receive some benefits in future, but which other firms will share. Patents can keep a proportion of the benefits within the innovating firm, but sometimes only a small proportion, and only for a while. The benefits that one firm's innovation confers on others justify public subsidy – without public support, there will be much less innovation than is desirable from the point of view of the community as a whole. ... To take advantage of the new opportunities provided by a carbon price and to reduce emissions at low cost, substantial public support for innovation is required.[21]

Apart from public support for innovation, other governmental policies may impact development and deployment of new technologies.[22] National planning and standardisation regimes can impede innovation or increase the cost of deployment of new technologies. For instance, while at the domestic level intellectual property regulation may operate as an incentive to the innovator; exercise of property right can also pose problems to diffusion of

[18] Garnaut, above n 8, at 115.
[19] Stern, above n 5, at 422.
[20] Garnaut, above n 8, at 116.
[21] Ibid.
[22] Stern, above n 5, at 420.

new technologies and discourage further efforts to improve on the original innovation.[23] Thus, a careful balance needs to be struck between the interest of the original innovator and the wider public interest in making the technology arising from such innovation available to the public. Striking this balance continues to elude the stakeholders and policymakers, especially in the climate regime governing development and diffusion of technology, where this inherently domestic property rights issues have assumed an international dimension of intractable nature.[24]

Furthermore, the sheer amount of paradigmatic leap required in achieving the level of innovation necessary for the development of low-carbon technologies to deal with climate change justifies public-private partnership.[25] Although the private sector plays a vital role in R & D and technology transfer, partnership between governments and private firms will further catalyse the development of a "broad portfolio" of low-carbon technologies at a lesser economic costs.[26] Collaboration between government and industry may also serve to create the enabling environment for dealing with problems arising from a wide range of issues which may operate as impediments to development of new technologies or the diffusion of existing ones.[27] However, to avoid unwanted outcomes, the parameters of such partnership have been stressed:

It is important that public R & D leverages private R & D and encourage commercialisation. Ultimately the products will be brought into the market by private firms who have a better knowledge of markets, and, so it is important that public R & D maintains the flow of knowledge by ensuring public R & D complements the efforts

[23] Ibid.
[24] See generally, Chaewoon Oh and Shunji Matsuoka, "Complementary Approaches to Discursive Contestation on the Effects of the IPR Regime on Technology Transfer in the Face of Climate Change" (2016) 128 *Journal of Cleaner Production*, 168-177. See generally Matthew Rimmer, *Intellectual Property and Climate Change – Inventing Clean Technologies* (Edward Elgar, United Kingdom, 2011).
[25] Elisa Morgera and Kati Kulovesi, "Public-Private Partnerships for Wider and Equitable Access to Climate Technologies" in Abbe E.L Brown (ed.) *Environmental Technologies, Intellectual Property and Climate Change: Accessing, Obtaining and Protecting* (Edward Elgar, UK, 2013), 108 -151.
[26] Stern, above n 5, at 393.
[27] Ibid.

of the private sector. The growth and direction of private R & D efforts will be a product of the incentives for low-emission investments provided by the structure of markets and public policies. Public R & D should aim to complement, not compete, with private R & D, generally by concentrating on more fundamental, longer-term possibilities, and by sharing in the risks of some larger-scale projects...[28]

The requisite balance of interests in the partnership between public and private institutions if attained will engender seamless development of low-carbon technologies in response to supply-push and demand-pull factors.[29] While government funding of innovative R & D leading to development of new technologies represents a key push factor, the price of carbon as determined through governmental policies represents a demand factor. In both scenarios, the private sector occupies a strategic position.

The fact that financial assistance from developed to developing countries alone will be inadequate to galvanize mitigation and adaptation actions needed to effectively deal with climate change in developing countries makes technology cooperation an imperative.[30] The realisation of the indispensability of technology development and transfer in the climate regime formed part of the reason for the recognition and operationalization of the common but differentiated responsibilities principle,[31] which obliges developed countries, owing to their better financial and technological capacity, among other considerations, to transfer technology to developing countries to enable the latter mitigate climate change and deal with its adverse effects. Thus, from Rio in 1992 to Paris in 2015,[32] the international climate regime

[28] Ibid, 414.
[29] United Nations Department of Economic and Social Affairs, 'Climate Change: Technology Development and Technology Transfer' Beijing High-level Conference on Climate Change: Technology Development and Technology Transfer, Beijing China, 7-8 November 2008, 67-69.
[30] Stern, above n 5, at 581; Garnaut, above, n 6, at 226. See also David Ockwell, Ambuj Sagar and Heleen de Coninck, "Collaborative Research and Development for Climate Technology Transfer and Uptake in Developing Countries: Towards a Need Driven Approach" (2015) 131 *Climatic Change*, 401 – 415; Cedric Philibert, "The Role of Technological Development and Policies in a Post-Kyoto Climate Regime" (2005) 5(3) *Climate Policy*, 291 – 308.
[31] UNFCCC, Art.3; Paris Agreement, Art. 2.2
[32] UNFCCC, Art. 4.5; Kyoto Protocol, Art. 10(c); Paris Agreement, Art. 10. Virtually every COP decision has handed down a declaration / decision on transfer of technology to developing countries since COP-1 in 1995.

boasts a significant literature on transfer of technology to developing countries. However, new technologies need to be developed first before issues surrounding their transfer arise. Innovation through R & D drives development of new low-carbon technologies. While underlining the primal position occupied by developed countries with respect to investments to encourage innovation necessary for technology development, Garnaut states thus:

There are good reasons for high-income countries to play their proportionate part in a global innovation effort. That part will be most productive if each country contributes in areas in which it has a comparative advantage in research. Developed countries have superior endowments of relevant human and physical capital for successful research and development. They are also in a better position than developing countries to invest in long-term and risky projects that hold out the possibility of high returns.[33]

Admittedly, as long as developed countries continue to occupy comparatively better position economically and technologically compared to developing countries, the need for technology transfer from the former to the latter will remain a major aspect of the climate regime. The desirability for 'energy technology leapfrogging'[34] by developing countries will primarily depend on how fast innovative ideas lead to development of new low-carbon technologies and the efficiency of their diffusion or transfer.

The idea behind energy leapfrogging is that developing countries can avoid traditional sources of energy, such as fossil fuel, in the pursuit of economic development, in preference for low-carbon and cleaner sources invented mostly in developed countries.[35] Thus, it has been suggested that for effective climate change mitigation, "developing countries need not adopt the dirty technologies of the past – rather, they can "leapfrog" over them, opting instead for modern, clean technologies as an integral part of capacity additions".[36] In support

[33] Garnaut, above n 8, at 117.
[34] Joana I. Lewis, "Technology Acquisition and Innovation in the Developing World: Wind Turbine Development in China and India" (2007) 42 *Studies in Comparative International Development*, 208 – 232, 210.
[35] Ibid.
[36] Ibid.

of leapfrogging, it has been maintained that it is feasible provided some basic requirements, such as the need to secure the participation of transnational corporations in the development process of new technologies, coupled with attractive incentives for firms embracing the attendant policies, are met.[37] However, leapfrogging has not been found to be empirically feasible in developing countries and therefore much more complex and challenging than the plain idea suggests.[38]

Obviously, presently, the economic and technological status of most, if not all developing countries, does not support leapfrog from traditional energy sources to cleaner sources without assistance from developed countries. Therefore, collaboration between developed and developing countries in the areas of technology development and diffusion remains imperative. The fact that some developing countries underlined the importance of technological and financial support to the fulfilment of the NDCs submitted under the Paris Agreement [39] lends further credence to this conclusion.

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[37] Ibid.

[38] Ibid. See generally, Jose Goldemberg, "Leapfrog Energy Technologies" (1998) 26(10) *Energy Policy*, 729 – 741; Richard Perkins, *Environmental Leapfrogging in Developing Countries: A Critical Assessment and Reconstruction* (Blackwell, Oxford, 2003); Kelly Sims Gallagher, "Limits to Leapfrogging in Energy Technologies? Evidence from the Chinese Automobile Industry" (2006) 34(4) *Energy Policy* 383 – 394.

[39] For instance, the NDC of Kenya while stressing the need for fairness and ambition states: "Kenya believes that the key factors in determining the fairness of a contribution should include historical responsibility and respective capability to address climate change. The UNFCCC also recognises that the extent to which developing countries will meet their obligations under the Convention will depend on the level of support in terms of finance, technology and capacity building available". See Kenya's Intended Nationally Determined Contributions (INDC), 23 July 2015, Para. 3. In the same vein, Mexico's NDC stipulates, among other things, that "The 25% reduction commitment expressed above could increase up to a 40% in a conditional manner, subject to a global agreement addressing important topics including international carbon price, carbon border adjustments, technical cooperation, access to low cost financial resources and technology transfer, all at a scale commensurate to the challenge of global climate change". See the Republic of Mexico, Intended Nationally Determined Contribution (INDC), 30 March 2015, 2. India, in its NDC noted that: "As we put together the new global compact for enhanced actions, it is critical to ensure that it is comprehensive, balanced, equitable, and pragmatic. It should address all the elements including adaptation, mitigation, finance, technology transfer, capacity-building, and transparency of action and support. At the same time, the genuine requirements of developing countries like India for an equitable carbon and development space to achieve sustainable development and eradication of poverty needs to be safeguarded." See India's Intended Nationally Determined Contribution (INDC): Working Towards Climate Justice, 10 January 2015, 3.

4.1.3 The Role of Transfer of Technology in the Implementation of Multilateral Environmental Agreements (MEAs) in Developing Countries

The strategic role of transfer of technology in the protection of the environment was recognised as early as 1972. The Stockholm Declaration recognised "the need to make international technical assistance available to developing countries."[40] It further called for "environmental technologies to be made available to developing countries on terms which would encourage their wide dissemination without constituting an economic burden."[41] Two decades later, Agenda 21 devoted an entire chapter to the subject of transfer of technology and kindred issues,[42] underlining the fundamental importance of technology transfer in the successful implementation of MEAs, especially from developing countries' standpoint.

Prior to the United Nations Conference on Environment and Development (UNCED), technology transfer provisions in multilateral environmental treaties, especially provisions dealing with transfer of technology from developed to developing countries, lacked substance as they were normally couched in general and non-committal terms, making them of little or no value. However, at the UNCED the vague and ineffective nature of the provisions in previous multilateral treaties were recognised as formidable impediment to the objective of transfer of technology and rendering of other technical assistance to developing countries, necessitating the treaties adopted at the UNCED improving on *the status quo ante*.[43] Post-UNCED, provisions dealing with transfer of technology to developing countries in

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[40] Declaration of the United Nations Conference on the Human Environment, adopted at Stockholm 16 June 1972, Principle 12, (Stockholm Declaration).
[41] Ibid, Principle 20.
[42] United Nations Conference on Environment and Development, Rio de Janeiro, Brazil, 3-14 June 1992, (Agenda 21), Chapter 34.
[43] See, for instance, the United Nations Framework Convention on Climate Change (UNFCCC) and the Convention on Biological Diversity (CBD).

multilateral treaties have acquired a reasonable degree of substance and clarity, and their legal and practical effects are now measurable.[44]

According to Sands *et al*, three epochs underline the evolution of transfer of technology provisions in MEAs. First, the setting up of international institutions to facilitate the mobilisation of financial resources needed to ensure that requisite technology and technical know-how are made available to parties in need of them.[45] Second, as enshrined in the UNFCCC[46] and the Convention on Biological Diversity (CBD),[47] is the making of developing countries' ability to implement or fulfil their treaty obligations contingent upon developed countries transferring technology and offering other required technical assistance in fulfilment of the latter's treaty obligations. Finally, the appreciation of regime of intellectual property rights protection as a major impediment to transfer of technology from developed to developing countries.[48]

Thus, the primary role of transfer of technology in the implementation of MEAs in developing countries is to create, or bolster endogenous technological know-how to enable effective implementation of treaty obligations. Without the transfer of environmentally sound technology, developing countries will not be able to implement their obligations under MEAs, mainly because of scarcity of resources and lack of technical know-how. Most developing countries still view obligations under MEAs as second level responsibilities, considering that their primary preoccupation revolves around economic growth and improvement of standard of living of the general population. In this regard, the linkage of effective implementation of treaty obligations by developing countries with transfer of

[44] Philippe Sands, Jacqueline Peel, Adriana Fabra and Ruth MacKenzie *Principles of International Environmental Law* (3rd edn, Cambridge University Press, Cambridge, 2012) 679.
[45] Ibid.
[46] Arts. 4:5 and 4:7.
[47] Art. 20:4
[48] Sands, *et al*, above n 44, at 679

environmentally sound technology by developed countries provides one of the initial benchmark for the assessment of North-South performance of treaty obligations.

The Ozone Convention and its Montreal Protocol remain the only multilateral environmental regime to have successfully transferred technology to developing countries. The Montreal Protocol achieved this feat via six phases: technology transfer to phase out ozone depleting substances (ODSs) in foams; technology transfer to phase out ODSs in refrigeration and air-conditioning; technology transfer to phase out ODSs in aerosol products; technology transfer to phase out ODSs in fire protection; technology transfer to phase out ODSs in solvents; and technology transfer to phase out ODSs in pest control.[49]

Can the 'phase system' of the ozone regime work in the climate technology transfer regime? For instance, transfer of technology to phase out GHGs in the highly crucial sectors – energy, transportation, industry, etc. Technology commitment by developed countries that goes beyond current efforts will be indispensable if that is to be tenable. The phases can be overseen by the Green Climate Fund (GCF) through periodic fund replenishments pursuant to a technology commitment. The budget and periodic replenishments of the Multilateral Fund made the phase system of the ozone regime effective, and can be extrapolated within the GCF for climate technologies. However, it must be stated that climate change is a much bigger problem than the ozone problem, considering that climate change policy and regulation affect almost every economic sector of a state - waste management, industry, urban planning, agriculture, energy, transportation, etc.

[49] Montreal Protocol, Annex D. See generally, Alexander Gillespie, *Climate Change, Ozone Depletion and Air Pollution* (Martinus Nijhoff Publishers, Leiden/Boston, 2006); Anderson, et al, above n 2.

4.1.4 Review of the Climate Regime Provisions on Transfer of Technology to Developing Countries

The UNFCCC contains three fundamentally important provisions on technology.[50] First, it provides that all parties, following the CBDRRC principle and taking into account their development priorities, shall "promote and cooperate in the development, application and diffusion, including transfer, of technologies, practices and processes that control, reduce or prevent anthropogenic emission of greenhouse gases not controlled by the Montreal Protocol in all relevant sectors, including the energy, transport, industry, agriculture, forestry and waste management sectors.[51] This provision applies to all parties, however, the implementation of the provision by developing countries is connected to Articles 4.3 and 4.5 of the UNFCCC which set out technology transfer obligations of developed countries.[52]

Furthermore, it has been observed that while Article 4.1(c) covers mitigation, adaptation is not mentioned at all - but that "the references to 'practices and processes' refer to behavioural and lifestyle changes, ensuring that [the Article] strikes a balance between two polar views regarding the role of technology in the climate debate: one giving prominence to carbon-free technologies that would permit life to proceed as 'normal', the other giving greater prominence to changes in behaviour as a necessary complement to development of new technologies".[53]

Second, the UNFCCC obligates Annex II parties to provide new and additional financial resources, "including for the transfer of technology, needed by the developing country Parties to meet the agreed full incremental costs of implementing measures that are covered by

[50] The provisions are those contained in Articles 4.1(c), 4.3 and 4.5 and 12.3. See Farhana Yamin and Joanna Depledge, *The International Climate Change Regime: A guide to Rules, Institutions and Procedures* (Cambridge University Press, Cambridge, 2004), 304.
[51] Art. 4.1(c)
[52] Yamin & Depledge, above n 50, at 304.
[53] Ibid.

paragraph 1 of this Article…"[54] Alongside Article 4.5 of the UNFCCC, this provision specifically commits developed countries to provide financial assistance to developing countries to facilitate technology transfer.

Third, the most important provision of the UNFCCC on technology transfer provides that "The developed country Parties and other developed Parties included in Annex II shall take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other Parties, particularly developing country Parties, to enable them to implement the provisions of the Convention. In this process, the developed country Parties shall support the development and enhancement of endogenous capacities and technologies of developing country Parties. Other Parties and organizations in a position to do so may also assist in facilitating the transfer of such technologies".[55] This provision and Article 12(3) of the UNFCCC have been said to originate from the Response Strategies report of the IPCC Working Group III that formed part of the First Assessment Report of 1990, following the recognition that "as the greenhouse gas emissions in developing countries are increasing with their population and economic growth, rapid transfer, on preferential basis, to developing countries, of technologies that help to monitor, limit, or adapt to climate change, without hindering their economic development, is an urgent requirement".[56]

The technology obligation on developed countries under Article 4.5 has been described as being "modest and qualified".[57] The provision only envisages transfer of technology that is "environmentally sound" as against "the best available or appropriate to host country

[54] Art. 4.3
[55] Art. 4.5
[56] *Climate Change, The IPCC Response Strategies*, World Meteorological Organisation / United Nation Environment Programme 1990, 225. See Navraj Singh Ghaleigh "The Puzzling Persistence of the Intellectual Property Right/Climate Change Relationship" in Abbe E.L Brown (ed.) *Environmental Technologies, Intellectual Property and Climate Change: Accessing, Obtaining and Protecting* (Edward Elgar, Cheltenham, 2013), 65.
[57] Ghaleigh, ibid, 66

circumstances or new and innovative".[58] Furthermore, technology transfer to developing countries under Article 4.5 is to be specifically undertaken to enable the implementation of the provisions of the Convention by developing countries, which is relatively narrow considering the overall mitigation and adaptation needs of developing countries.[59] Moreover, the unambitious nature of the provision can be inferred from allusion to "endogenous capacities and technologies" which can be construed as implying the rejection of economic restructuring through technology transfer, a more preferable option to developing countries.[60] Lastly, the employment of the terms "practicable" and "as appropriate" considerably weakens the provisions of Article 4.5.[61] Factually, the provisions of Article 4.5 cannot be said to mandate developed countries to transfer technology to developing countries, rather it requires them to "take all practicable steps" to transfer technology which does not constitute a clear binding obligation.[62]

The Kyoto Protocol also contains provisions dealing with technology transfer. The Protocol provides that all parties shall "Cooperate in the promotion of effective modalities for the development, application and diffusion of, and take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies, know-how, practices and processes pertinent to climate change, in particular to developing countries, including the formulation of policies and programmes for the effective transfer of environmentally sound technologies that are publicly owned or in the public domain and the creation of an enabling environment for the private sector, to promote and enhance the transfer of, and access to, environmentally sound technologies".[63] It has been stated that this

[58] Ibid.
[59] Ibid.
[60] Ibid.
[61] Ibid.
[62] Friedrich Soltau, *Fairness in International Climate Change Law and Policy* (Cambridge University Press, Cambridge, 2009), 195.
[63] Art. 10(c).

provision "clarifies, strengthens and expands the scope of commitment in Article 4.1(c) of the Convention".[64] Notably, the chapeau to Article 10(c) qualifying subsequent provisions of the article with the CBDRRC principle, development priorities, and the fact that the provision is not intended to introduce any new commitment for developing countries, and references to other provisions of the UNFCCC as factors to be taken into account in construing the provision, offers a strong basis to adjudge Article 10(c) as naturally flowing from the UNFCCC.

However, Article 10(c) differs from Article 4.1(c) of the UNFCCC in some material respects. One, the scope of Article 10(c) includes adaptation owing to the expression "practices and processes pertinent to climate change, particularly to developing countries".[65] Consequently, it has been stated that "because adaptation concerns are likely to foreshadow mitigation for many vulnerable developing countries, a clear commitment to developing, financing and transferring adaptation technologies by all Parties advances the provision of Article 4.1".[66] Moreover, the fact that the commitment under Article 10(c) is qualified with "as appropriate" makes the case that developing countries are expected to be part of the scheme for technology development and financing, as against being technology recipients only.[67]

Two, the Protocol differs from the UNFCCC by incorporating the concept of "environmentally sound technologies" (ESTs) instead of the term "technologies".[68] The concept of ESTs formally originated from Agenda 21, which describes the concept, among other things, as a technology that is "less polluting, use all resources in a more sustainable manner, recycle more of their wastes and products, and handle residual wastes in a more

[64] Yamin and Depledge, above n 50, at 306.
[65] Ibid.
[66] Ibid.
[67] Ibid.
[68] Ibid.

acceptable manner than the technologies for which they were substitutes".[69] The Protocol's incorporation of ESTs has been lauded as indicating a preference for a more versatile approach compared with the UNFCCC which dwells mostly on hardware aspect of technology transfer.[70]

Finally, the Protocol diverges from the UNFCCC on technology following the distinction it makes between public and privately owned technologies. Thus, while the Protocol appreciates that states can undertake transfer of public owned technologies, with respect to privately held technologies, establishing an enabling environment to facilitate transfer of such technologies is fundamentally important. This provision led to a significant shift in the position maintained by developing countries in emphasising the obligation of developed countries as technology transferors but not their own positions as creators of the enabling environment to facilitate such transfer, especially for technologies flowing from the private sector.[71] Taking into account the foregoing distinction between the Protocol and the UNFCCC, it has been concluded that "the provisions on technology mark an area where the Protocol clearly advances the implementation of existing commitments, rather than simply reiterating them".[72]

Furthermore, the Kyoto Protocol also contains other provisions relating to technology transfer.[73] Although the provision establishing the CDM does not specifically refer to transfer of technology, transfer of technology can be said to constitute one of its primary goals.[74] This

[69] Agenda 21, Chapter 34, *Transfer of Environmentally Sound Technologies, Cooperation and Capacity-building*, Introduction, paragraph 1.
[70] Yamin & Depledge, above n 50, at 307.
[71] Ibid.
[72] Ibid.
[73] See Articles 3.14, 10(c), 11.2(b), 12 and 13.4(b).
[74] Ghaleigh, above n 56, at 67.

position is corroborated by the Marrakech Accords which stresses that CDM projects should result in "transfer of environmentally safe and sound technology and know-how".[75]

Considering that the provisions of the UNFCCC and the Kyoto Protocol on technology are couched in general and relatively permissive language, successive Conferences of the Parties have taken steps to further elaborate and strengthen the provisions.[76] In 2001, the Marrakesh Accords elaborated a framework for meaningful and effective actions to enhance the implementation of technology transfer obligations under the Convention.[77] The Marrakesh Accords called for the establishment of an Expert Group on Technology Transfer (EGTT) to be nominated by the parties.[78] The EGTT was charged with the task of analysing and identifying ways to facilitate and advance technology transfer activities in key areas such as: technology needs assessment (TNA); establishment of efficient information systems in support of technology transfer; creation of enabling environments for technology transfer, including the identification and removal of barriers; capacity-building in developing countries to allow for the dissemination, application and development of environmentally sound technologies and know-how; and creation of institutional arrangements.[79]

Subsequently, the EGTT issued various reports and guidelines, including a Handbook for Conducting Technology Needs Assessment for Climate Change.[80] The Handbook was structured to cover four main headings: 'overall context' - the objective for technology transfer to speed up a low emission and low vulnerability pathway; 'policy context' –

[75] Decision 17/CP.7, Modalities and procedures for a clean development mechanism as defined in Article 12 of the Kyoto Protocol.
[76] See for instance, Decision 11/CP.1; Decision 4/CP.4; Decision 4/CP.7; Decision 1/CP.16 and Decision 1/CP.21. See also Soltau, above n 62, 195-196.
[77] Decision 4/CP.7, para. 1.
[78] Ibid, para. 2.
[79] Marrakesh Accord, Decision 4/CP.7, Annex.
[80] UNDP, *Handbook for Conducting Technology Needs Assessment for Climate Change,* November 2010 (updated version). The 2010 update followed from UNFCCC COP Decisions 3/CP.13 and 2/CP.14. The UNDP published the first Handbook in 2004, entitled: *Conducting Technology Needs Assessment for Climate Change,* designed to serve as a practical guidance on how to conduct a technology needs assessment in developing countries.

technology transfer as indispensable in international climate change governance; key principles and objectives of a technology needs assessment; and, key steps to conduct a technology needs assessment.[81]

The Handbook set the objective of a technology needs assessment as "identifying, evaluating and prioritising technological means for both mitigation and adaptation, in order to achieve sustainable development ends".[82] Subsequently, to augment the TNA processes, the UNEP noting the importance of removing barriers to the transfer and diffusion of mitigation and adaptation technologies, issued a guidebook on how to identify such barriers and possible approaches to be adopted toward removing or reducing their effects.[83] However, the TNA initiative has not been successful, especially with respect to implementation. Recently, the Technology Executive Committee released guidance on enhanced implementation of the results of technology needs assessment.[84]

The Committee recommended, among other things, that a guidance document be prepared for accelerating the implementation of prioritised technologies, through: "a focus on people rather than on process; the three key steps of identification of barriers to technology implementation, actions to address barriers, and implementation plans; enhanced guidance to attract funding for actions in technology action plans (TAPs); and an elaboration of the potential role and capacity needs of national designated entities and of the Climate Technology Centre and Network for providing technical support for the implementation of prioritised technologies." [85]

[81] Ibid, 2.
[82] Ibid, 5.
[83] Boldt, J., I. Nygaard, U.E Hansen, S. Traerup (2012) *Overcoming Barriers to the Transfer and Diffusion of Climate Technologies*. UNEP Risϕ Centre, Roskilde, Denmark, 2012.
[84] UNFCCC 2015, Guidance on enhanced implementation of the results of technology needs assessments: interim report by the Technology Executive Committee. FCCC/SB/2015/INF.3, 23 November 2015.
[85] Ibid, 1.

Furthermore, the Cancun Agreements created a new 'Technology Mechanism' to further the goals of technology transfer under the Convention.[86] The Technology Mechanism consists of a Technology Executive Committee (TEC) and the Climate Technology Centre and Network (CTCN).[87] The TEC replaced the EGTT and is responsible for further implementation of the technology transfer provisions. The CTCN is designed "to facilitate a network of national, regional, sectoral and international technology networks, organisations and initiatives, provision of advice and information, training, technology co-operation and encouraging collaborative research and development of environmentally sound technologies for climate change."[88]

However, these decisions and institutional changes on the regime governing transfer of technology notwithstanding, attaining the desired international cooperation in this area remains elusive. The strategic importance of developed countries in the schemes for transfer of technology to developing countries to combat climate change has long been established. Historical responsibility for the climate change problem, superior command of resources, and established technological ability, are some of the reasons that justify the technology transfer responsibility placed on developed countries by the climate change regime. This responsibility is not likely to shift in the near future as long as the balance of power remains the same.

Notably, the notion of new and additional resources and full incremental costs necessary to facilitate transfer of technology to developing countries, among other objectives, can be linked to mitigation obligations under the UNFCCC. Thus, Article 4.3 which obligates developed countries to provide additional finance needed by developing countries to meet the agreed full costs necessary for implementing their obligations under Article 12.1, and to

[86] Decision 1/CP.16, para. 117.
[87] Ibid.
[88] Ibid, paras. 123 - 127.

provide financial assistance for technology transfer and for meeting the agreed full incremental costs incurred by developing countries in the implementation of Article 4.1, reveal the said linkage. The binding mitigation obligations set out in Articles 4.1 and 12.1 of the UNFCCC are reporting obligations relating to communication of national GHG inventories applicable to all parties, but subject to developed countries footing agreed full costs and incremental costs to aid implementation by developing countries. This linkage also traverses the technology transfer provision of Article 4.5 considering that the underlying objective of the provision is that of transferring technology to enable developing countries "to implement the provisions of the Convention".

The Paris Agreement and the accompanying COP decision also contain provisions relating to technology transfer. However, it should be noted from the outset that the provisions on technology in the Paris Agreement cannot be said to be comprehensive, necessitating the COP to assign additional work to UNFCCC institutions to further enhance the provisions.[89] The Agreement acknowledges the long-term vision shared by parties in relation to technology development and transfer in order to realise the objectives of improving resilience to climate change and overall reduction of GHGs.[90] Underscoring the importance of technology to achieving the implementation of the provisions of the Agreement, parties shall cooperate in strengthening action on technology development and transfer.[91] The Technology Mechanism established by the Cancun Agreements is to serve the Paris Agreement,[92] under the guidance of the Agreement's new technology framework whose role centres around "promoting and facilitating enhanced action on technology development and transfer".[93]

[89] Decision 1/CP.21, paras. 68 and 71.
[90] Art. 10.1
[91] Art. 10.2
[92] Art.10.3. See also decision 1/CP.21, para. 67 and decision 2/CP.21
[93] Art. 10.4.

Following request by the Paris COP[94] to the Subsidiary Body for Scientific and Technological Advice (SBSTA) to undertake further work towards the elaboration of the technology framework at its forty-fourth session in May 2016, the SBSTA commenced deliberations on the issue as requested.[95] At the conclusion of the first meeting, the SBSTA acknowledged fruitful deliberations by Parties on the elaboration of the technology framework,[96] while directing the UNFCCC Secretariat "to prepare an information note on mapping climate technology development and transfer activities and initiatives under and outside the Convention relevant to the implementation of the Agreement".[97] The SBSTA further requested parties to submit their views on the elaboration of the technology framework which should cover issues such as content, features and characteristics of the technology framework.[98] The SBSTA will continue its elaboration task at its forty-fifth session.[99] Thus, uncertainty still surrounds when the Agreement's technology framework will be finalized.

The Paris Agreement also recognises that innovation is critical for effective long-term measures to address climate change and secure economic development and sustainable development, while noting that actions to encourage innovation shall be supported by both the Technology Mechanism and the Financial Mechanism of the Convention, especially "for collaborative approaches to research and development, and facilitating access to technology, in particular for early stages of the technology cycle, to developing country Parties".[100] To attain the objectives of the Agreement, work on linking the Technology Mechanism and the

[94] Decision 1/CP.21, para. 68.
[95] SBSTA, Technology framework under Article 10, paragraph 4, of the Paris Agreement, Agenda item 4, Bonn, 16 – 26 May 2016. FCCC/SBSTA/2016/L.8 (Draft conclusions by the Chair).
[96] Ibid, para. 2
[97] Ibid, para. 3
[98] Ibid, para. 4
[99] Ibid, para. 5
[100] Art. 10.5

Financial Mechanism is ongoing.[101] The Agreement also provides that support shall be provided to developing countries for the implementation of the technology provisions, and to engender cooperative action on technology development and transfer necessary to attain a balance between mitigation and adaptation.[102] Support provided to developing countries on technology development and transfer shall form part of the global stocktake.[103]

Although the Paris Agreement's lack of definitive and elaborate provisions on technology transfer has been termed "not necessarily a sign of weakness",[104] the expectation would have been that a central issue like technology development and transfer should have been dealt with more extensively in any post-Kyoto treaty. While the tasks assigned by the COP to UNFCCC bodies to elaborate on the relevant provisions of the Agreement[105] have commenced in earnest, it is still not clear when the tasks will be completed, or what the likely outcome will be. Moreover, the fact that negotiations at COP 22 was characterised by disagreements over fundamental issues relevant for setting the Paris Agreement ready for implementation shows that there remains a long way to go.[106]

The foregoing observation notwithstanding, one of the positive developments of the Paris outcome is the recognition of non-party stakeholders. Thus, non-state actors do have roles to play "to strengthen knowledge, technologies, practices and efforts of local communities and indigenous peoples related to addressing and responding to climate change".[107] To what extent non-state actors will influence the implementation of the technology provisions of the Paris Agreement in particular, and the whole of the Agreement in general, remains to be seen.

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[101] Decision 13/CP.21.
[102] Art. 10.6
[103] Ibid. See also Article 14.
[104] Charlotte Streck, Paul Keenlyside and Moritz von Unger, "The Paris Agreement: A New Beginning" (2016) 13 *Journal for European Environmental & Planning Law*, 3 – 29, 20.
[105] See Decision 1/CP.21, paras. 68, 69 and 71.
[106] Energy Legislation Hub, 'COP-22 – Overshadowed by Trump and Lacking in Decision – Can the Paris Agreement Survive? (21 November 2016). Available online at:< http://www.energylegislation.co.uk/cop-22-overshadowed-trump-lacking-decisions-can-paris-agreement-survive/>
[107] Decision 1/CP.21, paras. 134 – 137.

However, there is strong reason to believe that pressure will be applied by non-state actors on governments and intergovernmental establishments responsible for setting the administrative and structural frameworks requisite for implementing the provisions of the Agreement.[108]

The future will tell if the Paris COP will be adjudged wanting for leaving so much on the table for future determination, particularly with respect to technology development and transfer of technology. While this thesis will explore ways of improving the technology provisions of the Paris Agreement in the final chapter, I remain convinced that the institutionalisation of financial and technological assistance to developing countries through separate instruments forming part of a body of climate change treaty is likely to hold the key for addressing climate change, especially from the perspective of developing countries. This proposition forms part of the tripartite framework that will be expounded in the final chapter, subject, of course, to the Paris Agreement being given the chance it deserves.

4.1.5 Barriers to Transfer of Technology to Developing Countries under the Climate Change Regime

Intellectual property right as a barrier to transfer of technology to developing countries has long been recognised,[109] and this problem has been a particularly difficult one to address owing to attendant private ownership interests deemed not to fall within the purview of

[108] Harro van Asselt, "The Role of Non-State Actors in Reviewing Ambition, Implementation, and Compliance under the Paris Agreement", (2016) 6 *Climate Law*, 91 – 108.

[109] See generally Rimmer, above n 24; Abbe E.L Brown (ed.) *Environmental Technologies, Intellectual Property and Climate Change* (Edward Elgar, UK, 2013); Michael Golin, *Driving Innovation: Intellectual Property Strategies for a Dynamic World* (Cambridge University Press, Cambridge, 2008); M. Monirul Azam, "Climate Change Resilience and Technology Transfer: The Role of Intellectual Property" (2011) 80 *Nordic Journal of International Law*, 485 – 505; Climate International Centre for Trade and Sustainable Development (ICTSD) "Climate Change, Technology Transfer and Intellectual Property Rights", Background Paper, Copenhagen, Denmark, June 18 – 20, 2008; Ahmed Abdel-Latif "Intellectual Property Rights and the Transfer of Climate Change Technologies: Issues, Challenges and Way Forward" (2015) 15(1) *Climate Policy*, 103 – 126; Charikleia Karakosta " A Holistic Approach for Addressing the Issue of Effective Technology Transfer in the Frame of Climate Change" (2016) 9 *Energies* 1 -20; Oh and Matsuoka, above n 24, at 168 -177.

states' public regulation.[110] Moreover, questions arise as to whether developing countries possess the requisite domestic legal and administrative capability to protect intellectual property rights of owners of transferred environmental technologies, considering that corporate entities in developed countries that hold property rights to advanced technologies often point to lack of adequate arrangement to protect intellectual property rights in developing countries as a barrier to the deployment of such technologies, while indicating that strengthening of protection regimes in developing countries would encourage them to agree to transfer such technologies.[111]

Intellectual property right "refers to property rights protected by laws that protect the application of thoughts, ideas and information which are of commercial value, including the law relating to patents, copyrights, trademarks, trade secrets and other similar rights."[112] The inherent private nature of intellectual property rights has contributed to developed countries taking a rather uncompromising stance during negotiation of treaties involving transfer of technology by insisting that they are precluded from imposing technology transfer requirements on persons within their jurisdiction or control, citing obligations under national and international laws for the protection of intellectual property, patents and biotechnology rights.[113]

The issue of intellectual property rights posing obstacle to technology transfer was addressed by Agenda 21, leading to a declaration by the international community on the importance of

[110] See generally, Peter Lawrence, "The Asia Pacific Partnership on Clean Development and Climate (AP6): A Distraction to the Kyoto Process or a Viable Alternative?" (2007) 10 *Asia Pacific Journal of Environmental Law*, 184-209, 195. See also Peter Lawrence, "APEC Promises a Roar and Delivers a Whimper: The Sydney Declaration on Climate and Energy" (2008) 11 *Asia Pacific Journal of Environmental Law*, 29-49, 44-45.
[111] Stern, above n 5, at 565-6.
[112] Michael Blakeney, *Legal Aspects of Technology Transfer to Developing Countries* (ESC Publishing Limited, Oxford, 1989) 4-5. See generally W.R Cornish, David Llewelyn and Tanya Frances Aplin, *Intellectual Property: Patents, Copyright, Trade Marks and Allied Rights (*7th edn, Sweet and Maxwell, 2010).
[113] See, for example, the Paris Convention for the Protection of Industrial Property, Paris, 20 March, 1883; Patent Co-operation Treaty (as amended), Washington, 19 June 1970; International Convention for the Protection of New Varieties of Plants (UPOV Convention), Brussels, 2 December 1961. Revised 1972, 1978, and 1991.

giving due consideration to issues pertaining to the role played by patent protection and intellectual property rights, and their effects on regimes for transfer of environmentally sound technology to developing countries;[114] while also recognising that intellectual property rights might constitute an impediment to transfer of technology, and consequently recommending that measures be taken – "including acquisition through compulsory licensing and the provision of equitable and adequate compensation – which are in compliance with and under the specific circumstances recognised by the relevant international conventions adhered to by states."[115]

The chequered history of intellectual property rights and transfer of technology under the climate change regime dates back to the negotiation leading to the adoption of the UNFCCC. Commenting on the provision of the UNFCCC that parties should cooperate in the development, application and diffusion of technology,[116] Bodansky accounts for the initial skirmish over intellectual property rights between developing and developed countries during the negotiation of the UNFCCC thus:

Developing countries initially sought a commitment by developed countries to transfer technology on "concessional and preferential terms". They argued that, to implement the Convention, they needed access to environmentally sound technologies at an affordable cost. Some even suggested that the Convention provide for "assured access to technology" or "compulsory licensing". In contrast, developed countries emphasized technology "cooperation" rather than "transfer" and the need to protect intellectual property rights in order to preserve incentives for innovation. Most were willing to agree to the transfer of technology only on "fair and most favourable terms". Since the rights to most technologies are privately held, developed countries argued that governments could not commit to their transfer.[117]

[114] Agenda 21, above n 42, paras. 34:10 and 34:18.
[115] Agenda 21, para. 34(18) (e) (iv)
[116] Art. 4.1(c). See also Kyoto Protocol, Art. 10(c).
[117] Daniel Bodansky, "The United Nations Framework Convention on Climate Change: A Commentary" (1993) 18 *Yale Journal of International Law*, 451, 529 -530.

From the negotiations leading to the UNFCCC in I992 till date, issues concerning the application of intellectual property rights to transfer of climate change technologies continue to be problematic and divisive.[118] Although the Bali Action Plan earlier on stressed the need for "effective mechanisms and enhanced means for the removal of obstacles to, and provision of financial and other incentives for, scaling up of the development and transfer of technology to developing country Parties in order to promote access to affordable environmentally sound technologies…,"[119] the controversy regarding intellectual property rights and transfer of technology raged on to subsequent conferences of the parties.

Notably, in the build-up to COP 15 and COP 16, developing countries contended that intellectual property rights continued to pose significant barrier to transfer of climate change technologies and suggested ways of overcoming the barrier, such as "exempting climate change technologies from patentability in developing countries to the expanded use of Trade-Related Aspects of Intellectual Property Rights (TRIPS)-related flexibilities to facilitate access to these technologies".[120] On their part, developed countries rejected the proposal while stating that any language on intellectual property rights should not form part of the issues to be considered. Consequently, the outcomes of COPs 15 and 16 contain no references to intellectual property rights in the context of transfer of climate change technologies.[121]

At COP 17, India proposed the inclusion of intellectual property rights to the agenda considering that majority of the technologies capable of placing it and other developing states on a path to low-carbon growth are not within reach due to issues pertaining to intellectual

[118] Abdel-Latif, above n 109, at 106; Rimmer, above n 109, at 39 – 82.
[119] Decision 1/CP.13
[120] Abdel-Latif, above n 109, at 106. See also Rimmer, above n 109, at 45 – 82.
[121] Ibid.

property rights and attendant high costs, however, the proposal never succeeded.[122] Controversy relating to intellectual property rights and transfer of technology also arose at COP 18 in Doha. While developing countries were of the view that the Technology Executive Committee (TEC) should consider issues relating to intellectual property rights, developed countries objected to any reference to intellectual property while noting that other fora exist where such issues can be rightly dealt with.[123]

At COP 19 in Warsaw, Egypt emphasised the importance of dealing with issues pertaining to intellectual property rights in the context of transfer of technology to developing countries in a pragmatic and head-on manner.[124] It suggested the utilization of the financial mechanisms of the Convention to fund costs emanating from intellectual property rights to guarantee the transfer of low-carbon technologies to developing countries, while further proposing the establishment under the Green Climate Fund a specialised agency that will oversee resolution of problems arising from intellectual property rights.[125]

Furthermore, due to discord between developing and developed countries over intellectual property rights the joint report meant to be submitted to the COP by the TEC and the CTCN was not adopted owing to the insistence of developing countries that texts on intellectual property rights be included in the report, and that the TEC should attend meetings of international organisations regulating intellectual property rights, such as the World Trade

[122] Proposals by India for inclusion of additional agenda items in the provisional agenda of the seventeenth session of the Conference of the Parties, Conference of the Parties, seventeenth session, Durban, 28 November to 9 December 2011, FCCC/CP/2011/INF.2/Add.1, Agenda Item 11.

[123] Earth Negotiations Bulletin (ENB), Summary of the Doha Climate Change Conference, Earth Negotiation Bulletin, 12(567).

[124] Nitin Sethi, 'Developing countries call for easing IPR costs of clean technologies', The Hindu, November 18, 2013. Available online at: <http://www.thehindu.com/sci-tech/energy-and-environment/developing-countries-call-for-easing-ipr-costs-of-clean-technologies/article5355065.ece> Accessed 29 July 2016.

[125] Ibid.

Organisation (WTO) and the World Intellectual Property Organisation (WIPO), as an observer.[126]

Furthermore, the Geneva negotiating text which formed the initial basis for the negotiation of the Paris Agreement contains handful of options in relation to intellectual property right and transfer of technology to developing countries.[127] While a record of the wrangling between developing and developed countries on the issue of intellectual property rights during negotiation of the Paris Agreement seems not to be in the public domain yet, the fact that intellectual property was neither mentioned in COP 21 decision nor in the text of the Paris Agreement shows that consensus on the issue continues to be elusive.[128]

Taken the totality of the disagreement between developing and developed countries over intellectual property rights and the need for effective transfer of technology into account, Abdel-Latif concluded that a shift has taken place on the part of developing countries since negotiations began under the auspice of the UNFCCC:

[Intellectual Property Rights] IPRs have been consistently raised by developing countries at all COPs in recent years. However, it is important to notice that the approach of developing countries has evolved over the years, going from putting forward far-reaching measures and proposals that could entail changes to global IP rules, such as removal of patents on climate-related technologies in developing countries, to more general language about the need to 'address IPRs' in a 'pragmatic manner' as reflected in subsequent proposals to use financial mechanisms 'to fund IPR costs'. Nevertheless, industrial countries have continuously expressed their opposition to all of these proposals and to any discussion of IPRs as a 'barrier' to accessing climate change technologies by developing countries. As a result, there has been no agreement on this issue nor has there been any mention of IPRs in the outcome of any UNFCCC COP in recent years.[129]

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[126] Global CCS Institute, 'Warsaw climate talks end with divergent views on way ahead' 29 Nov 2013. Available online at: <http://www.globalccsinstitute.com/insights/authors/markbonner/2013/11/29/warsaw-climate-talks-end-divergent-views-way-ahead> Accessed 29 July 2016.

[127] For instance, see paragraphs 56.3 and 68(e) of the Geneva Negotiating text leading to the Paris Agreement.

[128] Whilst Decision 1/CP.21, para. 68(d) calls for "the enhancement of enabling environments for and the addressing of barriers to the development and transfer of socially and environmentally sound technology…", Article 9 of the Paris Agreement refers, inter alia, "facilitating access to technology… to developing country Parties. Both of the instances fall short of direct reference to intellectual property rights.

[129] Abdel-Latif, above n 109, at 107.

While it has been established that disagreements exist between developing and developed countries over the effect of intellectual property rights on transfer of technology, there is no consensus among writers and other stakeholders as to whether intellectual property rights indeed constitutes a barrier to transfer of climate technologies to developing countries. First, I will evaluate the views of those that contend that intellectual property rights pose problems to technology transfer.

It has been contended "that there needs to be substantive reforms to intellectual property and climate change – in international negotiations; in patent regimes; and in local innovations; and that... intellectual property should not be ignored or neglected, marginalised or discounted, in multilateral debates over climate change – such as was the case in Copenhagen in 2009, and Cancun in 2010".[130] There ought to be a comprehensive framework towards addressing concerns over the effect of intellectual property rights on transfer of climate technologies to developing countries.[131]

The intellectual property regime has been viewed as being exploitative of developing countries in the sense that developed countries set high licensing costs to maintain limited access to available climate technologies, and that this high costs follow from "the protected monopolistic position of IPR holders", leading to the suggestion that there should be a "utilization of flexible mechanisms of the TRIPS Agreement and the establishment of a multilateral mechanism to buy and share IPR on ESTs within or outside the UNFCCC".[132] Moreover, it has been stated that the rules enjoining the observation of intellectual property rights raise the cost of accessing technology, and that owing to this fact "it has generally been accepted that low-income developing countries should be exempt from strong intellectual

[130] Rimmer, above n 109, at 29.
[131] Ibid.
[132] Oh and Matsuoka, above n 24, at 170.

property rights-related obligations and that the strength of obligations should only arise with levels of development".[133]

Notwithstanding the foregoing views, an inherent difficulty still persists considering that extant intellectual property regime "is unduly biased towards the owners rather than the users of technology", necessitating the call for "a more graduated approach [that] is likely to be supportive of large-scale technology transfer... accompanied by complementary measures with respect to financing, R &D and technical cooperation, which has not been the case in recent years".[134]

Thus, it can rightly be concluded that a phenomenon or situation that increases the cost of accessing climate technologies does, indeed, constitute a barrier to those countries that need such technologies to attain set climate change objectives - whether it is in the realm of mitigation or adaptation, but cannot afford the cost or struggle to invest the amount of resources required to acquire such technologies due to competing national priorities arising from scarcity of resources.

The other side of the coin boasts views that intellectual property does not constitute a barrier to transfer of climate technologies, or the ambivalence stance that it has not been equivocally or statistically proven to so do. The International Chamber of Commerce (ICC) has been rather resolute in opposing any relaxation or amendment of intellectual property rules to facilitate transfer of climate technology to developing countries except in situations of extreme necessity, noting that any attempt to do otherwise "would jeopardise all transfer of

[133] United Nations, 'Promoting Development, Saving the Planet' World Economic and Social Survey 2009, Department of Economic and Social Affairs, New York, 127. Available online at: <http://www.un.org/en/development/desa/policy/wess/wess_archive/2009wess.pdf> Accessed 30 July 2016.
[134] Ibid.

technologies across national boundaries and prevent the transnational cooperation essential to address changes in the earth's environment that transcend national boundaries".[135]

The United States Chamber of Commerce Global Intellectual Property Centre echoed similar view as the ICC to the effect that intellectual property laws and regulation should not be weakened in any substantive form for the sake of dealing with climate change generally, and transfer of technologies to developing countries in particular. Rather, it suggested that parties "should instead prioritize actions to strengthen intellectual property protection and enforcement..."[136] Furthermore, it has been stated that "the prospect of IPRs operating as a significant barrier to deployment [of technology] is substantially chimerical".[137] More so, there is the view that "a strong IPR regime is a catalyst to the development and transfer of ESTs; particularly, [that] the regime provides an innovation incentive to EST developers and [that] a lack of regulatory and absorptive capacity in developing countries is a genuine hindrance to transfer of technology".[138]

Ambivalence as to whether intellectual property right poses barrier to transfer of technology also exists. On that note, it has been observed that intellectual property can potentially serve as an incentive as well as pose a barrier to transfer of technology and that, regrettably, "the exact role of IP in the transfer of climate-related technologies remains unclear" as "no comprehensive study has been conducted on the impact of IP rights in the different categories of climate-related technologies" but that there are calls to address the possible adverse effects

[135] ICC Submission on the Review and Assessment of the Effectiveness on the implementation of Article 4, Paragraph 1(c) and 5, of the Convention (2009), Paragraph 4. Available online at: <https://unfccc.int/resource/docs/2009/smsn/ngo/126.pdf> Accessed 29 July 2016.

[136] US Chamber of Commerce, Global Intellectual Property Center and the Institute for 21st Century Energy, Submission to COP-14 on on the Review and Assessment of the Effectiveness on the implementation of Article 4, Paragraph 1(c) and 5, of the Convention. Available online at: <https://unfccc.int/resource/docs/2009/smsn/ngo/124.pdf> Accessed 29 July 2016.

[137] Navraj Singh Ghaleigh, "Barriers to Technology Transfer – The Chimera of Intellectual Property Rights" (2011) 2 Carbon and Climate Law Review, 220 – 233.

[138] Oh and Matsuoka, above n 24, at 170.

of IP on the transfer of climate-related technologies."[139] It has also been claimed that in the context of transfer of technology under the UNFCCC, "to view IPR as a meaningful barrier is erroneous", but that "this is not to say that IPR/climate change relationship is meaningless..., rather that the relevant question should be "whether non-liberalized access to climate friendly IPRs is essential for the development and dissemination of such environmentally sound technologies".[140]

It is submitted that the absence of a comprehensive study to establish the existence of a problem does not mean that the problem does not exist. While the need for an elaborate investigation of how intellectual property right affects transfer of climate technologies to developing countries is indeed desirable, the starting point in the absence of such investigation is to consult developing countries that raise intellectual property as a barrier to accessing relevant climate technologies on a case-by-case basis. Through such case-by-case approach, a comprehensive body of useful scenarios on the interaction between intellectual property and technology transfer will be developed.

The essence of the above assessment on the argument for and against intellectual property right as a barrier to transfer of climate change technologies to developing countries is to further highlight the intricate volatility of the issue independent of the views of developing and developed countries during COP negotiations. Undoubtedly, a problem of demand and supply definitely exists in relation to climate change technologies, considering that while mostly a set of parties to the climate regime (developed countries) possesses the needed mitigation and adaptation technologies; the other set of parties (developing countries) lacks such technologies, and therefore needs favourable terms to access them. The underlying issue of intellectual property right in the relationship between developed and developing countries

[139] International Centre for Trade and Sustainable Development (ICTSD), 'Climate Technology Transfer and Intellectual Property Rights' Background Paper, June 2008, Copenhagen Denmark.
[140] Ghaleigh, above n 56, at 60.

vis-a-vis climate technology transfer is inherently set by the fact that a consideration has to be furnished in one form or another to the technology sellers to enable them transfer their knowledge or finished product to the technology buyers.

Developing countries, being predominantly the technology buyers and constrained by scarcity of resources and other national impediments, makes a strong case for the rules governing intellectual property to be relaxed in the interest of attaining the mitigation and adaptation objectives of the climate change regime, which will be largely unattainable without transfer of low-carbon technologies to developing countries. From the preceding discourse, intellectual property right does constitute a barrier to transfer of technology.

While any hope of addressing the issue of intellectual property is undoubtedly complicated, and will have to linger even more, considering that the Paris Agreement and the accompanying COP 21 decision failed to categorically deal with the issue, it is recommended that developed and developing countries should work out a deliberative framework first, to understand the various forms intellectual property poses barrier to technology transfer and, second, consult on ways of removing or alleviating the attendant hardship. To attain the stated goals, cooperation rather than antagonism will be required.

At this juncture, it is worthwhile exploring to what extent the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS)[141] offers a framework for discussing the relationship between transfer of technology and climate change.[142] The TRIPS provides that "The protection and enforcement of intellectual property rights should contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a manner

[141] Agreement on Trade-Related Aspects of Intellectual Property Rights, Marrakesh Agreement Establishing the World Trade Organisation, 1C, The Legal Texts: The Result of Uruguay Round of Multilateral Trade Negotiations 320 (1999), 1869 UNTS, 299; 22 ILM 1197 (1994). (TRIPS)

[142] Rimmer, above n 109, at 83.

conducive to social and economic welfare, and to a balance of rights and obligations;[143] and that "Appropriate measures, provided that they are consistent with the provisions of this Agreement, may be needed to prevent the abuse of intellectual property rights by right holders or the resort to practices which unreasonably restrain trade or adversely affect the international transfer of technology".[144]

The relationship between Intellectual property and transfer of technology under TRIPS has been termed "unruly",[145] and specifically with respect to transfer of climate technologies, as one that bears "a number of mysteries, textual ambiguities and interpretative aporia".[146]

However, the above criticism of TRIPS notwithstanding, it has been hailed as capable of producing positive effects on transfer of climate technologies.[147] Moreover, ambivalence also exists as to the impacts of TRIPS on the transfer of environmental technologies. Thus, a question has been posed: Does TRIPS facilitate or impede transfer of technology to developing countries?[148] In response to the question, it has been observed specifically with respect to patents as an aspect of intellectual property right protection under TRIPS that:

...While local innovators in developing countries may benefit from strong patent protection, the reality is that research and development capacities in developing countries are generally limited and tend to focus or follow on innovation (or adaptation or improvement of developed world technologies). Thus, any benefit of strong patent laws accruing to local innovators in developing countries is, in most cases, overwhelmingly outweighed by the high cost of importing patented technologies from developed countries. Many commentators have

[143] TRIPS, Art. 7. See also Articles 27, 28, 30, 31 and 66.
[144] Ibid, Art. 8(3).
[145] Christopher Arup, "Interpreting and Implementing the TRIPS Agreement" in Justin Malbon and Charles Lawson (eds.) *Interpreting and Implementing the TRIPS Agreement: Is it fair?* (Edward Elgar, UK, 2008), 24.
[146] Rimmer, above n 109, at 85.
[147] Ilona Cheyne, "Intellectual Property and Climate Change from a Trade Perspective" (2010) 2 *Nordic Environmental Journal*, 121 – 130, 122.
[148] Cameron Hutchinson, "Does TRIPS Facilitate or Impede Climate Change Technology Transfer to Developing Countries?" (2006) 3 *University of Ottawa Law and Technology Journal*, 517 – 537, 527.

suggested that overly protective IPR regimes may inhibit follow-on innovations, thus slowing down technological development, particularly in developing countries.[149]

Thus, whether patentability under TRIPS constitutes a barrier to technology transfer to developing countries depends, among other things, on the availability of local innovators in developing countries that will likely reap the benefits of strict patent protection, or the presence of domestic research and development capabilities that would guarantee innovation to the same measure as obtains in developed countries. Of course, most developing countries are short of domestic innovators, especially in the area of renewable energy, owing to the fact that fossil fuel remains the primary source of energy. Lack of domestic innovators coupled with issues relating to domestic capacity and limited resources is arguably the main reason behind the quest for transfer of technology from developed countries to developing countries. Viewed from this perspective, the regime governing patentability under TRIPS can be argued to constitute a barrier to transfer of technology to developing countries.

Following from the conclusion that intellectual property constitutes a barrier to transfer of climate technologies; it has been recommended that an international law reform of intellectual property and climate change be undertaken.[150] Moreover, there has been a call for a Declaration on Intellectual Property and Climate Change,[151] in line with the Doha Declaration on the TRIPS Agreement and Public Health.[152] However, responding to the likely effect of such declaration, Rimmer submits thus:

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[149] Ibid, 528 (footnotes omitted).

[150] Rimmer, above n 109, at 88.

[151] UNFCCC, Views on elements for the terms of reference for the review and assessment of the effectiveness of the implementation of Article 4, paragraphs 1(c) and 5, of the Convention, Subsidiary Body for Implementation (SBI), Twenty-eighth session Bonn, 4–13 June 2008, Paper No.2, Submission of Brazil on Development and Transfer of Technology, Paragraph 8(g). See also Teneille Brown, "The Eminence of Imminence and the Myopia of Markets" (2010) 9 *John Marshall Review of Intellectual Property Law*, 674, 697 – 710.

[152] World Trade Organisation, *Declaration on the TRIPS Agreement and Public Health*, Ministerial Conference, Fourth Session, Doha, 9-14 November, 2001.

Arguably, though, a symbolic declaration on intellectual property and climate change, along the lines of the Doha Declaration on Public Health and the TRIPS Agreement 2001 would be insufficient. There have been doubts as to whether the Doha Declaration has been successful in easing conflicts over access to essential medicines. It is similarly doubtful that a declaration on intellectual property and climate change would have a transformative effect on the interpretation of trade law. There is greater need for substantive reform of the TRIPS Agreement 1994 – so that its exemptions and exceptions are not merely hollow, ornamental articles, without force or substance.[153]

However, while the foregoing submission by Rimmer should be one of the ultimate goals in making the intellectual property regime more responsive to the means of achieving a crucial objective of the climate change regime – transfer of climate-friendly technology to developing countries; a declaration on intellectual property rights and climate change, akin to Doha Declaration, will not only bolster consensus on the need to effectively address the attendant issues of concern to developing and developed countries in that respect, but will also provide the first synergy between the WTO, UNFCCC and other stakeholders on the issue. Indeed, a Doha-like declaration on intellectual property and climate change will offer a solid footing requisite for consensus building on the issue.

Furthermore, the UNEP guidebook on overcoming barriers to the transfer and diffusion of climate technologies, states other typical categories of barriers as: "*Economic and financial* – lack of access to finance, high cost of capital, financially not viable, inappropriate incentive; *Market failures* – poor market infrastructure, uneven playing field, inadequate sources of increasing returns, market control by incumbents; *Policy, legal and regulatory* - insufficient legal framework, highly controlled sector, clash of interests, political instability, bureaucracy, rent-seeking behaviour; *Network failures* - weak connectivity between actors, incumbent networks being favoured; *Institutional and organisational capacity* – lack of professional institutions, limited institutional capacity; *Human skills* – inadequate training, lack of skilled personnel; *Social, cultural and behavioural* – consumer preferences and social biases,

[153] Rimmer, above n 109, at 117 – 118.

traditions, dispersed settlements; *Information and awareness* – inadequate information, missing feedback, lack of awareness; *Technical* – uneven technical competition, lack of standards and codes, lack of operation and maintenance (O&M), unreliable product; and *Other* – environmental impacts, lack of physical infrastructure".[154]

The guidebook proceeded to suggest measures to overcome these barriers, especially in relation to diffusion of renewable energy technologies, thus: "*Financial measures* – production incentives, standard power purchase agreements, investment subsidies, loan guarantees, set-asides, and green marketing; *Non-financial measures* – market liberalisation, improved infrastructure, improved access to the grid, obligation to generate or purchase 'green' electricity, voluntary agreements, competitive concessions, government-assisted business development, involving local communities and civil society, discouraging alternatives (e.g. environmental taxation of fossil fuels), research, development and demonstration, testing and certification, and information and education".[155]

While delving into details on the UNEP guidebook's list of barriers and possible means of overcoming them may not be possible owing to space constraint, the essence of summarily outlining them is to reveal the enormous nature of the challenge and consequent human and non-human resources required to confront the problem. Thus, removing the barriers to transfer of climate-friendly technologies to developing countries requires not only large-scale financial commitment by developed countries, but also commitment to the same measure towards capacity-building through education and training in recipient developing countries.

Additionally, Klaus Bosselmann lists other forms of barriers to transfer of technology as: "cultural and language gaps; lack of governmental agency to regulate or promote transfers; inadequate infrastructure in developing countries; insufficient investment in R & D; vested

[154] Boldt, J., *et al,* above n 83, at 17 – 18.
[155] Ibid, 32.

interests opposed to technology transfer; inability of consumers in developing countries to pay; and lack of confidence in new technologies."[156]

4.1.6 Achievements and Failures of the Climate Change Regime on Transfer of Technology to Developing Countries – what technology has been transferred?

Using the CDM as a case study, in 2006 a report evaluated 63 CDM projects registered in 20 developing countries as of 1 January 2006 to discover how much technology transfer took place under them.[157] The three main criteria used for the analysis were: "whether technologies deployed in CDM originate from outside the host country; whether the technologies that are implemented in CDM are indeed new or improved and do not represent business-as-usual in the host country of the project; and whether the knowledge and capacity to implement the technology in the project originates from outside the host country".[158]

It was found that a reasonable proportion of the projects utilized technology from overseas, especially in sizeable non-CO_2 greenhouse gas and wind energy projects, and that a large part of the new technologies came from either the EU or the host country.[159] The evaluation also found that in a number of projects, "new or improved technologies were used, and in many projects knowledge transfer and capacity-building took place, although these numbers are uncertain".[160] However, the study while underlining the fact that the CDM facilitates

[156] Klaus Bosselmann, "Poverty Alleviation and Environmental Sustainability through Improved Regimes of Technology Transfer" (2006) 2(1) *Law, Environment and Development Journal*, 21-32, at 23.
[157] Heleen De Coninck, Frauke Haake and Nico Van Der Linden, "Technology Transfer in the Clean Development Mechanism" (2007) 7:5 *Climate Policy*, 444 – 456.
[158] Ibid, 446. The criteria was based on IPCC's broad definition of technology transfer: "A broad set of processes covering the flows of know-how, experience and equipment for mitigating and adapting to climate change amongst different stakeholders such as governments, private sector entities, financial institutions, NGOs and research/education institutions". See B. Metz, O. Davidson, J.W Martens, S.N.M Van Rooijen and L. Van Wie McGrory (eds.), *IPCC Special Report on Methodological and Technological Issues in Technology Transfer, Working Group III of the Intergovernmental Panel on Climate Change* (Cambridge University Press, UK:New York, 2000).
[159] De Coninck, *et al*, above n 157, at 454.
[160] Ibid.

technology transfer emphasised the uncertain nature of the outcome due to "limited data availability and many arguable assumptions".[161]

Of course, there is no doubt that technology transfer is happening under the CDM, the question has always been whether it's happening fast enough to enable developing countries to abandon their current high greenhouse gas emitting activities for low-carbon alternatives in accordance with the spirit of Article 12 of the Kyoto Protocol that the CDM should assist developing countries achieve sustainable development, among other objectives. This point also touches on the overall effectiveness of the regime for technology transfer to developing countries, which forms the primary basis of the investigation undertaken by this thesis.

Furthermore, in an updated analysis published in 2015, 3949 CDM projects registered as of March 2012 were evaluated to see to what extent technologies were transferred under them.[162] The analysis found that:

Technology transfer is very heterogeneous across project types... Overall, 39% of projects (accounting for 59% of the estimated emissions reductions) expected to involve TT [Technology Transfer]. Seven of the 24 project types had fewer than 15 projects, whereas six projects types had over 100 projects each. Hydro, wind, methane avoidance, and biomass energy accounted for 74% of all projects. The average size varies widely by project type. The percentage of projects that are expected to involve TT ranges from 13% to 100% for different project types. The percentages are lowest for project types that use widely available, mature technologies, such as hydro (13%) and cement (17%). Technology transfer is common for N_2O destruction (100%) and hydrofluorocarbons (HFCs, 91%) projects as well as the two CO_2 usage (100%) and lone tidal (100%) projects.[163]

[161] Ibid, 455.
[162] Kevin Murphy, Grant A. Kirkman, Stephen Seres and Erik Haites "Technology Transfer in CDM: An Updated Analysis" (2015) 15:1 *Climate Policy*, 127 – 145, 128.
[163] Ibid, 132-134.

The analysis also found that there is inherent variation in distribution of CDM projects across host countries, with China, India and Brazil,[164] hosting most of the projects.[165] It also found, as expected, that most of the technologies originated from developed countries, notably the US, Japan, Germany, Denmark, and that China also supplies technology to CDM projects to a reasonable degree.[166] It estimated that about 85% of technologies used in CDM projects were transferred from developed countries.[167]

In assessing the contribution of the CDM to technology transfer to developing countries, the study found that "of the top six developing-country wind-power markets, CDM project capacity covered virtually the entire market for China, Mexico, Morocco, and Egypt, but not for India and Brazil; CDM biomass energy projects covered all of the capacity additions in Chile and Malaysia and about half of the total additions in China and India; technologies for the destruction of industrial gases (e.g. HFCs, N_2O, PFCs, and SF_6),[168] which have high frequencies of TT, have been retro-fitted to virtually all existing facilities in developing countries as CDM projects".[169] It then concluded that "the CDM's very large share of capacity additions for wind, biomass energy, and destruction of industrial gases in several countries thus suggests that CDM projects have contributed to the transfer of related technologies to those host countries".[170]

On the inherent difficulty and limitations associated with the analysis, the authors submitted thus:

[164] The other countries covered by the study are Indonesia, Malaysia, Mexico, Philippines, Republic of Korea, Thailand, Vietnam, and all other countries (developing countries, I assume). See ibid, Table 4, at 133.
[165] Murphy, *et al*, above n 162, 133.
[166] Ibid, 135.
[167] Ibid.
[168] HFCs – Hydrofluorocarbons; N_2O – Nitrous Oxide; PFCs – Perfluorinated Compounds; and SF_6 – Sulfur Hexafluoride. See Murphy, *et al*, above n 162.
[169] Murphy, *et al* above n 162, 139.
[170] Ibid, 139 – 140.

In summary, the evidence on the contribution of CDM projects to the development of broader technological capacity in the host country is mixed. Some technologies, such as hydro in China and India, and biomass energy in India, were widely available in specific countries before the CDM was established. The contribution of CDM projects to the country's technological capacity in these cases has been limited. In other cases – such as wind energy in China and Mexico, biomass energy in Chile and Malaysia, and industrial gas destruction in all host countries – the CDM projects have accounted for almost all of the capacity additions, and so have probably contributed substantially to the TT that has occurred. On the other hand, patent applications and FDI [foreign direct investment] flows suggest that CDM projects have been but a small part of the total TT that has occurred. Although TT by CDM projects appears to have contributed to host countries' technological capacity as the number of projects of a given type has increased, it is likely that other factors – such as domestic policies and TT via other channels – have also contributed. The contributions of the CDM and the other factors have not yet been disentangled, and it may not be possible to do so. If a CDM project with foreign investors involves TT, is the transfer due to the CDM or to FDI? The project may not have been implemented without FDI, or FDI may not have occurred without the CDM. So, is CDM or FDI responsible for the TT?[171]

Thus, just as the first study, this updated analysis on the extent the CDM has transferred technologies to developing countries, echoes the inherent uncertainty in determining with certainty what technology has been transferred under the CDM. Again, the conclusion that that can be drawn from the report is that while technology is being transferred to developing countries under the CDM, the transfer has been limited in scope and clouded by a number of difficulties, especially how to verify exactly what has been transferred and through what channel.

Overall, the extant regime governing climate change cannot be said to have been effective in transferring climate-friendly technologies to developing countries.[172] Furthermore, attaining the greenhouse gas stabilisation objective of the UNFCCC entails a robust, efficient and effective international framework for transfer of technology to developing countries. Had the technology transfer framework of the UNFCCC and the Kyoto Protocol been effective, the

[171] Ibid, 141.
[172] UNFCCC, Art. 4.5; Kyoto Protocol, Article 10(c).

rate at which emissions have increased in developing countries over the last two decades may not have been the case.[173]

While the Paris Agreement contains elements of market mechanisms which are likely to mirror or repeat a CDM-like arrangement,[174] it remains uncertain to what extent the Agreement's framework is going to improve the Kyoto market architecture. Nonetheless, the fact that the Agreement envisages promotion of sustainable development as one of the objectives of its market[175] and non-market[176] approaches supports the conclusion that technology transfer will form part of its framework. Specifically, among other things, technology transfer is mentioned in the provisions setting out the Agreement's non-market framework.[177] Moreover, in general terms, the provisions of the Paris Agreement on transfer of technology, notwithstanding the establishment of a new technology framework, cannot be said to be extensive and robust enough to lay a formidable foundation for technology development and transfer of technology to developing countries in a post-Kyoto era.

4.2 Financial Assistance to Developing Countries under the Climate Change Regime

4.2.1 Evolution of Financial Assistance to Developing Countries in International Environmental Law

International environmental law places the common duty of protecting the global environment on both developing and developed countries. However, a known constraint on developing countries has been lack of economic and technological capabilities to effectively implement multilateral environmental agreements. This inherent constraint on developing countries notwithstanding, it is without doubt that developed countries are historically

[173] See Eriko Miyama and Shunsuke Managi, "Global environmental emissions estimate: application of multiple imputation" (2014) 16 *Environmental Economics and Policy Studies*, 115-135.
[174] See Art. 6; Decision 1/CP.21, para. 38 – 41.
[175] Art. 6.1.
[176] Art. 6.8.
[177] ibid.

responsible for most global environmental problems, coupled with better economic and technological capability to effectively address them. These facts taken into account, prioritising environmental protection in developing countries requires a formidable international scheme mandating developed countries to render financial support to developing countries to enable the latter implement obligations pertaining to protection of the global environment.

Thus, following developments in international environmental governance in this respect, it has been rightly submitted that [the treaty obligation on developed countries to render financial support to developing countries] "is no longer a question of fact, but also of law by virtue of provisions in multilateral environmental agreements that explicitly make implementation by developing states dependent on developed countries providing financial and technical assistance. Developed states thus are to provide assistance to developing countries in order for the latter to be able to meet the incremental costs of environmental projects, which produce global public goods ."[178]

The Montreal Protocol laid the precedent by urging parties to take into account the special situation of developing countries.[179] The legal precedent set by the Montreal Protocol was later followed by the UNFCCC[180] and other multilateral environmental agreements.[181] Financial assistance to developing countries from developed countries to enable the former implement obligations under MEAs evolved largely as a creation of the CBDRRC principle.

[178] Laurence Boisson De Chazournes, 'Technical and Financial Assistance' in Daniel Bodansky, Jutta Brunnee and Ellen Hey (eds) *Oxford Handbook of International Environmental Law* (Oxford University Press, Oxford, 2007) at 970.
[179] Art. 5. See Boisson De Chazournes, 970.
[180] Art. 4.7
[181] CBD, Art. 20.4; Stockholm Convention on Persistent Organic Pollutants (POPs) 40 ILM 532 (2001); 2256 UNTS 119, Art. 13.4. See generally, Boisson De Chazournes, above n 178, 970-971.

4.2.2 The Role of Financial Assistance in the Implementation of MEAs in Developing Countries.

The fundamental role of financial assistance in the implementation of MEAs in developing countries is to aid compliance.[182] The achievements of the ozone regime are testimonies to this conclusion. The Ozone regime is seen as the most successful MEA because developed countries lived up to their treaty obligations to provide financial and technological assistance to developing countries to phase out ozone-damaging substances.[183] Thus, compliance with the Ozone Convention and the Montreal Protocol by developing countries would not have been possible without financial and technological assistance from developed countries. Unfortunately, so far the climate change regime does not boast the success of the ozone regime in this respect.

Financial assistance enables developing countries to integrate environmental protection into their national policies and actions without bearing disproportionate financial burdens resulting in the diversion of critical resources from pressing national needs. Considering that economic development remains the overriding priority of developing countries, available scarce national resources cannot be channelled toward environmental protection, which many developing countries still view as a 'luxury' that should be dealt with by the economically advantaged and technologically advanced industrialised developed countries, who are primarily responsible for creating global environmental problems. This stance of developing countries, among other considerations, gave rise to the idea of developed countries footing the incremental costs arising from developing countries' implementation of multilateral environmental treaty obligations.

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[182] Boisson De Chazournes, above n 178, 970.

[183] See generally Donald Kaniaru (ed.), *The Montreal Protocol – Celebrating 20 Years of Environmental Progress: Ozone Layer and Climate Protection* (Cameron May, London, 2007). See also Alexander Gillespie, "Money questions: financial assistance under the ozone and climate regimes" (2003) 20 *Environment and Planning Law Journal*, 142 – 160.

With respect to climate change, developed countries are obligated to provide new and additional finance to offset agreed full costs and agreed full incremental costs arising from developing countries' implementing their obligations under the UNFCCC.[184] Generally, financial resources flowing from developed to developing countries in the climate change regime is referred to as "climate finance". So to what extent has developed countries supplied the finance needed by developing countries to mitigate and adapt to climate change? Although there remain inherent limitations in tracking and reporting climate finance, effort will be made in the preceding section to ascertain what financial resources are required in developing countries for climate change policies and measures, and what amount has been supplied by developed countries toward the fulfilment of their treaty obligations.

4.2.3 Climate Finance: Global Estimates and the Amount Supplied

Climate finance has been said "to include all finance that specifically targets low-carbon or climate-resilient development",[185] while 'climate finance law' has been employed to "denote the existence of state obligations on climate finance".[186] The obligation to provide climate finance rests primarily on developed countries listed in Annex II of the UNFCCC.[187]

Presently, there exists no burden-sharing arrangement among developed countries on how to fulfil their commitments to provide finance required for climate change mitigation and adaptation in developing countries. Thus, individual developed country decides what it wants to contribute as climate finance through rather a bottom-up method.[188] In addition to lack of burden-sharing arrangement, there is also no agreement among states as to what amount is required to support mitigation and adaptation globally. However, global estimates of financial

[184] Art. 4.3
[185] OECD (2015), "Climate Finance in 2013-14 and the USD 100 billion Goal" a report by the Organisation for Economic Co-operation and Development (OECD) in collaboration with Climate Policy Initiative (CPI), 10
[186] Alexander Zahar, "The Paris Agreement and the Gradual Development of a Law on Climate Finance" (2016) 6 *Climate Law*, 75-90, 75
[187] See Article 4.3 of the UNFCCC. See also Article 9 of the Paris Agreement.
[188] Alexander Zahar, *International Climate Change Law and State Compliance* (Routledge, Abingdon, 2015), 126

resources required to attain the climate objectives set in the UNFCCC in 1992 have been put forward by a number of reputable organisations.

With respect to mitigation,[189] a 2007 ground-breaking technical paper by the UNFCCC estimates that additional investment and financial flows of around USD 177 billion will be required for mitigation per year in non-Annex I countries by 2030.[190] A 2009 update to the technical paper puts the estimate at more than USD 300 billion.[191] McKinsey estimates that incremental investments of USD 695 billion will be needed for mitigation activity in developing countries per year by 2030.[192] In 2009 the International Energy Agency (IEA) estimates USD 377 billion for mitigation activities in developing countries per year from 2021 - 2030.[193] In 2010, the World Bank estimates that mitigation could cost USD 140 – 175 billion in developing countries per year from 2030 (coupled with associated financial needs of around USD 265 – 565 billion).[194] Recent estimates of the cost of mitigation are even more exacting. In 2016, the IEA reported that to achieve the 2°C temperature goal USD 35 trillion is needed for energy efficiency improvement globally by 2040,[195] while the World Economic Forum estimates that by 2020 USD 5.7 trillion will have to be invested annually in developing countries to enable a shift to green infrastructure as well as mobilizing at least additional USD 700 billion to attain the 2°C emission stabilization goal (which increases to USD 14 trillion by 2030).[196]

[189] See generally, Susanna Olbrisch, Erik Haites, Matthew Savage, Pradeep Dadhich and Manish Kumar Shrivastava "Estimates of Incremental Investment for and Cost of Mitigation Measures in Developing Countries", (2011) 11(3) *Climate Policy*, 970.
[190] UNFCCC, *Investment and Financial Flows to Address Climate Change* (October 2007), 175, table IX-64.
[191] UNFCCC, *Investment and Financial Flows to Address Climate Change*: An Update (March 2009), para. 241.
[192] McKinsey & Company, *Pathways to a Low-Carbon Economy – Version 2 of the Global Greenhouse Gas Abatement Cost curve* (2009).
[193] International Energy Agency (IEA), *World Energy Outlook* 2009.
[194] World Bank, *Development and Climate Change. World Development Report* 2010, 257.
[195] International Energy Agency (IEA), World Energy Outlook 2016, Executive Summary, 5.
[196] World Economic Forum, *The Green Investment Report*, Geneva 2013, 13 – 14.

With respect to the cost of adaptation in developing countries,[197] the UNFCCC technical paper estimates USD 28 – 67 billion per year by 2030.[198] A report by the World Bank puts adaptation costs in developing countries at around USD 80 – 90 billion per year by 2030.[199] However, a 2016 report indicates that "the costs of adaptation are likely to be two-to-three times higher than current global estimates by 2030, and potentially four-to-five times higher by 2050".[200] As against global estimates of adaptation costs of USD 70 – 100 billion in developing countries from 2010-2050, the new report states that adaptation costs could be in the region of USD 140 – 300 billion by 2030, and between USD 280 – 500 billion by 2050.[201]

While the methodology adopted in arriving at the estimated costs of mitigation and adaptation in developing countries differs according to organisation, as will be shown in the next paragraphs, one common denominator is that a reasonable gap still exists between the projected climate finance required and the actual amount supplied, or reported to have been supplied.[202] I shall now undertake an evaluation of climate finance supplied by developed countries to developing countries through public and private sources pursuant to their obligation under the UNFCCC.[203]

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[197] See generally, Joel B. Smith, Thea Dickinson, Joseph D.B Donahue, Ian Burton, Erik Haites, Richard J.T Klein and Anand Patwardhan "Development and Climate Change Adaptation Funding: Coordination and Integration" (2011) 11(3) *Climate Policy*, 987 at 989; Narain, Urvashi, Margulis, Sergio Essam, Timothy, "Estimating Costs of Adaptation to Climate Change" (2011) 11(3) *Climate Policy*, 1001-1019.

[198] UNFCCC, Investment and Financial Flows to Address Climate Change, above n 324 para. 26 of the Executive Summary. The 2009 update quotes the estimate to be tens of billions to hundreds of billions of US dollars per year by 2030. See above n 325, Executive Summary, para. 6.

[199] World Bank, The Costs to Developing Countries of Adapting to Climate Change: New Methods and Estimates, World Bank, 2010.

[200] UNEP 2016. The Adaptation Finance Gap Report 2016. United Nations Environment Programme (UNEP), Nairobi Kenya, xii.

[201] Ibid.

[202] It has been reported that developing countries rejected an OECD report that developed countries mobilized US$57 billion towards the US$100 billion long-term finance goal by 2020. See Nitin Sethi, "Developing Countries Irked by Report Saying Climate Funds Delivered" *Business Standard*, New Delhi, 23 October 2015.

[203] Art. 4.3.

Public climate finance includes finance provided for climate change mitigation and adaptation by governments, bilateral aid agencies, multilateral, bilateral and national development finance institutions (DFIs).[204] Within the Organisation for Economic Cooperation and Development (OECD), public climate finance is captured through bilateral flows, disbursements from multilateral development banks (MDBs) and specific developing countries' climate funds, and national contributions by countries to UN specialised agencies.[205] 'Bilateral flows refer to the financial commitments made in a given period by a developed country directly to a developing country'.[206] Private climate finance encompasses climate investments undertaken by households, multinational corporations, and other private-oriented establishments as distinguished from public institutions, usually with the aim of fostering low-carbon and climate-resilient development pathway.[207]

In 2013, total annual climate finance flow was reported to be around USD 331 billion, short of the 2012 level by USD 28 billion.[208] Out of the amount, public climate finance accounted for USD 137 billion (USD 134-140 billion), while private climate finance contributed USD 193 billion.[209] The total amount that was channelled to developing countries by developed countries in 2013 was put at USD 34 billion, lesser than the 2012 amount by USD 8 billion.[210]

In 2014, global climate finance was reported to have increased to USD 391 billion owing mostly to growth in public finance and improved private investment in renewable energy.[211] While public climate finance contributed approximately USD 148 billion (USD 144-152

[204] Climate Policy Initiative (CPI), *The Global Landscape of Climate Finance 2015*, November 2015, 3.
[205] OECD (2016), *2020 Projections of Climate Finance towards the USD 100 Billion Goal: Technical Note*, OECD Publishing 2016, 11.
[206] Ibid.
[207] CPI (2015), above n 204, at 4.
[208] Climate Policy Initiative (CPI), *The Global Landscape of Climate Finance 2014*, November 2014, IV.
[209] Ibid.
[210] Ibid.
[211] CPI (2015), above n 204, at 1.

billion), representing 8 and 10 percent increase above the levels in 2013 and 2012 respectively,[212] private climate investments accounted for up to USD 243 billion.[213] Whereas about USD 31 billion or 21 percent of 2014 public climate finance was disbursed to private entities (NGOs inclusive), public or public-private climate entities received USD 61 billion or 41 percent of the public finance.[214] Private finance for 2014 was mostly channelled towards mitigation projects in countries in the upper-middle or high-income category,[215] while adaptation projects received about USD 1.4 billion or 4 percent of the global climate finance in 2014.[216] Further on adaptation finance, it has been reported that gross bilateral and multilateral finance for adaptation reached USD 25 billion in 2014, from which US$ 22.5 billion was channelled to developing countries.[217] In 2015, over USD 35 billion of adaptation climate fund was approved for distribution, signifying growth in funds dedicated to climate change adaptation.[218]

Specifically on climate finance channelled to developing countries by developed countries, a 2015 OECD report[219] on developed countries' effort towards the USD 100 billion climate finance goal by 2020 is worth highlighting. The report "estimated the aggregate volume of public and private climate finance mobilized by developed countries for developing countries reached USD 61.8 billion in 2014, up from USD 52.2 billion in 2013, with an average for the two years of USD 57.0 billion per year in 2013-14".[220] However, the report and the figure mentioned was promptly dismissed by developing countries as lacking credibility and

[212] Ibid.
[213] Ibid.
[214] Ibid, 8.
[215] Ibid.
[216] Ibid.
[217] UNEP 2016, above n 200, at xiii
[218] Ibid.
[219] OECD (2015), above n 185.
[220] Ibid, 10.

unsupported by any known methodology.[221] As mentioned in subsequent section of this chapter, the OECD report raises issues relating to accurate climate finance reporting and transparency.

By 2020, developed countries are projected to scale up public climate finance, through bilateral and multilateral sources, to up to USD 67 billion compared to about USD 38 billion and close to USD 44 billion in 2013 and 2014 respectively.[222] With respect to projected future private climate finance mobilised by developed countries to support climate change policies and actions in developing countries, it has been stated that the level of such finance will not only depend on the overall level of public finance but on other factors such as the contribution made by projects with potential for generation of direct private finance and the ratio of private and public finance mobilised through such projects.[223] Thus, it has been estimated that "if every dollar of developed countries' projected public finance in 2020 mobilised private finance on average in exactly the same proportion as every dollar of public finance did in 2013-14, the projected amount of private finance would be USD 24.2 billion".[224] If this projection holds, public and private climate finance mobilised by developed countries by 2020 will still fall short of the USD 100 billion goal set in the Copenhagen Accord and later endorsed in the Cancun Agreements and COP 21 Decision.

While the foregoing evaluation establishes the fact that progress is being made, a chasm still remains between the estimated climate finance needed for the attainment of the ultimate objective of the UNFCCC as enunciated in Article 2 and the actual amount being supplied.

[221] Yulia Yamineva, "Climate Finance in the Paris Outcome: Why Do Today What You Can Put Off Till Tomorrow?" (2016) 25(2) *Review of European & International Environmental Law*, 174-185, 181.
[222] OECD (2016), above n 205, at 10.
[223] Ibid, 4.
[224] Ibid.

This state of affairs raises questions as to the effectiveness[225] of the regime governing climate finance in achieving the objective of rendering financial assistance to developing countries to enable low-carbon economic development requisite for building resilience to climate change.

4.2.4 Review of the Financial Assistance Provisions of the Climate Change Regime

Before delving into the evaluation of the main provisions dealing with financial assistance to developing countries, I shall first briefly examine the important issue of which countries are mandated to provide financial resources for climate change mitigation and adaptation, and those expected to benefit from the resources provided. Yamin and Depledge categorise the two groups as "resource providers"[226] and "resource beneficiaries".[227]

Under the UNFCCC, three provisions deal with provision of financial resources.[228] They are provisions on financial resources for general commitments and reporting;[229] adaptation costs;[230] and technology transfer.[231] For all of these resources, "the developed country Parties" and "other developed Parties" listed in UNFCCC Annex II are the providers or donors.[232] The EU is taken to be the "other developed Parties" as referred to in the relevant articles.[233] Thus, under the UNFCCC, developed countries assume the legal obligation to provide financial resources for climate change mitigation and adaptation in developing countries.[234] According to Alexander Zahar, this legal obligation on developed countries

[225] Smita Nakhooda and Marigold Norman, *Climate Finance: Is It Making A Difference? A Review of the effectiveness of Multilateral Climate Funds,* Overseas Development Institute (ODI), December 2014.
[226] Yamin and Depledge, above n 50, at 266.
[227] Ibid, 272.
[228] Ibid, 266.
[229] Art. 4.3.
[230] Art. 4.4.
[231] Art. 4.5
[232] Yamin and Depledge, above n 50, at 266.
[233] UNFCCCC, Arts. 4.3, 4.4, and 4.5.
[234] Zahar, above n 188, at 118.

"advances the FCCC's general mitigation rule, whose objective is to have states cooperate to avoid dangerous climate change".[235]

With respect to the Kyoto Protocol, the provisions dealing with provision of financial resources are also directed at UNFCCC's Annex II parties.[236] However, the provision of Article of 12 of the Protocol which channels a share of CERs proceeds to adaptation costs in developing countries that are mostly vulnerable to the adverse impacts of climate change entails wider coverage of resource providers beyond Annex II parties.[237] The fact that Annex I parties can execute investments under the CDM means that CERs proceed will be generated from larger group of parties, which encompasses private investors, thereby expanding the number of parties that provide financial resources.[238] It has been observed that "this broadening was resisted by the private sector, many EITs and some developing countries as it marks a fundamental shift away from reliance on ODA funding from OECD countries".[239]

It should be noted that the UNFCCC and the Kyoto Protocol do not set the level of financial resources that Annex II parties should provide nor do they state how they should share the burden of providing the resources.[240] However, the two instruments make reference to "the need for adequacy and predictability in the flow of funds and the importance of appropriate burden-sharing among developed country Parties".[241]

[235] Ibid.
[236] Art. 11.
[237] Yamin and Depledge, above n 50, at 266.
[238] Ibid.
[239] Ibid.
[240] Notably, the first time financial commitment of developed countries was expressed in dollars, albeit arbitrarily, was in the decision resulting from the Cancun COP, in line with the Copenhagen Accord which originally set the benchmarks for the fast-start and long-term finance at up to USD 30 billion in (2010-2012) and up to USD 100 billion in (2013-2020), respectively. See the Copenhagen Accord, paragraph 8 and Decision 1/CP.16, paragraphs 95 and 98. See also Zahar, above n 188, 125-126. The Paris outcome also reflects this trend of COP 15 and COP 16. See Decision 1/CP.21, paragraph 54.
[241] UNFCCC, Art. 4.3; Kyoto Protocol, Art. 11.2(b). See Yamin and Depledge, above n 50, at 267.

Countries that are to benefit from resources provided by developed countries listed in Annex II are developing countries and non-Annex I parties – "resource beneficiaries".[242] Thus far, the expression "developing country" is yet to be defined under the climate change regime. No definition of the term has been attempted by the UNFCCC, the Kyoto Protocol, the Paris Agreement, or relevant COP decisions till date. At the outset, the question for determination surrounded whether the 154 parties to the UNFCCC which are not mentioned in Annex I should be categorised as "developing countries".[243] The rationale for the question lays in the fact that relevant articles of the UNFCCC[244] stipulate that resources are to be provided by Annex II developed countries to developing countries.[245]

Moreover, the need for specificity on which countries are developing countries consists in the fact that other provisions of the UNFCCC and the Kyoto Protocol make mention of developing countries in relation to performance of an obligation or entitlement to a right. Cases in point include expressions like: "the extent to which *developing country* Parties will effectively implement their commitments under the Convention... related to financial resources...";[246] ...Parties shall give full consideration..., to meet the specific needs and concerns of *developing countries* arising from the adverse effects of climate change and/or the impact of the implementation of response measures...;"[247] "*Developing country* Parties may, on a voluntary basis, propose projects for financing, including specific technologies,...";[248] "...Each party not so listed [in Annex 1] shall make its initial communication within three years of the entry into force of the Convention..."[249] (which

[242] Yamin and Depledge, above n 50, at 267.
[243] Ibid, 272.
[244] See Arts. 4.3, 4.4 and 4.5.
[245] See generally, Yamin and Depledge, above n 50, at 272.
[246] UNFCCC, Art. 4.7.
[247] Ibid, Art. 4.8.
[248] Ibid, Art. 12.4.
[249] Ibid, Art. 12.5.

refers to developing countries). Following the UNFCCC, the Protocol refers to *developing countries* in vital provisions as well.[250]

The gap of non-definition of developing countries notwithstanding, COP 1 decided that developing countries are the only countries eligible for funding from the financial mechanism pursuant to Article 4.3 of the UNFCCC.[251] In line with this decision, the GEF makes funds available to all non-Annex 1 parties keeping with its enabling instrument.[252] Pondering the inherent complication in ascertaining who developing countries are based on the UNFCCC annexes and the practice of the GEF providing access to finance to all non-Annex I countries, it has been submitted that "although the Convention and the Protocol legally limit entitlement to funding to developing countries, in practice all Parties not listed in Annex I of the Convention are eligible for funding under the Convention's financial mechanism".[253]

Moreover, within the wider question of which countries are eligible for funding lays the question of the status of Parties described as "countries that are undergoing the process of transition to a market economy" [EITs] under the UNFCCC and the Protocol.[254] Generally, an EIT country is eligible to be funded by the operating entity of the financial mechanism of the UNFCCC as long it is not listed in Annex I. The logic informing this conclusion is that such EIT is deemed to have a non-Annex I status as a result of the fact that such a country not being expressly mentioned in Annex I implies an exclusion from the group mentioned. Consequently, a country like Russia which is expressly listed in Annex I, though with an EIT status, is excluded from funding by the financial mechanism because it does not qualify as a non-Annex 1 developing country. However, it should be noted that EITs excluded as result of

[250] Arts. 2.3, 3.14, 10 and 11. Further, see Yamin and Depledge, above n 50, at 272 – 273.
[251] Decision 11/CP.1, Initial guidance on policies, programme priorities and eligibility criteria to the operating entity or entities of the financial mechanism. FCCC/CP/1995/7/Add.1.
[252] See the Instrument for the Establishment of the Restructured Global Environment Facility, March 2015, paragraph 9(a) (Eligibility).
[253] Yamin and Depledge, above n 50, at 273.
[254] See Annex 1 UNFCCC; Annex B Kyoto Protocol.

their being listed in Annex I may still receive climate finance outside the financial mechanism of the UNFCCC.[255]

Thus, it can be seen that the climate regime's delineation of which parties should provide resources and those eligible to receive same for mitigation and adaptation activities cannot be said to have been laid on stone. There remain grey areas in that respect. That said, this state of affairs has remained the position since 1992 when the UNFCCC was adopted, and the fact that the Paris conference deemed it not central to further categorically deal with the issue of status of parties with respect to the "developing or developed" countries question provides the basis for belief that the question may not have been deemed a preoccupying one. However, as argued earlier on in this work, the fact that the Paris Agreement flows from the UNFCCC and made reference to "developing" and "developed" countries without defining the terms, implies that the annexes to the UNFCCC remain relevant in the interpretation of the Agreement's provisions on finance provision and disbursement in particular, and other provisions of the Agreement where the issue of categorisation of parties may arise in general. I shall now turn to the evaluation of relevant provisions dealing with financial assistance to developing countries under the climate regime.

Under the UNFCCC, climate finance covers both mitigation and adaptation. This much can be distilled from the main provision of the UNFCCC which obligates Annex II parties to render financial assistance and transfer technology to developing countries. It provides as follows:

The developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1. They shall also provide such financial resources, including for the transfer of technology, needed by the developing country Parties to meet the agreed full incremental

[255] Yamin and Depledge, above n 50, at 275

costs of implementing measures that are covered by paragraph 1 of this Article and that are agreed between a developing country Party and the international entity or entities referred to in Article 11, in accordance with that Article. The implementation of these commitments shall take into account the need for adequacy and predictability in the flow of funds and the importance of appropriate burden sharing among the developed country Parties.[256]

Although the foregoing provision is communal in nature, the fact that the word "shall" is employed in setting out the provisions of the article creates a binding obligation on developed countries. However, the obligation created by the article does not bind individual developed country, but binds them collectively in view of the fact that the provision is addressed to "The developed country Parties and other developed country Parties included in Annex II".[257]

The rationale for the phrase "new and additional" in the provision has been construed as devised to secure an understanding that "scarce ODA funds would not be diverted by Annex II parties to fund their obligations under the new conventions agreed in Rio".[258] Thus, any relabeling of aid flowing from the ODA framework will not qualify as "new and additional" under the UNFCCC.[259] This provision also envisages an agreement as to the actual financial resources needed. There is also a requirement as to adequacy and predictability of financial transfers and the need for developed countries to adopt requisite burden-sharing arrangements.[260] Although the provision does not stipulate the formula for such burden-sharing, it has been stated that the fact that burden-sharing is recognised operates to further

[256] UNFCCC, Art. 4.3
[257] See Zahar, above n 188, at 122. Article 9 of the Paris Agreement also follows the communalist trend of Article 4.3 of the UNFCCC.
[258] Yamin and Depledge, above n 50, at 276. The 'Rio Conventions' (i.e., Conventions adopted at the Rio Conference in 1992) are the Convention on Biological Diversity (CBD); the United Nations Convention to Combat Desertification (UNCCD); and the United Nations Framework Convention on Climate Change (UNFCCC).
[259] Zahar, above n 188, at 122.
[260] UNFCCC, Art. 4.3.

the financial assistance provisions, and that the requirement reflects the burden-sharing system for mitigation of greenhouse gas emission.[261]

Furthermore, the UNFCCC provides that developed countries "shall also assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects".[262] This provision flows from Article 4.3, with specific emphasis on adaptation for countries that are most likely to suffer disproportionately from climate change. This is normally taken to mean countries in the categories of least developed countries (LDCs), small-island developing states (SIDs) and other countries listed in the UNFCCC.[263] It should be noted that Article 4.4 neither refers to "new and additional resources" nor "incremental costs". It has been stated that what informed the omission of the terms is that "during the Convention's negotiation, donors considered that these matters would be met outside of GEF resources based on the widely shared assumption that such resources would also be new and additional".[264]

The UNFCCC also provides for provision of finance by developed countries to aid transfer of technology to other parties, especially developing countries.[265] Owing to the fact that the provisions relating to transfer of technology have been dealt with in detail elsewhere in this thesis,[266] I will restate the fact that Article 4.5 complements the provisions of Article 4.3 and vice-versa.[267]

Considering that the UNFCCC creates two distinct categories of parties (providers and beneficiaries) with respect to financial resources and provision of support generally, a question has been raised as to the nature of the obligation and relationship between the

[261] Zahar, above n 188, at 122.
[262] Art. 4.4
[263] See Arts. 4.8 and 4.9
[264] Yamin and Depledge, above n 50, at 276.
[265] Art. 4.5.
[266] See the sub-chapter on transfer of technology, supra.
[267] See Zahar, above n 188, at 122.

groups,[268] especially with respect to implementation. Attempt to answer this question can be found in the provision of the UNFCCC which states that:

The extent to which developing country Parties will effectively implement their commitments under the Convention will depend on the effective implementation by developed country 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.[269]

Commenting on the effect of Article 4.7, Zahar submits that "it might be thought that Article 4.7 renders the obligation of non-Annex I parties 'conditional', and therefore that they are not fully legal obligations... However, this article conditions the 'effective implementation' of the commitments of non-Annex I – not the commitments themselves".[270] Zahar continues: "While the article does not state that each party must negotiate in good faith to individualize obligations under the [financial] transfer rule, it is implicit in the logic of the communal rule".[271] Furthermore, Zahar postulates that "A non-Annex I party, or group of them, could hold out unreasonably for a higher overall transfer budget, and in the meantime fail to effectively implement their commitments under the Convention due to insufficient fund. This would in no way absolve them of their mitigation obligations".[272]

While the above views of Zahar might look correct when the provision of Article 4.7 is interpreted literally, a purposive interpretation of the provision would prove otherwise. Moreover, Zahar seems to have hypothetically imported an element of bad faith on the part of a developing country, or a group of them (that of "holding out unreasonably for a higher

[268] Ibid, 122-123.
[269] Art. 4.7.
[270] Zahar, above n 188, at 123.
[271] Ibid. (emphasis added).
[272] Ibid. See also Jutta Brunee and Stephen J. Toope, *Legitimacy and Legality in International Law: An Interactional Account* (Cambridge University Press, Cambridge & New York, 2010), 162.

overall transfer budget")[273] to arrive at his conclusion. Would Zahar's conclusion be the same if a developing country, in good faith, fails to implement its commitment effectively for want of requisite resources from developed countries?

Factually-speaking, the simple question may go thus: What purpose is the provision of Article 4.7 meant to serve? I would answer that: For developing countries to effectively implement their commitments under the Convention, developed countries have to effectively implement their commitments with respect to financial assistance and technology transfer. What if developed countries fail to effectively implement their commitments? Then, developing countries will lack the support to effectively implement their commitments. Is there a half-way house between the actual commitments of developing countries and their effective implementation? On face value, one can be established, however, Article 4.7 interpreted purposively in line with the principles and objective of the Convention, the actual commitments of developing countries and their effective implementation coalesces into one inseparable undertaking. What would a hypothetical international tribunal before whom Article 4.7 comes up for construction do? Expounding the law on purposive interpretation, Lord Simon in *Maunsell v Olins* asserted thus:

The first task of a court of construction is to put itself in the shoes of the draftsman – to consider what knowledge he had and, importantly, what statutory objective he had …being thus placed…the court proceeds to ascertain the meaning of the statutory language.[274]

So what must have been the intention of the drafters of Article 4.7? Arguably, their intention would be that developing countries should be empowered by the more economically and technologically advantaged developed countries to enable the former effectively implement their commitments. Moreover, the latter part of Article 4.7 offers a compelling and practical

[273] Ibid, 123.
[274] [1975] AC 373. For a recent view on purposive interpretation, see Aharon Barak, *Purposive Interpretation in Law* (Princeton University Press, Princeton, 2005).

justification for the 'conditional clause' to the effect "that economic and social development and poverty eradication are the first and overriding priorities of developing country Parties".

In disagreement with Zahar, I submit that a literal interpretation of Article 4.7 as he adopted will defeat, rather than further the objective and principles of the UNFCCC, especially the common but differentiated responsibilities principle. I have maintained similar position in every section of this thesis where Article 4.7 and the wider question of the relationship between the UNFCCC and the Paris Agreement has been considered. The fact that the Paris Agreement does not directly refer to Article 4.7 has led to questions as to its relevance in any post-Kyoto framework.[275] I have maintained the view that Article 4.7 may still be invoked in interpreting relevant provisions of the Paris Agreement, especially in a situation where it is possible to interpret the Agreement as engaging the whole of the UNFCCC pursuant to Article 2 of the Agreement.

With respect to the Kyoto Protocol, no new addition to the provisions of the UNFCCC on financial assistance was negotiated. The Protocol reiterates the obligation of developed countries to "provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in advancing the implementation of existing commitments under Article 4, paragraph 1(a), of the Convention..."[276] Like the UNFCCC, the Kyoto Protocol does not state the level of financial commitment to be assumed by Annex II developed countries.[277]

Before proceeding to evaluate the financial resources provisions of the Paris Agreement, I will first undertake further discussion of the concepts of "new and additional" and

[275] Christina Voigt and Felipe Ferreira, "Differentiation in the Paris Agreement" (2016) 6 *Climate Law*, 58-74, 70; Sandrine Maljean-Dubois, "The Paris Agreement: A New Step in the Gradual Evolution of Differential Treatment in the Climate Regime" (2016) 25(2) *Review of European Community & International Environmental Law*, 151-160, 158.
[276] Art. 11.2(a)
[277] See Zahar, above n 188, at 125.

"incremental costs". Controversy has characterized reaching consensus on the meaning of "new and additional" and "incremental costs" as employed under the UNFCCC. The UNFCCC provides no definition for these terms, thus leaving the room for diverse interpretations.[278] Developing countries' emphasis on the lack of definition of 'additionality' stemmed from the concern that official development assistance (ODA) might be repackaged as climate resources.[279]

The additionality of developed country financing has been a thorny issue both politically and technically.[280] However, COP decisions contain some guidance as to what should be considered as a "new and additional" funding. For instance, COP 7 states that "there is need for a funding; including funding that is new and additional to contributions which are allocated to the climate change focal area of the Global Environment Facility and to multilateral and bilateral funding, for the implementation of the Convention".[281] Another decision by COP 7 on funding under the Kyoto Protocol employed similar definition.[282] Married together, the language of COP 7 suggests that "new and additional" climate finance refers to the increase of funds in the context of implementation of the Convention.[283] Nonetheless, this definition has not been accepted by all the parties.[284]

Likewise, the definition of "incremental cost" under the UNFCCC has also been problematic. Yamin and Depledge opine that "the concept of incremental cost raises politically sensitive issues about the sustainable development pathways developing countries can and should

[278] Yulia Yamineva and Kati Kulovesi, "The New Framework for Climate Finance under the United Nations Framework Convention on Climate Change: A Breakthrough or an Empty Promise?" in Errki J. Hollo, Kati Kulovesi and Michael Mehling (eds.) Climate Change and the Law (Springer, New York, 2013), 196.
[279] Ibid.
[280] Yamin and Depledge, above n 50, at 276.
[281] Decision 7/CP.7
[282] Decision 10/CP.7
[283] Yamineva and Kulovesi, above n 278, at 197.
[284] Ibid.

follow."[285] This is informed by the fact that "the notion of "incremental cost" aims to exclude baseline costs and limit financing under the Convention to the benefits of the global environment."[286] Thus, it has been suggested that the "incremental costs of a project are the difference in costs between doing a project that achieves national goals but does not give global environment benefits and doing one that does not".[287] While assessing the incremental cost for projects falling within climate change mitigation may be simple and straight-forward considering that such projects are generally deemed to provide global benefits, calculating incremental cost for projects on adaptation to climate change, which mostly create national or local benefits, is inherently difficult and controversial.[288]

Effort to clarify and simplify the notion and application of incremental costs has been made by the GEF. The GEF has played an important role in operationalizing the concept of incremental costs through its funding decisions.[289] The controversial Resource Allocation Framework (RAF) – a system for allocating funds between countries based on country performance and potential to generate global environmental benefits – is one example. This system failed to take into account vulnerability to the impacts of climate change and the need for adaptation.[290] It was criticised as an attempt by the GEF to calibrate the concept of incremental costs based on the World Bank indicators without recourse to the UNFCCC COP.[291] Reacting to the criticism, the GEF replaced the RAF with a new policy that takes GDP into consideration in the allocation of funds.[292]

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[285] Yamin and Depledge, above n 50, at 278.
[286] Charlotte Streck, "Ensuring New Finance and Real Emission Reduction: A Critical Review of the Additionality Concept" (2011) 5(2) *Carbon and Climate Law Review* 158, 162.
[287] Yamin and Depledge, above n 50, at 280.
[288] Erik Haites, Development Perspectives for a Post-2012 Climate Financing Architecture (OECD, 2010) 12-13. Available online at: <http://www.oecd.org/greengrowth/green-development/47115936.pdf> Accessed 5 October 2013.
[289] Yamin and Depledge, above n 50, at 278.
[290] Yamineva and Kulovesi, above n 278, at 198.
[291] Luis Gomez-Echeverri and Benito Muller, "The Financial Mechanism of the UNFCCC: A Brief History", European Capacity Building Initiative (ECBI), Policy Brief, April 2009, 1. Available online at:

The concepts of "new and additional" funding and "incremental costs" are so fundamental to the financial mechanism of the climate regime to be left undefined. A mere guidance by the COP, or allocation formula by the GEF, is bound to generate discord between developed and developing countries. While the Paris Agreement seems to have avoided using the controversial terms, it does provide that mobilization of climate finance by developed countries "should represent a progression beyond previous efforts."[293] Considering that the Agreement was negotiated and adopted under the UNFCCC, the controversy surrounding the meaning of "new and additional" and "incremental costs" may not have gone away by the mere fact of the terms being omitted from the Agreement. The early years of implementation of the Paris Agreement will provide a clue as to whether the controversy will wane or wax, or be re-born in a totally different manner.

At this juncture, I will review the provisions of the Paris Agreement dealing with climate finance and financial assistance to developing countries. The accompanying COP 21 decision shall form part of the discourse. To start with, it should be noted that the novelty introduced by the Paris Agreement to the body of international regime on climate finance is mainly of a procedural nature.[294] The substantive part of climate finance provision (supply) did not register any radical change.[295]

With respect to finance, the provisions of the Paris Agreement and the COP 21 decision broadly cover areas like provision of financial resources; scaling up of finance; principles

<http://www.oxfordclimatepolicy.org/publications/documents/ecbiBrief-FMHistory.pdf> Accessed 5 October 2013.

[292] Yamineva and Kulovesi, above n 278, at 198. Further on this, see the discussion on pages 277-278.

[293] Paris Agreement, Art. 9.3.

[294] Zahar, above n 186, at 75.

[295] Ibid.

underlying financing; transparency; and the institutional structure governing finance framework.[296]

On provision of financial resources, the Agreement provides that "Developed country Parties shall provide financial resources to assist developing country Parties with respect to both mitigation and adaptation in continuation of their existing obligations under the Convention".[297] This provision reaffirms continuity rather than a change.[298] Moreover, the expression "in continuation of their existing obligation" has been construed to mean that the provisions of the Paris Agreement on finance will be viewed in the light of the UNFCCC.[299] Furthermore, the provision makes no allusion to UNFCCC's Annex II parties, but chose to employ the phrase "developed countries" instead. This has led to a submission that "the term "developed country" is less precise and more flexible"; that "this reflects a departure from interpreting the principle of common but differentiated responsibilities through dividing all parties of the Convention into lists; and that "it also illustrates a more general evolution of the UNFCCC regime from a firewall type of differentiation to a more flexible approach adequate to current economic realities of the world".[300] The foregoing suppositions notwithstanding, it has also been reasoned that the expression "developed country" will continue to be viewed from the prism of Annex II of the UNFCCC for the time being.[301]

The Agreement also provides that "Other Parties are encouraged to provide or continue to provide such support voluntarily".[302] This has been described as a novel introduction which reflects the changing economic landscape of the twenty-first century world.[303] The likely

[296] See Yamineva, above n 221, at 180.
[297] Art. 9.1
[298] Zahar, above n 186, at 76.
[299] Yamineva, above n 221, at 180.
[300] Ibid. For further expatiation on the 'flexibility' credentials of the Paris Agreement with respect to the CBDRRC, see Voigt and Ferreira, above n 275.
[301] Yamineva, above n 221, at 180.
[302] Art. 9.2.
[303] Yamineva, above n 221, at 180.

targets of this provision are the new strong economies that emerged post-1992. The permissive tone of the provision has been linked to the fact that opting for a mandatory language as present in Article 9.1 would have been counter-productive as it would have been viewed as a re-negotiation of the UNFCCC by developing countries, and as a development contradicting the ethical basis of developed countries being historically responsible for the climate change problem, and therefore under a moral, if not legal obligation, to lead the way in addressing the problem.[304]

Resultantly, the Paris Agreement adopted a recommendatory language to encourage whoever is capable to contribute financial resources, while acknowledging the efforts of parties that are already doing so.[305] This provision has been termed "significant as it may help move away from the poisonous dynamic of climate finance negotiations in the UNFCCC and ultimately unlock additional financial resources needed for transition to a low-carbon and climate-resilient economy".[306]

Furthermore, the Paris Agreement provides that developed countries should continue to lead the way in the mobilization of climate finance from a wide range of sources, and that "such mobilization should represent a progression beyond previous efforts".[307] This provision signifies a change – that of an increase in climate finance. Thus, the "continuity" of Article 9.1 does not exclude additional efforts towards mobilization of climate finance being

[304] Ibid.
[305] Ibid.
[306] Ibid.
[307] Art. 9.3. "Mobilise" has been construed to refer to the provision of climate finance for developing countries via developed countries' use of both financial instruments (e.g. debt, equity, grants, insurance, and guarantees) as well as interventions such as policies and measures". See Randy Caruso and Jane Ellis, *Comparing Definitions and Methods to Estimate Mobilised Climate Finance* (2013), Climate Change Expert Group Paper No. 2013(2), Organisation for Economic Co-operation and Development (OECD), Paris France, 12. In its submission on the elements of the 2015 agreement, the United States lent support to "mobilisation" as against "provision" of climate finance as originally employed in the Copenhagen Accord, notwithstanding the transparency problem the term may create in tracking climate finance. See Zahar, above n 188, at 133. It is assumed that 'mobilization' of climate finance entails wider coverage of sources of climate finance such as public, private, etc., compared with 'provision' of climate finance. With respect to climate finance, the UNFCCC process has not defined the terms "mobilize", or "provision".

undertaken.[308] While pondering the inherent uncertainty arising from lack of quantification of climate finance, as obtainable even under the Paris Agreement, Zahar submits thus:

Why does the Paris Outcome demand that the amount of climate finance be increased? The answer might seem obvious, but it is not. The answer is not, for example, that the current flow of finance is only $X billion a year, yet we need $Y billion, so climate finance must be increased by the difference between the two. There is no information in the COP Decision on the annual amounts of climate finance supplied under the auspices of the UNFCCC, nor is there any forecast of need. Nor is the answer, say, that the Green Climate Fund has a large number of mitigation and adaptation projects for developing countries awaiting funding, but is still low on funds, so states must commence cycles of replenishment to maintain the required support. The actual answer is given in Article 4.5 of the Paris Agreement. It evidences the area's rudimentary state of development: 'Support shall be provided to developing countries Parties... recognizing that enhanced support for [them] will allow for higher ambition in their actions'. That is all. Why is more finance needed? To pay for more action.[309]

Zahar also berates the Paris Agreement for the inconsistent use of modal verbs "shall" and "should" in the provisions of Article 9, noting that "The Paris Outcome – both the Agreement and the COP Decision – is in places marred by the same inconsistent use of modals found in other parts of the climate change regime".[310] Furthermore, assessing the use of the modal "will" in the other provisions of the Agreement,[311] Zahar concludes, among other things, that "it is less than truthful to use a 'will' when, legally, only a 'may' is intended".[312] In this regard, the chickens will surely come home to roost when the implementation of the Paris Agreement gets underway. If the vacillation in the use of modal verbs is intended to undermine some provisions of the Agreement, or introduce ambiguity in their construction to serve the interests of a group of parties, as seen in the provisions of Article 9.1 and 9.3 –

[308] Zahar, above n 186, at 76.
[309] Ibid, 77-78
[310] Ibid, 78.
[311] Arts. 3 and 4.3. Zahar also points out the case of the 'should' in Article 4.4, "suggesting that the 'lead' question was deliberately answered with a 'should' [and that] while there might be a political explanation of this choice of terms..., it does not displace the ambiguity, nor does it help with the legal interpretation of the treaty text". Ibid, 78, footnote 4.
[312] Zahar, above n 186, at 78-79, see specifically footnote n 6 at 78.

change from "shall" to "should" respectively, then the Agreement may not live up to its purpose.

With respect to scaling up of climate finance, the main COP decision on the issue is worth analysing. The relevant COP decision provides that "developed countries intend to continue their existing collective mobilization goal through 2025 in the context of meaningful mitigation actions and transparency on implementation; prior to 2025 the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement shall set a new collective quantified goal from a floor of USD 100 billion per year, taking into account the needs and priorities of developing countries".[313]

As a starting point, the USD 100 billion climate finance goal first appeared in the Copenhagen Accord, and later in the Cancun Agreements, wherein developed countries committed to jointly mobilize USD 100 billion a year by 2020 to assist developing countries.[314] Notably, while in the Copenhagen Accord and the Cancun Agreements the amount forecast by developed countries was taken to be the "ceiling", COP 21 intends to make it the "floor" pursuant to a decision of the Conference of Parties before 2025.[315] On the relationship between the COP decision in question and Article 9 of the Paris Agreement, it is deducible that the employment of the term "intend" in the decision corroborates the "should" in Article 9.3.[316] According to the decision, the up to USD 100 billion projected financing level is expected not to change prior to 2025 – leading to the conclusion that enhancement of climate finance under the UNFCCC will be stagnated until at least 2025.[317]

Assessing the relevant decisions of COP 21 and the Paris Agreement on enhancement of climate finance, it has been observed that the Paris outcome fails to set out how the burden of

[313] Decision 1/CP.21, para. 54.
[314] Copenhagen Accord, para. 8; Decision 1/CP.16, para. 98 (Cancun Agreements).
[315] Decision 1/CP.21, para. 54.
[316] Zahar, above n 186, at 79.
[317] Ibid.

attaining the annual USD 100 billion goal by 2020, and further maintaining that level of funding to 2025, could be distributed among developed countries; is devoid of a "concrete path" to attaining the projected financial ambition, although it "strongly urges" developed countries to set a "concrete roadmap" to achieve the projected goal;[318] relied on a pledge made in previous COP decisions, albeit aiming to make the *old pledge* the floor rather than the ceiling, without stating any substantive higher target.[319] All these taken into account, the Paris outcome can be said to suffer from "lack of concrete, time-bound commitment on climate finance".[320] Moreover, the Paris COP in deciding that the Conference of the Parties to the Paris Agreement shall set a new climate finance goal for the period 2025 and onwards has been described as a postponement of a politically difficult question to the future, while agreeing a procedural roadmap.[321]

More so, the projected finance goal under the Paris Agreement may still yet face the same accounting and transparency problems that have bedevilled provision of finance under the UNFCCC framework.[322] This inherent accounting problem has been attributed to methodological and definition gaps in the architecture governing climate finance.[323] Notably, with respect to climate finance accounting, in the months preceding the Paris conference, developing countries were pinned against developed countries following an OECD report that developed countries mobilized USD57 billion on the average annually in the period 2014 – 2015 in line with the long-term climate finance goal under the UNFCCC, leading to the conclusion that developed countries are gradually progressing towards attaining the 2020

[318] Ibid. See Decision 1/CP.21, para. 115.
[319] Ibid.
[320] Charlotte Streck, Paul Keenlyside and Moritz von Unger, "The Paris Agreement: A New Beginning" (2016) 13 *Journal for European Environmental and Planning Law*, 3-29, 20.
[321] Yamineva, above n 221, at 181.
[322] Although the transparency framework of the Paris Agreement covers finance, it remains to be seen how the framework will improve on the shortcomings of the existing regime. See Decision 1/CP.21, paras 85-99; Art. 13, Paris Agreement.
[323] Yamineva, above n 221, at 181.

benchmark of USD 100 billion per year.[324] Specifically, the report stated that USD 52 billion and USD 62 billion were mobilized in 2013 and 2014 respectively.[325] However, the said report was vehemently opposed by developing countries as they raised questions about its underlying methodology and credibility.[326] The OECD report and the attendant controversy underline the need for the transparency and review framework of the Paris Agreement to deliver an acceptable level of measuring, reporting and verification of climate finance.

The Paris Agreement also covers principles relating to climate finance, which mostly pertain to future source of climate finance, funding eligibility and distribution criteria.[327] With respect to possible sources of climate finance, the Agreement targets "finance from a wide variety of sources, instruments and channels, while "noting the significant role of public funds"[328] It has been observed that "the question of where the money would come from has also been a divisive issue in the climate change negotiations", considering that "whereas developed countries have argued for the important role of the private sector in addition to public funds, developing countries insisted that climate finance should primarily be provided by developed countries, reflecting their historical responsibility for climate change".[329] However, the Paris Agreement can be said to have engaged in a sort of window-dressing by kowtowing the Copenhagen and Cancun COPs approaches to climate finance sourcing without resolving the underlying issues as reflected in the divergent positions of developing and developed countries.[330]

On the question of funding eligibility and distribution, the Agreement identifies developing countries as climate finance beneficiaries but falls short of offering a definition of the group.

[324] OECD (2015), above n 219. See also Yamineva, above n 221, at 181; Streck *et al*, above n 320, at 20.
[325] Ibid.
[326] Sethi, above n 202.
[327] See Yamineva, above n 221, at 181.
[328] Art. 9.3.
[329] Yamineva, above n 221, at 181.
[330] Ibid.

This lacuna notwithstanding, the Agreement singles out climate change vulnerable developing countries as a group to be accorded priority in financing. Least developed countries (LDCs) and small island developing states (SIDS) fall into this group.[331] The emphasis on making climate finance available to this group of vulnerable countries by the Agreement has been said to flow from decisions of the Conference of the Parties in Copenhagen and Cancun.[332]

Further on eligibility for financing, it has been observed that the Agreement made no reference to economies in transition as being part of, or distinct from developing countries, making their eligibility for funding capable of generating controversy.[333] It is submitted that this omission can be addressed by referring to funding eligibility under the UNFCCC, based on the approach of this thesis that gaps in the Paris Agreement should be filled by reference to the relevant provisions of the UNFCCC and the attendant practices flowing from such provisions, the Paris Agreement being an instrument negotiated under the UNFCCC - and having as one of its purposes – the enhancement of the Convention.

The Paris Agreement can be said to recognise the principles of effectiveness of financial assistance[334] to developing countries pursuant to its provision that the architecture for climate finance mobilization should be pursued "taking into account the needs and priorities of developing country Parties".[335] This recognition is further acknowledged in the COP decision to the effect that "financial resources provided to developing countries should enhance the implementation of their policies, strategies, regulations and action plans and their climate actions with respect to both mitigation and adaptation to contribute to the achievement of the

[331] Art. 9.4
[332] Yamineva, above n 221, at 182.
[333] Ibid.
[334] See OECD, "The Paris Declaration on Aid Effectiveness: Five Principles for Smart Aid", Organisation for Economic Cooperation and Development (OECD), Paris (2005). The Declaration stipulates that the five principles underlying effective aid include ownership; alignment; harmonisation; managing for results; and mutual accountability.
[335] Art. 9.3.

purpose of the Agreement as defined in Article 2".[336] This provision supports the view that climate finance should be 'led and owned' by recipient developing countries to be effective, and that climate finance structure and practices should "be integrated into existing systems of recipient countries instead of creating parallel, isolated processes".[337]

The Paris Agreement aims to find a balance between mitigation and adaptation in the scaling up of climate finance.[338] This represents an acknowledgement of the known fact that mitigation finance has over the years been accorded priority over finance for adaptation in developing countries.[339] Scaling up adaptation finance within the framework set by the Agreement will likely see more public fund channelled towards adaptation.[340]

The principles of climate finance under the Paris Agreement are also reflected in the provision that the Agreement's institutions, which include the operating entities of the financial mechanism of the UNFCCC, "shall aim to ensure efficient access to financial resources through simplified approval procedures and enhanced readiness support for developing country Parties".[341] The institutions referred to by the Agreement in this respect are to particularly take into account the national climate strategies and plans of LDCs and the SIDS.[342] Although this provision falls short of articulating the principle of direct access to climate finance by developing countries as obtains under the Adaptation Fund and the Green Climate Fund, it does call for less cumbersome procedures for making climate finance available to developing countries in general, and the LDCs and SIDS in particular.[343]

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[336] Decision 1/CP.21, para. 53.
[337] Yamineva, above n 221, 182.
[338] Art. 9.4.
[339] See generally Zahar, above n 186, 118 – 134. See also W.P Pauw, R.J.T Klein, P. Vellinga and F. Biermann, "Private Finance for Adaptation: Do Private Realities Meet Public Ambitions?" (2016) 134(4) *Climate Change*, 489-503.
[340] Yamineva, above n 221, at 182.
[341] Art. 9.9
[342] Ibid.
[343] Yamineva, above n 221, at 182.

Provisions dealing with transparency and reporting on climate finance are also part of the Paris Agreement. First, I shall set out the relevant provisions, before proceeding to evaluate them. The Agreement emphasises the relevance of transparency on support as including "to provide clarity on support provided and received by relevant individual Parties in the context of climate change actions under Articles 4, 7, 9, 10 and 11, and, to the extent possible, to provide a full overview of aggregate financial support provided, to inform the global stocktake under Article 14".[344] The Agreement also mandates developed countries to "biennially communicate indicative quantitative and qualitative information..., including... projected levels of public financial resources to be provided to developing country Parties".[345] The agreement makes such biennial communication on finance provision voluntary for other parties (those that are not in the category of developed countries).[346] Information communicated by developed countries biennially on provision of financial support to developing countries shall be transparent and consistent, and in accordance with guidelines of the Paris Agreement's first COP.[347] Again, the Agreement encourages other parties to do the same.[348]

The Agreement further provides that developed countries shall, and that other parties should, supply information on support provided in the areas of finance, technology transfer and capacity building.[349] Similar provision applies to developing countries in relation to support needed and received in the areas of finance, technology and capacity-building,[350] albeit with the recommendatory modal verb "should" as is the case with "other parties" reporting and obligation under Article 9.9. Information provided by developed countries in relation to

[344] Art. 13.6. Further on the purpose and coverage of the transparency framework under the Agreement, see Article 13.1 – 13.15 and Decision 1/CP.21, paragraphs 85 – 99.
[345] Art. 9.5.
[346] Ibid.
[347] Art. 9.7.
[348] Ibid.
[349] Art. 13.9
[350] Art. 13.10.

support provided shall be subjected to a technical expert review,[351] and each party shall be part of a "facilitative, multilateral consideration of progress" with respect to finance, etc.[352] Financial and other supports provided and received shall form part of the global stocktake.[353]

The overarching importance of measuring, reporting and verification (MRV) of climate finance can be said to underpin the provision of the Agreement on transparency of financial support. MRV underlie the effectiveness of the climate regime in the effort to render financial assistance to developing countries in order to attain the mitigation and adaptation of goals of the regime. Thus, it has been stated that "a clear transparency framework on climate finance helps not only understand the amount and characteristics of finance flows but is also instrumental in generating trust and willingness to cooperate between developed and developing countries".[354]

However, while reporting of emissions via the annual inventories by parties to the UNFCCC has been described as one of the "finest achievements" of the regime, the reporting on climate finance has not been satisfactory.[355] The climate change regime registered initial modest progress in the area of reporting on climate finance following the decision by COP 16 to build on existing regime guidelines to enhance reporting on financial support by developed countries.[356] Notwithstanding this development, emission reporting remains much more

[351] Art. 13.11. It should be noted that the technical expert review applies to all parties in relation to the obligation under Article 13.7 – reporting on national emissions inventory and tracking of implementation of NDCs.
[352] Ibid.
[353] See Arts. 9.6 and 14.1.
[354] Yamineva, above n 221, at 182.
[355] Zahar, above n 188, at 83.
[356] Decision 1/CP.16, para. 40

developed and robust than climate finance reporting, leading to constant criticism of the latter.[357]

Notwithstanding, the Paris Agreement can be said to have registered some novelty on reporting on climate finance. First, the Agreement has promoted the elements of climate finance reporting which were previously found in COP decisions to a treaty provision.[358] Second, the fact that the Agreement and the accompanying COP decision made no direct reference to the annexes of the UNFCCC has been interpreted as expanding the scope of parties covered by the provision on finance reporting – *now applicable to all developed countries.*[359] Moreover, the use of modal verbs in the provisions dealing with reporting on climate finance can be said to be consistent and unambiguous,[360] in comparison to those on provision or supply of climate finance, and to an extent, mitigation provisions.[361] While the Agreement definitely "provides the contours of an enhanced, harmonized transparency framework for climate finance support", establishing an effective framework for their implementation remains a task for the future.[362] However, the transparency on reporting, if implemented, will operate to improve the predictability of climate finance – a perennial concern of developing countries.[363]

Nonetheless, the Paris Agreement has been criticised for not containing a reciprocal climate finance reporting obligation for developing countries, especially with respect to finance received. Specifically, it has been posited that while it is justifiable for developed countries to continue to be the suppliers of climate finance, no good reason exists to preclude developing

[357] Zahar, above n 188, at 84. See also Smita Nakhooda and Marigold Norman*, Climate Finance: Is it making a difference? A review of the effectiveness of Multilateral Climate Funds*, *Overseas Development Institute* (ODI) Report, 2014.
[358] Zahar, above n 186, at 86.
[359] Ibid.
[360] Ibid.
[361] Ibid, 78-79.
[362] Yamineva, above n 221, at 183. See also Article 13.13 of the Agreement and Decision 1/CP.21, paragraph 92.
[363] Ibid.

countries from being required to account for utilization of the finance received.[364] Recipient developing country reporting, it has been suggested, should centre around obligation to use climate finance – considering that mitigation activities are usually cheaper in developing countries; obligation to apply finance provided to good use; and, obligation to provide accurate report on use and outcomes.[365] These obligations should be made subject to capacity-building assistance to enable developing countries report effectively.[366]

Furthermore, it has been contended that the conditions stated in COP 21 Decision as forming the basis for the continuation of existing finance mobilization by developed countries – "meaningful mitigation actions and transparency on implementation" by developing countries as "too weak and indirect" because "they do not impose an independent obligation on developing countries to use climate finance meaningfully and transparently, let alone an obligation to proactively go after the finance (especially mitigation finance) on offer and put it to work".[367] However, the conditions create an incentive rather than a legal obligation - an incentive to the effect that more climate finance may not be forthcoming except the stated conditions are met.[368]

While the foregoing views of Zahar raise some vital issues about the institution of a reporting arrangement for developing countries with respect to climate finance received and how the same has been put to use, the Paris Agreement is not completely devoid of reporting obligation for developing countries,[369] especially with respect to financial support received.[370]

[364] Zahar, above n 186, at 86.
[365] Ibid.
[366] Ibid.
[367] Ibid.
[368] Ibid.
[369] The provision of Article 13.1 on "enhanced transparency framework for action and support" may be relied upon to invite a developing country to supply evidence of "action" taken in justification of "support" provided. Article 14 on global stocktake should also provide another opportunity for questions as to receipt and use of climate finance to be posed to a developing country. Zahar does admit that the Paris Agreement may have indirectly instituted a climate finance reporting arrangement for developing countries (ibid, 87), However, "indirectly" as used seems an understatement, especially in view of Article 13.10 of the Agreement. Although,

Providing information on use of climate finance by developing countries, while desirable, may not have been deemed fundamental by COP 21, due to the fact that a developing country may still be called upon to provide proof as to what use finance supplied has been put to through the other provisions of the Agreement.[371]

Moreover, a specific mandatory obligation to report on use of climate finance by developing countries is likely to be too contentious at this stage to stand any chance of success, considering that the position of developing countries has equally been that developed countries have not lived up to their treaty commitments to provide climate finance that is predictable and adequate. In the future, with near-to-adequate provision and mobilization of climate finance, a mandatory reporting on use by developing countries may not face strong opposition. For now, the transparency provisions of the Paris Agreement and the accompanying COP decision, if necessary structures for their implementation are put in place, should be fit for purpose, from the perspective of reporting on climate finance provided and received by developed and developing countries respectively.

Finally, on the assessment of financial assistance provisions of the Paris Agreement, I shall briefly look at the institutions put in place to realize the implementation of the provisions on finance. Fundamentally, the Paris Agreement provides that the Convention's financial mechanism and its operating entities shall service the Agreement.[372] The operating entities of the financial mechanism of the Convention are the Global Environment Facility (GEF) and the Green Climate Fund (GCF). Thus, the GEF and the GCF are to undertake the responsibility of ensuring that the provisions of the Agreement relating to financial support are implemented, in addition to the GEF administering the Least Developed Countries Fund

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the article uses the recommendatory modal verb "should" it does lay a foundation for developing countries to be invited to provide information on climate finance received, which qualifies as a form of reporting.

[370] See Article 13.10 of the Agreement.

[371] See footnote 369, above.

[372] Art. 9.8.

(LDCF) and the Special Climate Change Fund (SCCF).[373] Subject to a decision by the COP/MOP and the CMA, the Adaptation Fund (AF) may serve the Paris Agreement as well.[374] The Standing Committee on Finance shall also serve the Agreement.[375] It has been observed that use of "vague language" characterises provisions relating to institutional arrangement to make for ease of changes in the future.[376] Moreover, a lot of work still needs to be done to bring the institutional framework of the Agreement on finance in line with the financial mechanism of the Convention.[377]

In summary, the Paris Agreement boasts the achievement of instituting a formidable transparency framework necessary for measuring, reporting and verifying the action taken and support provided by parties. The Agreement's robust transparency framework has been attributed to the trend of "governing by disclosure" in the global governance of the environment in general, and the climate regime in particular.[378] Justifying the approach of the Agreement to transparency, it has been submitted that "in a highly heterogeneous and fragmented world of global climate governance with a myriad of State and non-state actors at all levels, increasing transparency appears to be a way to improve governance".[379] However, whether the transparency framework of the Agreement will result in improved accountability and promote sustainability among UNFCCC parties will remain an unanswered question until a couple of years into the implementation of the Agreement.[380] In the area of climate finance, the provisions on transparency stand out as one substantive improvement of the Agreement on the *status quo ante*.

[373] Decision 1/CP.21, para. 59.
[374] Ibid, para. 60.
[375] Ibid, para. 64.
[376] Yamineva, above n 221, at 183.
[377] See Decision 1/CP.21, paras. 61, 62, and 63.
[378] Yamineva, above n 221, at 184. See Aarti Gupta and Michael Mason, "Disclosing or Obscuring? The Politics of Transparency in Global Climate Governance" (2016) 18 *Current Opinion in Environmental Sustainability*, 82-90, 82.
[379] Yamineva, above n 221, at 184.
[380] Ibid.

Although the changes introduced by the Paris Agreement to climate finance governance are mainly of a procedural nature,[381] it has been termed "unfair" to say that the COP 21 outcome is a poor result.[382] However, the fact that the architecture of the Paris Agreement hardly effected any changes in the substantive provisions of the UNFCCC on climate finance means that cohesion and institutional linkage issues will remain a problem of the climate regime into the distant future.[383]

With respect to overall effectiveness of financial assistance to developing countries, reaching any conclusion at the moment on the likely impact of the Paris Agreement will only be a hypothetical exercise. However, the absence of data-based quantification of climate finance and a formula for sharing the burden among developed countries are surely known weaknesses of the Paris outcome. Considering the improved certainty of climate science on the threat posed by climate change to human civilization, and the overarching importance of finance in actualizing the mitigation and adaptation objectives of the climate regime, especially in developing countries, a climate change agreement negotiated in the twenty-first century ought to contain clear time-bound provisions on climate finance.

4.2.5 Financial Mechanism of the UNFCCC and Climate Funds

4.2.5.1 The Global Environment Facility (GEF) and the GEF Trust Fund

The GEF was formed in 1990, "initially as a three-year experiment to provide fund grants for investment projects and technical assistance and research, to developing countries to protect the global environment and transfer environmentally friendly technologies."[384] The core implementing agencies of the GEF are the United Nations Development Programme

[381] Zahar, above n 186, at 75.
[382] Yamineva, above n 221, at 184.
[383] Ibid.
[384] Executive Directors of the World Bank, Resolution No. 91-5, November 1991.

(UNDP), the United Nations Environment Programme (UNEP), and the World Bank.[385] Other implementing agencies of the GEF include the Food and Agricultural Organisation (FAO), United Nations Industrial Development Organisation (UNIDO), International Fund for Agricultural Development (IFAD), and the Regional Development Banks (RDBs).

In 1994, the GEF was restructured via an Instrument for the Establishment of the Restructured GEF.[386] The GEF has an Assembly, a Council and a Secretariat; and, a Scientific and Technical Advisory Panel (STAP) which shall provide appropriate advice.[387] On the distribution of membership on the GEF Council, the instrument restructuring the GEF provides that "the Council shall consist of 32 members, representing groupings formulated and distributed taking into account the need for balanced and equitable representation of all participants and giving due weight to the funding efforts of all donors. There shall be 16 members from developing countries, 14 members from developed countries and 2 members from the countries of Central and Eastern Europe and the former Soviet Union."[388]

The role of the GEF generated controversy that caused division between developed and developing countries during the 1992 Rio conference.[389] Developed countries wanted to avoid a proliferation of funds with overlapping and conflicting mandates, thus preferring to use the GEF for all multilateral environmental agreements.[390] Developing countries, on their part, preferred establishment of multilateral environmental agreement specific financial

[385] The establishment of the GEF was endorsed by Res. 16/17 of the UNEP Governing Council, 13 May 1991, and Decision 92/16 of the UNDP Governing Council, 26 May 1992. Procedural arrangements for operational co-operation under the GEF were signed by the Executive Heads of the World Bank, UNDP and UNEP via Res. No. 91-5, Annex C.
[386] Instrument Establishing the GEF, Geneva, 16 March 1994, 33 ILM 1273 (1994) (as amended in 1998, 2002, 2006, 2010 and 2011).
[387] Instrument for the Establishment of the Restructured Global Environment Facility (2011), para. 11.
[388] Ibid, para. 16.
[389] Yamin and Depledge, above n 50, at 265. See also Luis Gomez-Echeverri "Developing Countries and a Proposal for Architecture and Governance of a Reformed UNFCCC Financial Mechanism" in Richard B. Stewart, Benedict Kingsbury, and Bryce Rudyk (eds) *Climate Finance: Regulatory and Funding Strategies for Climate Change and Global Development* (New York University Press, New York & London, 2009), 165-171.
[390] Ibid.

mechanisms under direct supervision of the Conference of the Parties.[391] Specifically, developing countries vehemently objected to the GEF being appointed the financial mechanism of the UNFCCC pointing to lack of transparency in its administrative and governance structures mainly dominated by donor governments (developed countries), which runs counter to consensus-based decision-making procedures under multilateral environmental agreements, including the UNFCCC.[392]

Moreover, the attempt by developed countries to consolidate all financial functions under the GEF was viewed by developing countries as a bid to limit the amount of funding available to them under multilateral environmental agreements, considering that the GEF also serves as the financial mechanisms of other multilateral treaties from which developing countries were entitled to funds.[393] Resultantly, a compromise was reached under the UNFCCC and the CBD, leading to a distinction being made between the financial mechanism governed by the COP, and the international entity (entities) designated to operate the financial mechanism.[394] The implication is that the GEF is not the Conventions' financial mechanism, but only an entity assigned the operation of the financial mechanism.[395] Thus, a "financial mechanism" can be defined as "the totality of legal, institutional and procedural arrangements that regulate and make possible the flow of financial resources mandated by the Convention".[396]

The instrument restructuring the GEF further provides that the GEF "shall provide new and additional grant and concessional funding to meet the agreed incremental costs of measures to achieve agreed global environmental benefits in the areas of biological diversity; climate change; international waters; land degradation – primarily desertification and deforestation;

[391] Ibid.
[392] Jacob Werksman, "Consolidating Global Environment Governance: New Lessons from the GEF?", 6. Available online at: <http://www.yale.edu/gegdialogue/docs/dialogue/oct03/papers/Werksman%20GEF.pdf> Accessed 25 November 2013.
[393] Ibid.
[394] Yamin and Depledge, above n 50, at 265-66.
[395] Yamineva and Kulovesi, above n 278, at 201.
[396] Yamin and Depledge, above n 50, at 283.

ozone layer; and persistent organic pollutants.[397] A GEF Trust Fund shall be established, and the World Bank shall serve as the Trustee of the Fund.[398]

The GEF operates the financial mechanisms of the UNFCCC 1992, the CBD 1992, the Convention to Combat Desertification (CCD) 1994, and the Convention on Persistent Organic Pollutants (POPs) 2001. It has been observed that although the GEF is not formally linked to the Montreal Protocol on Ozone Depleting Substances, it supports implementation of the Protocol in countries with economies in transition, and also provides funds for projects to protect international watercourses.[399] The GEF also manages the Adaptation Fund, the Least Developed Countries Fund and the Special Climate Change Fund. The GEF has been nominated to serve as the operating entity of the financial mechanism of the Paris Agreement, alongside the GCF.[400]

The GEF Trust Fund is funded through a process known as 'replenishment', via which donor countries pledge money every four years.[401] The Sixth GEF Replenishment took place in 2014. The GEF receives most of its funds from developed countries required to provide financial assistance and transfer environmentally-friendly technologies to developing countries under the UNFCCC in particular, and other multilateral environmental agreements in general. However, under the UNFCCC countries not listed in Annex II have also made pledges to the GEF.[402]

Currently, the GEF allocates funds pursuant to a policy adopted by the GEF Council in 2010, known as the System for Transparent Allocation of Resources (STAR). The STAR "permits determining a country's allocation for biodiversity, climate change, and land degradation

[397] Instrument for the Establishment of the Restructured GEF (2011), para. 2.
[398] Ibid, para. 8.
[399] Sands, *et al*, above n 44, at 678.
[400] Decision 1/CP.21, para. 59; Art. 9.8 of the Paris Agreement.
[401] Instrument for the Establishment of the Restructured GEF 2011, para. 10 and Annex C.
[402] Luis Gomez-Echeverri and Benito Muller, above n 291, at 5.

based on indices agreed by the GEF Council, and such indices cover a country's general environmental performance, benefits for the environment, and the country's GDP."[403] The predecessor to the STAR policy, called the Resource Allocation Framework (RAF), was berated by developing countries as being insensitive to the plights of the most vulnerable countries to climate change.[404] Consideration of a country's GDP in the allocation of funds is a novel feature introduced by the GEF through the STAR policy to address the concerns raised by developing countries for rejecting the RAF.

The legal relationship between the GEF and the Conferences of the Parties of the Conventions that designate it as the operating entity of their financial mechanisms is that the GEF and its Participants' Assembly are accountable to the COPs. The COPs reserve the ultimate power to re-designate another financial institution as the operating entity of the financial mechanisms of the Conventions superintended by them, if not satisfied with the GEF. This ultimate power of re-designation by the COPs provides an incentive for the GEF to ensure that the wishes of the COPs are followed.[405] However, under the UNFCCC developing countries have been very critical of GEF's operations due to its donor-dominated decision-making process owing to their contention that the GEF fails to adequately take into account the needs and interests of recipient countries, especially in view of the difficulty inherent in developing countries accessing GEF funds.[406] As one author rightly observes:

"The UNFCCC requires that the GEF follow guidance provided by the COP. Nevertheless, the GEF Council takes decisions that have a substantial impact on the way funding is allocated by the GEF

[403] System for Transparent Allocation of Resources, GEF Policy Paper, GEF/P.3, 24 June 2010, available at: <http://www.fecc.moa.gov.cn/zcfg/201110/W020111008548850138037.pdf> Accessed 12 November 2013.
[404] Yamineva and Kulovesi, above n 278, at 201.
[405] UNFCCC, Art. 11:1. See also Memorandum of Understanding (MoU) between the GEF and the UNFCCC COP, Decision 2/CP.12 (Memorandum of Understanding between the Conference of the Parties and the Council of the Global Environment Facility), UN Doc FCCC/CP/1996/15/Add.1, 29 October 1996.
[406] Yamineva and Kulovesi, above n 278, at 202.

within the climate change focal area. At the UNFCCC COP, each State party theoretically has an equal vote. The same is not true in the GEF."[407]

Furthermore, the relationship between the GEF and the COP has been termed "disappointing due to the failure of the (UNFCCC) COP to provide explicit guidance.... as it has been due to the vested interest represented on the GEF Council and the COP".[408] Developing countries' dissatisfaction with the GEF provided the impetus for agitation for the creation of independent boards to govern the Adaptation Fund and the Green Climate Fund.[409]

4.2.5.2 Special Climate Change Fund (SCCF)

The GEF is the entity entrusted with the operation of the SCCF. The SCCF was created in 2001 by COP 7 "to address the special needs of developing countries under the UNFCCC in the areas of: adaptation; technology transfer; energy, transport, industry, agriculture, forestry and waste management; and economic diversification."[410] Funding from the SCCF supplements those from the GEF Trust Fund. Unlike other multilateral sources of climate finance, the SCCF gives priority to adaptation, and funds adaptation in all developing country parties under the UNFCCC.[411] The latest financial report of the SCCF shows that as of September 2015, donors' pledges amounted to USD 350.09 million.[412] Out of this amount, USD 290.31 million is channelled towards adaptation programmes, while USD 59.78 million

[407] M.J Mace "Funding for Adaptation to Climate Change: UNFCCC and GEF Developments since COP 7" (2005)14 *Review of European Community and International Environmental Law* 225, at 229.
[408]Luis Gomez-Echeverri and Benito Muller, above n 291, at 4.
[409] Yamineva and Kulovesi, above n 278, at 202.
[410] Decision 7/CP.7
[411] Report of the Global Environment Facility to the Conference of the Parties, 20 September 2012, UN Doc. FCCC/CP/2012/6, at 32. Available online at: < http://unfccc.int/resource/docs/2012/cop18/eng/06.pdf> Accessed 20 November 2013.
[412] Global Environment Facility, Special Climate Change Fund Financial Report, 49th GEF Council Meeting, October 20-22, 2015, Washington, D.C. GEF/LDCF.SCCF.19/Inf.03. <https://www.thegef.org/sites/default/files/council-meeting-documents/EN_GEF.LDCF_.SCCF_.19.Inf_.03_SCCF_Trustee_Report_4.pdf> Accessed 15 November 2016.

is directed towards programmes on technology transfer.[413] Cash receipts from donors by the Trustee of the Fund (World Bank) as of the stated date totals USD 344.08 million.[414]

The operation of the SCCF has generated tensions between developed and developing countries with respect to prioritization of activities to be funded, full-cost funding and scope of activities to be funded.[415] Unlike the GEF Trust Fund, the SCCF is not based on periodic replenishment by donors but relies on voluntary contributions by developed countries. So far, voluntary contributions to the SCCF have proved insufficient thereby making climate-related financial assistance to developing countries under the Fund difficult and unrealisable.[416]

4.2.5.3 Least Developed Country Fund (LDCF)

The GEF also operates the LDCF. The LDCF was established by COP 7 in 2001 "to specifically address the special needs of the Least Developed Countries (LDCs), and the Fund primarily focuses on the preparation and implementation of National Adaptation Programme of Actions (NAPAs) in the LDCs."[417] NAPA is a process designed for LDCs to identify their urgent and immediate needs for adaptation and to formulate priority actions and projects to address those needs. The LDCF relies on voluntary contributions and also suffers from funding inadequacy as the SCCF. The current GEF financial report on the LDCF shows that donors have pledged about USD 963.66 million as of September 2015, while the Trustee (World Bank) has received USD 961.87 million in cash from the donors.[418]

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[413] Ibid.
[414] Ibid.
[415] M.J Mace, above n 407, at 236.
[416] Yamineva and Kulovesi, above n 278, at 203.
[417] Report of the Global Environment Facility to the Conference of the Parties 2012, above n 411, at 30.
[418] Global Environment Facility, Least Developed Countries Fund Financial Report, 49th GEF Council Meeting, October 20-22, 2015, Washington, D.C. GEF/LDCF.SCCF.19/Inf.02 <https://www.thegef.org/sites/default/files/council-meeting-documents/EN_GEF.LDCF_.SCCF_.19.Inf_.02_LDCF_Trustee_Report_4.pdf> Accessed 15 November 2016.

4.2.5.4 Adaptation Fund (AF)

The Kyoto Protocol provides that "the Conference of the Parties serving as the meeting of the Parties to this Protocol shall ensure that a share of the proceeds from certified projected activities is used to cover administrative expenses as well as assist developing country parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation."[419] Pursuant to this provision of the Kyoto Protocol, the AF was created in 2001 by COP 7[420] to the effect that a share of proceeds from CDM projects is directed towards assisting developing country parties that are particularly vulnerable to the adverse impacts of climate change to meet the costs of adaptation. The AF is largely financed through the carbon market. Its main source of fund is the 2% levy on certified emission reductions (CERs) from CDM projects. The latest financial report on the AF shows that a total of USD 559.09 million accruing from CERs sales and donations has been received as of June 2016.[421] Out of the cumulative amount, CERs sales generated USD 196.58, while donors contributed USD 344.76 million.[422]

A distinguishing characteristic of the AF is that, unlike other climate funds, its resources are not completely dependent on donors' contributions. Moreover, the AF is innovative for pioneering "direct access" to its fund by developing countries,[423] to the effect that "developing countries may decide whether to access financial resources of the Adaptation Fund directly or indirectly through implementing and executing entities chosen by a particular developing country's national government."[424] The direct access arrangement

[419] Kyoto Protocol, Art. 12.8.
[420] Decision 10/CP.7
[421] Adaptation Fund, Adaptation Trust Fund: Financial Report Prepared by the Trustee, 30 June 2016. Ethics and Finance Committee, Eighteenth Meeting, Bonn, Germany, 4-7 2016 <https://www.adaptation-fund.org/wp-content/uploads/2016/09/AFB-EFC-19.11-Trustee-Financial-Report.pdf> Accessed 15 November 2016.
[422] Ibid.
[423] Yamineva and Kulovesi, above n 278, at 204.
[424] Decision 1/CMP-3.

addresses recipient developing countries' concerns over difficulties encountered when accessing funds through implementing agencies and the concomitant high administrative costs,[425] needless to mention that indirect access to climate funds operated by the GEF is one of the reasons developing countries have been clamouring for the replacement of the GEF. It is also worth mentioning that the AF is the first multilateral climate fund to grant direct access to developing countries.

The Adaptation Fund Board (AFB) is the entity that supervises and manages the AF.[426] The AFB functions under the authority and guidance of the COP/MOP, which makes decisions on the operation of the Fund's policies. The AFB is "fully accountable to the COP/CMP."[427] The AFB consists of 16 members – "two representatives from each of the five UN regional groups, one representative from Small Island Developing States, one representative from the LDCs, two representatives from Annex I countries, and two representatives from non-Annex 1 countries."[428] The AFB is clothed with legal capacity to enter into contractual relationships and fund projects directly rather than via an intermediary.[429] The World Bank serves as Trustee to the AF.

It is submitted that the AF dependence on the international carbon market for funding is not particularly attractive due to fluctuations, and the lack of explicit and organised legal and administrative framework for the international carbon market. Moreover, 2% of proceeds from CERs generated from CDM projects are inadequate to form the financial base of the AF considering the degree of financial pressure that adaptation to climate change foists on developing countries, especially the least developing countries. A much stronger and predictable source of funding for the AF is desirable. Restructuring of the international

[425] Yamineva and Kulovesi, above n 278, at 205.
[426] Decision 1/CMP-3.
[427] Ibid, para. 4.
[428] Ibid, para. 6.
[429] Decision 1/CMP-4.

carbon market to make for efficiency and predictability will also go a long way in boosting the AF resources. Additionally, increased direct contribution to the Adaptation Fund by developed countries is also recommended.

4.2.5.5 Fast Start Finance (FSF)

The Copenhagen Accord decided, among other things, that "the collective commitment by developed countries is to provide 'new and additional' resources approaching USD 30 billion for the period 2010 – 2012, with balanced allocation between adaptation and mitigation."[430] Yamineva and Kulovesi state that the pledge by developed countries at the Copenhagen conference in 2009 to mobilize US$30 billion of FSF represented an attempt to build trust in the interim, pending a new international architecture for long-term climate finance.[431] However, the Copenhagen Accord failed to define what constitutes FSF, but merely stated "that the funding should be new and additional."[432] Based on the conviction that much of the FSF provided in 2010 was neither new nor additional, developing countries and NGOs called for a formalised reporting on FSF under the Convention, however, developed countries rejected the proposal while contending that the Copenhagen Accord does not fall within the purview of the UNFCCC.[433] At Cancun, COP 16 brokered a compromise by inviting developed countries to submit information annually to the UNFCCC Secretariat on FSF provided, including how developing countries accessed the fund.[434] However, lack of coherent reporting and transparency posed a formidable obstacle to tracking the FSF contributed by developed countries within the relevant period.

[430] Decision 2/CP.15 (Copenhagen Accord). The Accord was 'noted' rather than 'adopted' due to objections from some countries. See Daniel Bodansky, 'The Copenhagen Climate Change Conference: A Post-mortem' (2010) 104(2) *American Journal of International Law* 230 at 231.
[431] Yamineva and Kulovesi, above n 278, at 210.
[432] Decision 2/CP.15.
[433] Yamineva and Kulovesi, above n 278, at 210.
[434] Decision 1/CP.16.

At COP 19, updates by some developed countries on contributions to FSF showed that a reasonable amount was delivered between 2010 and 2012,[435] however, verification of contribution, disbursement, and utilization, proved utterly difficult to track.[436] The EU in its update on FSF at COP 19 summarized the problems which militated against FSF as "lack of country leadership; lack of coordination; lack of scaling-up; and lack of coherent reporting."[437]

The discussion above on global estimates of climate finance required compared with the amount being supplied corroborates the EU's update on FSF. This is not just true of the FSF, but also of the current arrangements towards long-term climate finance billed to run from 2013 – 2020. Whilst the idea of a temporary climate financing arrangement, such as the FSF, is not totally wrong, it had the potential of diverting attention from the need for a more robust and permanent climate finance structure, which is binding, reliable, responsive, transparent, coherent, and proportionate to the mitigation and adaptation needs of developing countries. With the FSF funding phase ending in 2012, the phase for long-term finance commenced in 2013.

[435] It has been reported that developed countries mobilised up to USD35 billion for FSF, exceeding the target set by the Copenhagen Accord and the Cancun Agreements. However, the difficulty inherent in verifying the claim by developed countries has been raised due to a number of factors, including whether FSF contributed by a particular developed country was indeed "new" and "additional" and the issue of transparency and lack of strict thresholds for determining what is 'additional'. See Smita Nakhooda, Taryn Fransen, Takeshi Kuramochi, Alice Caravani, Annalisa Prizzon, Noriko Shimizu, Helen Tilley, Aidy Halimanjaya, and Bryn Welham, *Mobilizing International Climate Finance: Lessons from the Fast-Start Finance Period*. London: Overseas Development Institute, 2013, ii-vi.

[436] Submissions on Information from Developed Country Parties on the Resources provided to fulfil the Commitment referred to in Decision 1/CP.16, Paragraph 95, Conference of the Parties, Nineteenth Session, Warsaw, 11 – 22 November 2013.

[437] EU Fast-Start Funding 2010 – 2012: Lessons Learned in Mobilising Climate Finance, UNFCCC Side Event on Fast-Start Finance, Warsaw, 12 November 2013. Available online at: <http://unfccc.int/files/cooperation_support/financial_mechanism/fast_start_finance/application/pdf/eu_fsf_-_cop19.pdf > Accessed 1 December 2013.

4.2.5.6 Long Term Finance (LTF)

The Copenhagen Accord also provides that "in the context of meaningful mitigation actions and transparency on implementation, developed countries commit to a goal of mobilizing jointly USD 100 billion dollars a year from 2013 to 2020, to address the needs of developing countries;[438] that this funding will come from a wide variety of sources: public and private, bilateral and multilateral, including alternative sources of finance;[439] that a new multilateral funding for adaptation will be delivered through effective and efficient funding arrangements, with a governance structure providing for equal representation of developed and developing countries;[440] and that, a significant portion of such funding should flow through the 'Copenhagen' Green Climate Fund."[441]

The above decision of COP 15 represents the second arm of the financial package promised under the Copenhagen Accord. The FSF phase having expired at the end of 2012 and leaving a trail of positives and disappointments in its wake,[442] the more demanding LTF phase is now in operation. Just as controversy surrounded the exact amount of financial resources mobilised by developed countries toward fulfilling the FSF pledge due to lack of established framework for measuring, reporting and verification of climate finance, so far the exact climate finance generated under the long-term phase remains a subject of disagreement between developing and developed countries. As stated earlier in this chapter, a 2015 OECD report that developed countries mobilised USD 52.2 and 61.8 billion in 2013 and 2014 respectively,[443] has been challenged and rejected by developing countries.[444]

[438] Decision 2/CP.15.
[439] Ibid.
[440] Ibid.
[441] Ibid.
[442] Michael I. Westphal, *Lessons Learned from Climate Finance for Post-2015 Sustainable Development*, World Resource Institute, May 2014.
[443] OECD (2015), above n 219.
[444] Sethi, above n 202.

The Paris outcome reiterates the USD 100 billion long-term finance goal by stating, among other things, that "prior to 2025 the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement shall set a new collective quantified goal from a floor of USD 100 billion per year, taking into account the needs and priorities of developing countries…"[445] It is submitted that a repeat of the same financial promise made by developed countries at COP-15 in Copenhagen seven years ago in a COP decision supporting the Paris Agreement runs counter to the ambition required to effectively scale up climate finance in line with the global estimates considered at the beginning of this chapter. More so, COP 21 decision envisages the USD 100 billion goal to remain the benchmark post-2020 to at least 2025 before the COP sets "a new collective quantified goal *from a floor of USD 100 billion per year*".[446] The funding estimate scenarios contained in the global estimates necessary to support mitigation and adaptation in developing countries, compared to the target being set by developed countries, lend credence to the question whether the requisite financial assistance to developing countries to combat climate change will ever be secured.

4.2.5.7 Green Climate Fund (GCF)

The GCF was formally established by COP 16,[447] and launched by COP 17.[448] The "purpose of the Green Climate Fund is to make a significant and ambitious contribution to the global efforts toward attaining the goals set by the international community to combat climate change."[449] The GCF is to contribute towards the achievement of the ultimate objective of the UNFCCC as stated in Article 2. The governing instrument of the GCF proposes that "in the context of sustainable development, the Fund will promote the paradigm shift towards low-

[445] Decision 1/CP.21, para. 54. See also Article 9 of the Paris Agreement.
[446] Ibid. (emphasis added).
[447] Decision 1/CP.16
[448] Decision 3/CP.17
[449] Decision 3/CP.17, Annex on the Governing Instrument of the Green Climate Fund, Objectives and Guiding Principles, para. 1.

emission and climate-resilient development pathways by providing support to developing countries to limit or reduce their greenhouse gas emissions and to adapt to the impacts of climate change, taking into account the needs of those developing countries particularly vulnerable to the adverse effects of climate change."[450]

The governing instrument further provides that the GCF "will be guided by the principles and provisions of the Convention; play a key role in channelling new, additional, adequate and predictable financial resources to developing countries and will catalyse climate finance, both public and private, and at international and national levels; that the Fund will pursue a country-driven approach and promote and strengthen engagement at the country level through effective involvement of relevant institutions and stakeholders; that the Fund will be scalable and flexible and will be a continuously learning institution guided by processes for monitoring and evaluation; and that the Fund will strive to maximize the impact of its funding for adaptation and mitigation, and seek a balance between the two, while promoting environmental, social, economic and development co-benefits and taking a gender-sensitive approach."[451]

The GCF is designated the operating entity[452] of the financial mechanism under Article 11 of the UNFCCC "and will be accountable to, and function, under the guidance of the Conference of the Parties,[453] and will be governed and supervised by a Board that will have full responsibility for funding decisions."[454] The GCF "Board will have 24 members, composed of equal number of members from the developing and developed country parties. Representation from developing countries will include representatives of relevant United

[450] Ibid, para. 2.
[451] Ibid, para. 3.
[452] The GCF and the GEF are also designated the operating entities of the financial mechanism of the Paris Agreement. See Decision 1/CP.21, para. 59 and Article 9(8) of the Paris Agreement.
[453] Decision 3/CP.17, Annex on the Governing Instrument of the Green Climate Fund, Governance and Institutional Arrangements, Relationship to the Conference of the Parties, para. 4.
[454] Ibid, para. 5.

Nations regional groupings and representatives from Small Island Developing States (SIDS) and Least Developed Countries (LDCs)."[455]

COP 18 endorsed Songdo Incheon, Republic of Korea, as the host of the GCF.[456] The World Bank remains the interim trustee of the GCF subject to review three years after the operationalization of the Fund.[457] As of December 2016, a total of USD 10.3 billion has been pledged to the GCF by 43 countries.[458] The objective is that every pledge by a country be translated into a contribution agreement within one year of announcing the pledge.[459] The setting up of the GCF can be termed a remarkable achievement by the UNFCCC COP. The GCF is now operationalized, and it published its first funding proposal for Board consideration in October 2015.[460]

Notably, a major achievement of the GCF is the grant of direct access to developing countries wanting to access its funds. Needless to mention that issues relating to access to funding were pivotal in the negotiations leading to the establishment of the GCF.[461] Thus, developing countries can access fund held with the GCF directly through accredited sub-national, national, and regional entities as well as through accredited international entities.[462] It should be noted that the Paris Agreement emphasised the importance of access to climate finance by

[455] Decision 3/CP.17, Annex on the Governing Instrument of the Green Climate Fund, Rules of Procedure (Composition), para. 9.
[456] Decision 6/CP.18, Report of the Green Climate Fund to the Conference of the Parties and Guidance to the Green Climate Fund, paras. 1 – 17.
[457] Decision 3/CP.17, Annex on the Governing Instrument of the Green Climate Fund, Trustee, paras. 24 – 27.
[458] Green Climate Fund, *Status of Pledges and Contributions made to the Green Climate Fund*. Status Date: 07 December 2016.
[459] Ibid.
[460] GCF publishes first funding proposal for Board consideration, Songo, October 16, 2015. Available online at: <http://news.gcfund.org/gcf-publishes-first-funding-proposals-for-board-consideration/> Accessed October 20 2015.

[461] Yamineva and Kulovesi, above n 278, at 218.
[462] Decision 3/CP.17, Annex on the Governing Instrument of the Green Climate Fund, Access Modalities and Accreditation, paras. 45-49.

calling for "efficient access to financial resources through simplified approval procedures and enhanced readiness to assist developing countries."[463]

The establishment of the GCF followed the constant contestations in international climate negotiations, especially between developing and developed countries, "for a global climate fund that is representative and democratically governed, effective and accountable, and designed to meet the needs of those most marginalised and most vulnerable to climate change".[464] Prior to the establishment of the GCF, existing climate funds were, and continues to be bedevilled with problems relating to fair allocation of resources, transparency, and efficiency in their administration.[465] The GCF represents a break from the past in a number of respects, although more in a theoretical sense than in actual practise, considering that the fund only commenced operations in 2015.

First, the principles and provisions of the UNFCCC are to guide the GCF in its operation of the financial mechanism of the Convention which, among other things, entails the principle of common but differentiated responsibilities being taken into account in its operations,[466] thereby furthering the legal relationship between developing and developed countries with respect to financial commitment to deal with mitigation and adaptation to climate change.[467] Second, unlike the donor-dominated board of the GEF, representation in the GCF board is split equally between developing and developed countries,[468] making the GCF a more democratic and representative institution. Third, the GCF being accountable to, and

[463] Art. 9.9
[464] Kumi Naidoo, "The Green Climate Fund and the role of the World Bank" Briefing Paper Series, Climate Finance and Africa, Brief 2: March 2012, 2.
[465] Ibid.
[466] See Article 3.1 of the UNFCCC.
[467] Naidoo, above n 464, 2-3.
[468] See Decision 3/CP.17, Annex on the Governing Instrument of the GCF, para. 9.

functioning under the guidance of the COP,[469] entails reduction in the influence of the World Bank and other developed countries dominated international financial establishments.[470]

Fourth, with a distinct legal personality, the GCF can execute direct financial undertakings with developing countries, without resorting to "the economic austerity measures that implementing agencies like the World Bank often impose on sovereign governments, especially developing country governments.[471] The power of the GCF to enter into direct contracts gives developing countries direct access to its funds, thereby making developing countries avoid the bottlenecks and onerous disbursement procedures of the World Bank and other implementing agencies.[472] On the point of distinct legal personality for the GCF, it has been submitted that "the GEF has been at a considerable disadvantage by not having a legal status and has had to depend on the World Bank for its legal capacity".[473]

Fifth, the GCF is to ensure parity in the funding of mitigation and adaptation,[474] thereby setting the stage for according adaptation to climate change the attention it deserves after over two decades of lopsided concentration on climate change mitigation, which has led to relegating the survival concerns of countries most vulnerable to climate change to the background, especially the LDCs, SIDS, and vulnerable African and Asian countries. Finally, the GCF maintains an independent secretariat which goes a long way in improving transparency, accountability, and independence.[475]

Meanwhile, the role of the World Bank as an interim trustee of the GCF has been of major concern to developing countries and the civil society owing to palpable likelihood of conflict of interests. Notably, it has been stated that the potential risk of the World Bank having a

[469] Ibid, para. 4.
[470] See generally, Naidoo, above n 464, 2-3.
[471] Ibid, 3
[472] Ibid, 8
[473] Ibid.
[474] Governing Instrument of the GCF above, n 5, para. 3.
[475] Naidoo, above n 464, 8.

conflict of interest in the GCF lays in the numerous roles the Bank played in designing its governance structure.[476] This likelihood of conflict of interest was earlier on raised by developing countries like India, Nicaragua, and the Philippines. Moreover, the role of the World Bank as a trustee to the GCF has been seriously called into question following the Bank's "continued financing of environmentally destructive industries and promotion of dirty energy projects, which puts it in direct conflict with the GCF objective of transitioning to low carbon development".[477] Thus, it has been correctly observed that a financial establishment that has enduring vested interest in global fossil fuel industries ought not to have been entrusted with the development and trusteeship of a global climate fund with paradigmatic shift towards low emission and sustainable development as its main purpose.[478]

The GCF observes no-objection procedure in its funding operations following COP 17 decision that the GCF Board should develop a transparent no-objection procedure to be implemented through national designated authorities (NDAs) "in order to ensure consistency with national climate strategies and plans and a country driven approach and to provide for effective direct and indirect public and private sector financing".[479] Following COP 17 decision, the GCF Board developed a no-objection procedure. In addition to ensuring consistency with domestic climate strategies and facilitating a country driven approach and effective direct and indirect financing, the Board also made the no-objection procedure a condition for approving all proposals for funding submitted to the GCF.[480]

Practically-speaking, the no-objection procedure improves country ownership of projects executed through the GCF and also guarantees that local inhabitants of countries where GCF

[476] Ibid, 5.
[477] Ibid, 6.
[478] Ibid.
[479] Decision 3/CP.17, Launching the Green Climate Fund, para. 7. FCCC/CP/2011/9/Add.1
[480] Green Climate Fund, Decisions of the Board – Eighth Meeting of the Board, 14 – 17 October 2014, Annex XII: Initial no-objection procedure, para. 1. GCF/B.08/45.

projects are to be executed can exercise the right to reject such projects if they are likely to be adversely impacted.[481] Thus, the no-objection procedure serves the purpose of due diligence to ensure that unacceptable projects do not advance to the stage of Board consideration.[482] It also prevents the initiation or execution of projects that are not consistent with national strategies, or capable of harming or foisting unjustifiable economic, social or cultural costs on the host local communities. It puts local communities at the centre of decision-making on whether or not to accept a particular project, thereby guaranteeing that projects executed are of high quality and acceptable to those that will directly enjoy the benefits or suffer the burdens arising from such projects.[483]

The need for the no-objection procedure under the GCF to be carefully articulated to ensure efficiency is underscored by the fact that the same procedure under the International Finance Corporation (IFC), the GEF and the CDM, that allow beneficiaries to consent to or object to projects has not been effective due to faulty standards and criteria requisite for operationalizing the procedure.[484] Thus, it has been recommended that "the GCF should create clear, binding, and uniform standards and criteria – in line with best international practices – for no-objection procedures at national designated authorities".[485] The GCF should incorporate in its no-objection framework unambiguous definitions, mechanisms for compliance and evaluation, which will assist NDAs to arrive at a decision to approve or decline a project. GCF must avoid a situation of "silence equals consent" as has been the case in other institutions in order achieve the aims of projects according with national climate

[481] Karen Orenstein *et al*, The Green Climate Fund's "No-Objection" Procedure and Private Finance: Lessons Learned from Existing Institutions. September 2012, 1. <http://libcloud.s3.amazonaws.com/93/21/8/2350/no_obj_reprt_foe_gaia_ips_FINAL_8-10.pdf>
[482] Ibid.
[483] Ibid.
[484] Ibid.
[485] Ibid.

strategies, being country-driven and facilitating direct and indirect access to financing to beneficiary developing countries.[486]

Moreover, the GCF has an important role to play in the implementation of the mitigation and adaptation provisions of the Paris Agreement, considering that the Agreement and COP 21 decision contain direct and indirect provisions underlining the role of the GCF.[487] Availability of climate finance for the implementation of the Agreement, especially in developing countries, places the GCF at the centre of facilitating the attainment of the ultimate purpose of the Agreement – pegging global average temperature to well below 2°C above pre-industrial levels and to aspirationally pursue 1.5°C limit; increase adaptation and climate resilience; and, to make flow of finance consistent with low GHG emissions pathways and climate-resilient development.[488]

Thus, the GCF has a central function in complementing the Paris Agreement not only by promoting the integration of the fundamentals goals of the Agreement, but by providing needed support to facilitate implementation of parties' NDCs through programmatic and transformational funding approaches.[489] Furthermore, the normative elements of progression and highest possible ambition[490] in the Agreement entail corresponding futuristic increase in climate finance which further underscores the need for the GCF to be proactive in the mobilisation of climate finance. The emissions reduction trajectory necessary to attain 2°C or

[486] Ibid.
[487] See for example, Decision 1/CP.21, paras. 47, 55, and 59; Art. 9.8 Paris Agreement. See generally, Climate Focus, Green Climate Fund and the Paris Agreement. Climate Focus Client Brief on the Paris Agreement V, February 2016. <http://www.climatefocus.com/sites/default/files/GCF%20and%20Paris%20Brief%202016.new_.pdf >
[488] Art. 2.1(a)-(c) Paris Agreement.
[489] World Finance, The UN's climate is failing to invest in those most in need. September 23, 2016. <https://www.worldfinance.com/markets/the-uns-climate-fund-is-failing-to-invest-in-those-most-in-need>
[490] Art. 4.3

1.5°C goal of the Agreement makes adequate and predictable funding through the GCF indispensable, especially in developing countries.[491]

However, the "biggest weakness" of the GCF has been identified as its inability to invest in countries that are in dire need of capital.[492] Following this criticism, it has been stated that "access to climate finance among poorer nations would benefit if fund managers took the time out to identify underlying problems in these economies and engage in a dialogue about how to match this finance with on-the-ground-struggles".[493] The funding mechanism of the GCF must be constantly reviewed to ensure that target developing countries receive requisite climate funds for the implementation of the Paris Agreement if the Agreement is to be successful.

Generally-speaking, the GCF has recorded substantial progress since its operationalisation in 2015. During the initial round of finance mobilisation in 2015, more than 40 countries pledged around USD 10 billion to the GCF,[494] and the Fund's website shows that it has mobilised a total of USD 10.3 billion till date.[495] The GCF has also facilitated the creation and reinforcing of developing countries' national institutions to further country ownership and improve independence in the implementation of projects.[496] Currently, the GCF has approved a total of 43 projects and accredited 54 entities in developing countries as potential conduits for project financing.[497] It has been reported that starting from end of 2015; the GCF Board has granted approval for the disbursement of USD 1.5 billion covering 35 projects.[498]

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[491] Ibid.
[492] Ibid.
[493] Ibid.
[494] Green Climate Fund, Resource Mobilisation, <http://www.greenclimate.fund/how-we-work/resource-mobilization>
[495] Ibid.
[496] David Eckstein, Green Climate Fund (GCF): Much progress, but many open questions remain in 2017. Germanwatch, 2017. <http://www.germanclimatefinance.de/2017/03/31/green-climate-fund-gcf-much-progress-many-open-questions-remain-2017/>
[497] Green Climate Fund, <http://www.greenclimate.fund/home>
[498] Eckstein, above n 496.

This shows progress in advancing the paradigmatic low carbon and climate resilient goals of the Fund.

However, a number of shortcomings have been identified in the operations of the GCF since its operationalization. One, the direct access financing mechanism of the GCF through which national or subnational entities in developing countries gain accreditation to directly receive financing for projects, thereby avoiding high costs and procedural bottlenecks associated with using international implementing agencies for the same purpose,[499] has so far not achieved its purpose.[500] It has been reported that United Nations institutions and regional development banks, as against national entities, continue to enjoy greater access to GCF finance. In fact, by the first quarter of 2017, eighty three per cent of GCF approved projects were executed by international implementing agencies, and approximately ninety four per cent of financial resources were channelled through entities acting internationally.[501] Out of 29 projects billed for 2017, only three is expected to be executed by national entities in developing countries.[502]

Thus, the financing mechanism of the GCF, like that of the GEF, remains biased in favour of international implementing agencies and their subsidiaries. This seriously negates direct access and country driven and country ownership financing philosophy of the GCF. This should be urgently rectified to avoid the direct access policy of the Fund being merely symbolic and of little or no effect. On this note, and rightly so, it has been submitted that the paradigm shift purpose of the GCF "cannot be realized with projects which only reflect the

[499] Indira Masullo, Gaia Larsen, Louise Brown, and Lisa Dougherty-Choux, "Direct Access" to Climate Finance: Lessons Learned by National Institutions. World Resource Institute, Working Paper, November 2015, 1. See also African Development Bank (ADB), Getting Africa ready for the Green Climate Fund, November 2012.
[500] Eckstein, above n 496.
[501] Ibid.
[502] Ibid.

"business as usual" and undermine the added value of the GCF compared to other finance mechanisms".[503]

Two, the inefficiency in relation to direct access has been linked to insufficient capacity in the GCF Secretariat. The Secretariat has been said to lack requisite resources to effectively review project and accreditation proposals and provide feedbacks on them timeously.[504] Considering that the administrative work of the GCF will continue to increase as countries continue to develop national framework to further foster relationship with the Fund, the Secretariat needs to be expanded and repositioned for efficiency. To buttress existing bottlenecks and slow process of implementation in the Secretariat, a document released in October 2016 showed a long list of establishments seeking accreditation and a prediction by the Secretariat that barring any changes in the processing times, two to four years will be required to deal with all the requests.[505] The GCF Secretariat is fundamental to the day-to-day running of the Fund and should be further strengthened.

Three, there has been a call for improvement in the decision-making and transparency processes in the GCF, especially with respect to the decisions of the Board. The GCF Board has been accused of handing down premature decisions and putting itself in unpleasant position in a number of cases.[506] For instance, there were cases of approving accreditation of known controversial institutions despite concerns of board members and the civil society.[507] With respect to transparency, the GCF Board has been found to follow questionable process of project and accreditation approvals in the past. In October 2016, for example, new project applications and accreditation proposals "were adopted as a bundle without larger discussions

[503] Ibid.
[504] Ibid. See also Bowen Wang and Nera Rai, The Green Climate Fund accreditation process: barrier or opportunity. International Institute for Environment and Development Briefing, September 2015.
[505] Ibid.
[506] Ibid.
[507] Ibid.

on the content after informal consultations behind closed doors were held".[508] This raised serious transparency issues as the public and civil society observers had no access to the secretive session. It is hoped that the GCF will work to improve transparency to avoid damaging its image and brand in the long-term.[509]

Four, there has been a concern that GCF Board meetings could turn into a political arena where members flex their muscles according to the vested interest of their countries of origin. Climate finance and its administration being a politically sensitive issue, the possibility for polarisation within the GCF Board is real.[510] However, it has been recommended that "the Board should strive not to transfer political infightings that often occur at UN Climate Change Conferences to the GCF".[511] For example, there was the widely reported case of a board member from India attempt to block a climate project due to be executed in Pakistan.[512]

More so, to further improve the GCF for efficiency and transparency, complementarity and coherence between the GCF and other climate funds should be defined and clearly mapped out. Following this need, at one of its meetings the GCF Board requested the Secretariat to prepare a document outlining ways of achieving complementarity and coherence between the GCF and other institutions that administer climate funds, pursuant to paragraphs 33 and 34 of the GCF Governing Instrument.[513] Among other things, the Board at its June 2016 meeting considered complementarity and coherence through two broad headings: mandate and introduction (comprising scope of complementarity and coherence and overview of relevant

[508] Ibid.
[509] Ibid.
[510] Ibid.
[511] Ibid.
[512] See Global Village Space, India Attempts to Block Pakistan Funding for Climate Change Project, 15 October 2016, <https://www.globalvillagespace.com/india-attempts-to-block-pakistan-funding-for-climate-change-project/>
[513] Green Climate Fund, Meeting of the Board, 28 – 30 June 2016, Provision agenda item 8(e), referring to decision B.12/07, paragraph a.

guidance from the conference of parties); current status and existing process of the GCF (which consist of existing efforts under the GCF and proposed actions and next steps).[514]

While this effort of the GCF Board on complementarity and coherence is a welcome development, a faster and enduring approach to secure coordination, coherence and cohesion in climate finance governance should be urgently considered, especially in view of constant complaints by developing countries on difficulties associated with accessing funds held under the GEF.[515] The side-by-side existence of the GCF and the GEF as operating entities of the financial mechanism of the UNFCCC, including the Paris Agreement, remains questionable as the GCF ought to be positioned to assume the role of a centralised operating entity of the financial mechanism of the Convention exclusively. While the interests of both developing and developed countries are duly represented in the GCF Board owing to the provision on equal representation in its governing instrument, the same cannot be said of the GEF which continues to represent solely the interests of donor developed countries.

Furthermore, the GCF needs to adapt its policies to make it possible to simultaneously target poverty reduction/alleviation/elimination, climate change adaptation, and climate change mitigation in developing countries.[516] The poverty-adaptation-mitigation link in combating climate change in developing countries is inherent in the insistence of developing countries that their first and foremost national priority is to secure the satisfaction of basic needs for the larger populace.[517] Thus, to drive mitigation and adaptation in developing countries without compromising the fight against poverty, a poverty-adaptation-mitigation funding window within the GCF is highly necessary. Such funding window will bolster the will and capacity

[514] Ibid, 1-6.
[515] See Third World Network (TWN), Developing countries raise unhappiness over Global Environment Facility. Update No. 15, 2017, <http://www.twn.my/title2/climate/news/Bonn19/TWN_update15.pdf>
[516] See Sandrine Mathy & Odile Blanchard, "Proposal for a poverty-adaptation-mitigation window within the Green Climate Fund" (2016) 16:6 *Climate Policy*, 752 – 767.
[517] Ibid, 752.

of developing countries to pursue more ambitious emission limitation goals through the NDC framework of the Paris Agreement.[518] The obvious limitations of extant climate funds in addressing poverty in developing countries[519] make the case for the GCF to develop a better framework for this purpose in its early years to avoid repeating the shortcomings of the other funds in that respect.

4.2.6 The Emerging Mechanism of Results-based Financing: Practices, Challenges and Prospects of the REDD+ Approach

According to the IPCC, agriculture, forestry and other land use account for about a quarter of GHG emissions arising primarily from deforestation, emissions from livestock and soil and nutrient management.[520] In order to secure forest management and conservation in furtherance of the overall objective to mitigate climate change from all the relevant sectors, a mechanism geared towards reduction of emissions from deforestation; reduction of emissions from forest degradation; conservation of forest carbon stocks; sustainable management of forests; and enhancement of forest carbon stocks (REDD+) was created.[521] It has been stated that the REDD+ mechanism appreciates the role of forest as a carbon sink hence the rationale for encouraging a shift from deforestation and land use change to conservation and sustainability of forests.[522]

The origin of the REDD+ mechanism can be traced to the Bali Action Plan (BAP), which officially handed down a decision to stimulate reduction of emissions from forest degradation

[518] Ibid.
[519] See for instance, S. Fankhauser & G. Schmidt-Traub, *From adaptation to climate-resilient development: The costs of climate-proofing the Millennium Development Goals in Africa*. Policy Paper, February 2010. London: Centre for Climate Change Economics and Policy Grantham Research Institute on Climate Change and the Environment.
[520] IPCC, 2014: Climate Change 2014: *Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Edenhofer, O., *et al* (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 816.
[521] UNFCCC, REDD+ Web Platform, Fact Sheets <http://redd.unfccc.int/fact-sheets/unfccc-negotiations.html>
[522] Anne M. Larson and Elena Petkova, "An Introduction to Forest Governance, People and REDD+ in Latin America: Obstacles and Opportunities" (2011) 2(1) *Forests*, 86-111, 86

in developing countries.[523] Following the BAP, COP 16 agreed to approaches and incentives relating to REDD+ in developing countries,[524] to "be implemented in phases, beginning with the development of national strategies or action plans, policies and measures, and capacity-building, followed by the implementation of national policies and measures and national strategies or action plans that could involve further capacity-building, technology development and transfer and results-based demonstration activities, and evolving into results-based actions that should be fully measured, reported and verified".[525] The Warsaw Framework for REDD+ was adopted at COP 19 in Warsaw, Poland.[526] Among other things, the Warsaw Framework consists of a work programme on results-based finance to further the implementation of Decision 1/CP.16, paragraph 70.[527]

Specifically on REDD+ results-based finance,[528] the Warsaw Framework "reaffirms that results-based finance may come from a wide variety of sources, public and private, bilateral and multilateral, including alternative sources; encourages financing entities, including the Green Climate Fund in a key role, to channel adequate and predictable results-based finance in a fair and balanced manner, and to work with a view to increasing the number of countries that are in a position to obtain and receive payments for results-based actions; decides to establish an information hub on the REDD Web Platform, to publish information on the results and corresponding results-based payments; requests the Standing Committee on Finance to consider the issue of financing for forests in its work on coherence and

[523] Decision 2/CP.13. See also Sophie Chapman, Martijn Wilder, Ilona Millar and Arjuna Dibley, "Implementing REDD+ Under the UNFCCC: Basic Requirements and Guidance for Developing National Policy and Legal Frameworks" (2015) 2 *Carbon & Climate Law Review*, 101-112.
[524] Decision 1/CP.16, para. 70-79.
[525] Ibid, para. 73.
[526] Decision 9/CP.19
[527] UNFCCC, Warsaw Framework for REDD-plus <http://unfccc.int/land_use_and_climate_change/redd/items/8180.php>
[528] See generally Christina Voigt and Felipe Ferreira "The Warsaw Framework for REDD+: Implications for National Implementation and Access to Results-Based Finance" (2015) 2 *Carbon & Climate Law Review*, 113-129.

coordination; recognizes the importance of incentivizing non-carbon benefits for the long-term sustainability of the implementation of the activities referred to in decision 1/CP.16, paragraph 70".[529]

Following the report of the Standing Committee on Finance (SCF) to the Paris COP,[530] COP 21 Decision and the Paris Agreement contain provisions on REDD+ results-based financing.[531] While the Decision "recognizes the importance of adequate and predictable financial resources, including result-based payments, as appropriate, for the implementation of policy approaches and positive incentives for reducing emissions from deforestation and forest degradation...,[532] the Agreement provides, among other things, that "parties are encouraged to take action to implement and support, including through results-based payments... for: policy approaches and positive incentives for activities relating to reducing emissions from deforestation and forest degradation..."[533]

Moreover, the SCF will also provide guidance to the operating entities of the financial mechanism of the Convention and the Paris Agreement with respect to results-based financing.[534] The SCF encourages the GCF to improve "its coordination and exchange of information on the provision of support, including results-based payments guided by the Warsaw Framework...", and to accelerate work on results-based finance in 2016 following the methodological guidance of the Warsaw Framework.[535] Following the recommendations of the SCF, the GCF Board met in 2016 to discuss how support can be provided for the REDD+ with specific reference to the design of a REDD+ results-based finance framework

[529] Ibid.
[530] UNFCCC, Report of the Standing Committee on Finance to the Conference of the Parties, Conference of the Parties, Twenty-first session, Paris, 30 November to 11 December 2015. FCCC/CP/2015/8
[531] See generally Charlotte Streck, "Mobilizing Finance for REDD+ After Paris" (2016) 13 Journal for European Environment & Planning Law, 146-166.
[532] Decision 1/CP.21, para. 55.
[533] Art. 5.2
[534] Report of the Standing Committee on Finance, above n 478, Annexes IV and V.
[535] Ibid, Annex IV, paras. 27 and 28.

and the consideration of options for the operationalization of REDD+ results-based finance within the GCF.[536] Currently, the GEF operates results-based schemes through it Results-based Management Action Plan.[537]

Generally-speaking, result-based or performance-based financing "disburses finance to delivery agents (which might include private companies or state agencies) upon the delivery of (predetermined) results or outputs".[538] Thus, result-based financing makes payment contingent upon a certain result being achieved. With respect to REDD+, payment is conditioned upon the beneficiary or recipient reducing greenhouse gas emissions emanating from forests.[539] Result-based financing has been defined as a "financing approach where payments are made only after a quantified outcome has verifiably been achieved".[540] The main underlying criteria of result-based financing are that "the disbursement of funds is contingent on the delivery of pre-determined results, the recipient country has discretion over how results are achieved, under mutually agreed parameters, and independent verification acts as the trigger for disbursement".[541]

In practical terms, "rather than financing specific actions that lead to emission reduction (ERs), e.g. measure to protect forests, RBF [Result-based Financing] provides an ex-post reward and therefore incentivizes a REDD+ country (the recipient) to take these actions".[542] Some of the benefits of result-based financing have been highlighted as including that it can: "incentivize performance and increase ambition; strengthen ownership of the recipient who is

[536] Green Climate Fund, *Support for REDD-plus*, Meeting of the Board, 12-14 October 2016. GCF/B.14/03
[537] Global Environment Facility, Results-based Management Action Plan, GEF Council Meeting, 28-30 October, 2014. GEF/C.47/05.
[538]Marigold Norman and Smita Nakhooda (2014), "The State of REDD+ Finance." CGD Working Paper 378. Washington, DC: Center for Global Development, 26.
[539] Climate Focus, "Result-based Finance for REDD+: Emerging approaches", REDD+ Expert Dialogue 7, December 2015.
[540] Voigt and Ferreira, above n 528, at 116
[541] Ibid.
[542] Ibid.

responsible for the manner of achieving results and the use of finance; reduce transaction costs for donors and recipients, with donors less involved in operational details than with traditional input-based funding; improve monitoring of results (emission reductions); improve the efficiency of donors' fund by transferring some of the risks, including for cost efficiency, to the recipient; and, pilot approaches that could lead to a scaling up of finance".[543]

Trends in REDD+ results-based financing till 2014 shows that the highest amount of pledges from donors were recorded before 2010.[544] Topping the list was Norway following its 2009 pledge of USD 1 billion to the Amazon Fund, 2010 pledge of USD 1 billion to Indonesia, and a 2009 pledge of USD 250 million to the Guyana REDD+ Investment Fund (GRIF).[545] Furthermore, Norway pledged USD 300 million to Peru as a bilateral commitment in 2013-14, and USD 150 million to Liberia to secure zero deforestation by the year 2020.[546] Moreover, Norway, the United Kingdom and the United States have been reported to have committed over USD 310 million at COP 19 in 2013 as financial support for the multilateral Bio-Carbon Fund Initiative for Sustainable Forest Landscapes (ISFL).[547] Other donors to the REDD+ finance, especially from the period 2006-2014, include Germany, Japan, Australia, Finland, France, Sweden, Canada, the European Union, Denmark, Spain, Switzerland, Italy, the Netherlands, Belgium, Austria, Luxembourg, Slovakia and Ireland.[548] However, while Luxembourg, the Netherlands and the UK prefer to channel their REDD+ finance via chosen

[543] Ibid.
[544] Norman and Nakhooda, above n 538, at 11.
[545] Ibid.
[546] Ibid.
[547] Ibid. The ISFL has as its chief purpose the promotion of reduction of greenhouse gas emissions from land, deforestation, forest degradation and sustainable agriculture, through REDD+ in developing countries. It also seeks to foster smarter use of land through planning, policies and practices. See ISFL website: <http://www.biocarbonfund-isfl.org>
[548] Ibid, 13.

multilateral funds establishments, France, Germany, Finland and Japan utilize bilateral channels.[549] On the approach adopted by Norway, it has been submitted that:

Norway's REDD+ funding commitments were made in the context of seeking to mobilize support for ambitious pledges to reduce emissions within the UNFCCC process. Norway has also sought to attract private investment in REDD+, including efforts to pilot and operationalize an international REDD+ mechanism with potential ties to the carbon markets. Its support for key tropical forest countries that have expressed a commitment to ambitious action has raised the profile of REDD+ politically in countries such as Brazil, Guyana and Indonesia. Norwegian finance for REDD+ is often relatively small in the context of the economies that it targets, but large enough to get key actors within government to take it seriously, creating financial incentives for high level policy makers to continue to take actions that will help protect forests and promote national sustainable development objectives.[550]

The recipients of REDD+ finance are located across the world. However, Latin America and the Caribbean and Asia Pacific have received more funding.[551] While Latin America and the Caribbean have attracted about 28% of multilateral and bilateral pledges, Asia Pacific and Sub-Saharan Africa are to receive 23% and 14% of pledged finance respectively.[552] With respect to funding channels, whereas Latin America and the Caribbean are mostly funded via multilateral channels, funding for REDD+ programmes in the Asia Pacific is mostly conducted via bilateral initiatives.[553]

With respect to country-specific distribution of REDD+ finance via results-based means, it has been reported that since 2006 donors have financially supported REDD+ programmes in more than 80 countries, however, 35% of total finance pledged is expected to go to Indonesia

[549] Ibid.
[550] Ibid, 14. See also Smita Nakhooda, Taryn Fransen, Takeshi Kuramochi, Alice Caravani, Annalisa Prizzon, Noriko Shimizu, Helen Tilley, Aidy Halimanjaya, and Bryn Welham, *Mobilizing International Climate Finance: Lessons from the Fast-Start Finance Period*. London: Overseas Development Institute, 2013.
[551] Norman and Nakhooda, above n 538, at 21.
[552] Ibid.
[553] Ibid, 21-22.

(19%) and Brazil (17%).[554] Other top beneficiaries include Peru, Guyana, the Democratic Republic of Congo and Liberia (jointly expected to receive about 15% of pledged REDD+ finance).[555] Vietnam, Ecuador, Tanzania and Lao People's Democratic Republic are also recipients of funding. Considering that 20% of REDD+ finance is channelled towards international research initiatives, it is estimated that only about 17% of REDD+ finance will be available to support climate-related activities in the rest of 75% of countries entitled to be funded under the framework.[556]

Although the results-based financing approach of the REDD+ is an emerging financing mechanism, a number of shortcomings have already been identified in relation to its operation. First, with respect to disbursements of funds pledged under the REDD+, it has been stated that "finance actually released or disbursed from donor bank accounts to recipients has been much lower", underscoring the problem of protracted disbursement timeframe, especially through multilateral development banks.[557] As a case in point, it was reported in 2014 that while REDD+ donors have deposited about 75% of funding pledged to multilateral development banks; only about 12% of the deposited fund was disbursed.[558] Second, the actual ex-post payment for performance-based programmes covers relatively small number of activities, leading to the conclusion that "although, a number of programs claim to be paying for results but [they] do so at a relatively superficial level, or pay in ex-ante".[559]

Third, while donors provide finance for REDD+ activities on the basis of performance-based payments, for example reduction of emissions from deforestation, a recipient country may

[554] Ibid, 23.
[555] Ibid.
[556] Ibid.
[557] Ibid, 19.
[558] Ibid.
[559] Ibid, 28-29. See also Charles Kenny and William Savedoff, "Can Results-Based Payments Reduce Corruption?" Working Paper 345. Washington DC: Center for Global Development, 2013.

actually pursue objectives distinct from the primary aim of the donors. This is especially the case with Norway's financial pledge to the Amazon Fund which is conditioned upon reduction of emissions in the legal Amazon region, however, projects under the Amazon Fund cover other areas such as forest conservation and other sustainable development goals which are not directly related to the emission reduction objective of the donor.[560] This is capable of leading to disagreements between donors and recipients where application of fund by the latter differs considerably from the purpose for which the former intends the fund to be applied *ab initio.*

Fourth, there is the problem of diversion from ex-post payment for results achieved to ex-ante funding to secure readiness of a recipient country. This concern has been raised with respect to the ISFL of the World Bank. While the initiative was conceived to achieve reduction of emissions through results-based payments, it has been reported that "around 27% of the USD 311 million raised has been allocated to ex-ante technical assistance funding that will support countries ... build public sector capacity, engage the private sector and create integrated programs".[561] Fifth, it has been observed that due to the strict nature of the requirements to be met to trigger payments under results-based financing and the fact that the approach may require a certain degree of capacity from the outset, implementing results-based financing projects may be tardy and unevenly concentrated in a few countries that possess the initial capacity required to commence a project.[562]

Obviously, the results-based approach will achieve little or nothing in developing countries that lack the ex-ante capacity and resources to undertake stated programmes necessary for achieving results to be paid for ex-post. Thus, ex-ante building of capacity in developing

[560] Norman and Nakhooda, above n 538, at 29.
[561] Ibid.
[562] Voigt and Ferreira, above n 528, 116.

countries seems a prerequisite for the success of climate change mitigation activities utilizing the results-based financing approach. While results-based payments are intended to serve as an incentive and promote change, reference levels underpinning attainment of set objectives vary considerably across projects making it difficult to proportionally attribute results to funding.[563]

For instance, with respect to REDD+, it has been reported that available records as of December 2014 show that the amount of fund allocated and spent fell short of pledged and available fund.[564] The fact that relatively small amount of USD 391 million was contracted to the Amazon Fund in form of grants in 2014 out of the considerably higher amount pledged has raised questions as to what extent allocation and disbursement of funds under the Amazon Fund has contributed to the falling deforestation in the Amazon forest, leading to the conclusion that "the results Brazil is delivering in terms of deforestation reductions require much greater funding than the funding that is available through the Amazon Fund itself".[565]

Other challenges faced by countries receiving fund under the REDD+ results-based financing have been stated to include: lack of institutional and operational capacity in recipient countries; uncertainty of funding leading to recipient countries being cautious about committing to long-term strategies on deforestation; complexities and problems relating to accessing REDD+ results-based finance by recipient countries – delays, lengthy allocation timeframe, and other bureaucratic obstacles, have been identified.[566]

Challenges faced by donors include problem of proportionality between result and finance, excluding the Amazon case where result far exceeds the finance made available; the challenge of designing effective result-based systems due to donors' limited experience in

[563] Norman and Nakhooda, above n 538, at 30.
[564] Ibid.
[565] Ibid.
[566] Climate Focus, above n 539.

forest and deforestation governance; divergence among donors on the understanding of results-based financing and its rationalisation within the wider overseas development assistance (ODA) framework; and the challenge posed by question relating to accountability vis-a-vis country ownership – the need to secure the right balance between accountability and the effectiveness of financial resources made available on the one hand, and the desirability to promote country ownership and quick disbursement of fund on the other hand.[567]

The foregoing highlighted strengths, shortcomings and challenges facing REDD+ results-based financing notwithstanding, the prospects of the approach contributing to reduction of emissions from deforestation in developing countries should not be underestimated. The success registered by Brazil notwithstanding the problems associated with disbursement of funds under the Amazon Fund shows how the approach can help galvanize climate change mitigation actions in developing countries. However, executing readiness programmes in developing countries to establish requisite institutional and operational capacity prior to piloting result-based financing projects must be accorded high priority as failure to do so will likely lead to the approach not attaining its set objectives.

Compared to input and budgetary[568] financing of climate-related actions in developing countries, the results-based approach of the REDD+ can be said to be innovative in the sense that a recipient country assumes the responsibility of attaining set goals and results from day one in order to receive the fund promised by the donor. In terms of contribution of the results-based financing system to the overall effectiveness of climate finance, the future will tell considering that the initiative is still at a nascent stage.

[567] Ibid.

[568] See the UNDP, "Budgeting for Climate Change: How Governments Have Used National Budgets To Articulate A Response to Climate Change – Lessons Learned from over twenty Climate Public Expenditure and Institutional Reviews". United Nations Development Programme, Bangkok, Thailand, 2015.

4.2.7 Climate Finance Coordination and Coherence: The COP Standing Committee on Finance (SCF)

COP 16 established the SCF to "assist the COP in exercising its functions with respect to the financial mechanism of the Convention with a view to improving coherence and coordination in the delivery of climate finance, rationalization of the financial mechanism, mobilization of financial resources and measurement, reporting and verification of support provided to developing countries."[569] The SCF consists of 20 members with equal representation from Annex I and non-Annex I parties.[570] Members of the SCF must have requisite experience in the relevant areas of climate change, development and finance.[571]

The SCF "shall organise a forum for communication and exchange of information among bodies and institutions relating to climate finance, including those outside of the Convention;[572] provide guidance to the COP concerning operating entities of the Convention's financial mechanism, make recommendations on how to improve their work in terms of coherence, efficiency and effectiveness, and provide expert contribution into periodic reviews of the financial mechanism;[573] prepare a biennial assessment of climate finance flows on the basis of: national communications and biennial reports by both developed and developing countries; information in the Nationally Appropriate Mitigation Actions (NAMA) registry; information by developing countries on the assessment of their needs; reports by operating entities of the financial mechanism; and information available from other entities providing climate finance."[574]

[569] Decision 1/CP.16, para. 112.
[570] Decision 2/CP.17, Annex VI, para. 1.
[571] Ibid, para. 2.
[572] Ibid, Annex IV, para. 121 (a).
[573] Ibid, para 121 (c) – (e).
[574] Ibid, para 121 (b).

Multiplicity, fragmentation and duplicity in the UNFCCC climate finance regime informed the establishment of the SCF. This problem reached a climax with the establishment of the GCF as the operating entity of the financial mechanism of the UNFCCC, existing side-by-side with the GEF, also acting as the operating entity of the financial mechanism of the Convention. Double operating entities aside, too many Funds with different appellations and functions exist under the Convention, and the broader climate finance regime. The totality of climate architecture lack coherence and coordination considering that no centralised organ of the UNFCCC undertakes their administration. This state of affairs makes measuring, reporting and verification of climate finance extremely difficult, if not impossible.

Creating a centralized reference point for climate funds and the entity responsible for their operation should be considered - that is, a sole climate finance institution and a single operating entity. The single operating entity will deal with all the 'funds' to be subsumed under one institution. Unfortunately, COP 21 decision and the Paris Agreement have not done much to improve climate finance coordination and coherence. Apart from the novel provision that the global stocktake which will first take place in 2023 and every 5 years thereafter,[575] and that the stocktake will take into account relevant information on climate finance,[576] the Paris Agreement merely reaffirmed what had been done or decided by previous COPs, especially with respect to biennial assessment and reporting of climate finance by developed countries through the SCF.[577]

Moreover, COP 21 decided "that the Standing Committee on Finance shall serve the [Paris] Agreement..."[578] which leads to the conclusion that the existing difficulties in the coordination of climate finance will survive into the post-Kyoto era of the Paris Agreement.

[575] Art. 14.
[576] Art. 9.6.
[577] See Decision 64/CP.21 and Article 9 (5) and (7) of the Paris Agreement.
[578] The Standing Committee was established by COP-16 to improve coherence and coordination of climate finance, however, no proof exists to show that the objective has been attained.

This is a rather disappointing state of affairs considering the golden opportunity provided by the negotiation of the Paris Agreement for the failures of the climate regime in the areas of climate finance coordination and coherence to be addressed.

4.2.8. Impediments to Implementation of Financial Assistance Provisions of the Climate Change Regime

4.2.8.1 Measuring, Reporting and Verification (MRV) of Climate Finance

MRV appeared for the first time in the UNFCCC governance via the Bali Action Plan, which stipulates that national and international actions on mitigation of climate change should be measurable, reportable and verifiable.[579] Measuring, reporting and verification of climate finance have been described by Aaron Atteridge thus: "measurement starts with defining 'climate finance' - what kind of projects and activities are covered; and, what portion of a project with multiple objectives targets climate change; reporting refers to the ways in which data from finance providers are made available to external parties – the public, ideally; and, verification consists of two things – one, evaluation of the reported data to ensure accuracy and avoidance of errors such as double-counting, and two, evaluation of how funds provided were used to ensure that set objectives are being met."[580]

Sequel to the reforms introduced by COP 16, Annex II countries were only required to report in their periodic national communications the "new and additional" financial resources provided to developing countries and how they determined such resources to be new and

[579] Decision 1/CP. 13.

[580] Aaron Atteridge, "Monitoring, Reporting and Verifying Climate Finance – A Framework for Transparency of Support Provided to Developing Countries", Stockholm Environment Institute, Policy Brief, 2012. Available online at: <http://www.sei- international.org/mediamanager/documents/Publications/Climate/SEI-PB-2012-MRV-climate-finance.pdf > Accessed 7 December 2013.

additional.[581] Specifically, parties were required to report on financial assistance provided through bilateral and multilateral channels, including GEF funds, to the most vulnerable countries to address the adverse effects of climate change.[582] On the contrary, it has been reported that "Annex I countries tended to use different reporting approaches culminating in divergences over definitions of "new" and "additional" finance, reporting periods and currency, which made aggregation of data difficult."[583]

The Cancun Agreements launched a system of enhanced reporting on the provision of financial, technology and capacity building support to developing countries.[584] The Cancun Agreements made reporting on financial support part of biennial reports to be submitted by developed countries.[585] The Cancun Agreements also provided for "the enhancement of the guidelines for the reporting of national communications by Annex I parties, including the development of common reporting formats and methodology for finance, in order to ensure that information provided is complete, comparable, transparent and accurate."[586]

Guidelines on review of information on support to developing countries in the national communication of developed countries were also enhanced.[587] Subsequently, COP 17 adopted the UNFCCC biennial reporting guidelines for developed countries,[588] resulting from a work programme for the development of relevant guidelines established under COP 16. The maiden biennial reports were submitted in January 2014.[589] Regarding developing a common

[581] Guidelines for the Preparation of National Communications by Parties Included in Annex I to the Convention, UN Doc. FCCC/CP/1999/7, 16 February 2000, para. 51.
[582] Ibid, paras. 53 and 53.
[583] Compilation and Synthesis of Fifth National Communication: Note by the Secretariat (Addendum) - Financial resources, technology transfer, vulnerability, adaptation and other issues relating to the implementation of the Convention by Parties included in Annex I to the Convention, UN Doc. FCCC/SBI/2011/INF.1/Add.2, 20 May 2011, Paras. 45 – 47.
[584] Decision 1/CP.16, para. 40.
[585] Ibid, para 40(a)
[586] Ibid, para. 41
[587] Ibid, para. 42
[588] Decision 2/CP-17.
[589] Decision 2/CP-17, para. 13.

reporting format, COP 17 requested the Subsidiary Body for Scientific and Technological Advice to develop methodologies for reporting information on financial support, taking into account existing international methodologies, and lessons learnt in preparing the first biennial reports, with a view to making a recommendation to COP 20.[590] The Paris Agreement retains provisions on biennial reporting of climate finance resources by developed countries, and to an extent, by developing countries .[591]

However, Atteridge has concluded that reference to existing international reporting methodologies by COP 17 is taken to refer mainly to the guidance published by the Organisation for Economic Cooperation and Development (OECD) Development Assistance Committee on the use of Rio Markers in submissions to the Development Assistance Committee [DAC] Creditor Reporting System (CRS), and that "the Rio Markers and associated guidance were established for an entirely different purpose, and thus not fit for climate finance purposes, while further noting that Rio Markers contain no accounting guidance on how to carve out the climate finance portion of a multiple-objective project or programme, which leads to significant variation in reporting."[592]

Currently, climate finance is a highly complex and amorphous scheme, flowing from multiple channels and delivered to developing countries in multiple forms by disparate institutions. No existing systems for tracking financial flows are sufficiently comprehensive to meet the needs of an international MRV framework. Sometimes, the reporting channels overlap, resulting in double-counting. No formal verification body exists at the international level, making it difficult to establish what financial support reaches developing countries, and for what

[590] Decision 2/CP.17, para. 19. See also Decision 13/CP. 20.
[591] Paris Agreement, Art. 9 (5) and (7). See also Decision 1/CP.21, para. 58.
[592] Aaron Atteridge, above n 580.

purpose. The overall result is that the present climate finance framework lacks transparency and accountability.[593]

As discussed above, the Paris Agreement has surely raised the bar on MRV of climate finance pursuant to its transparency provisions,[594] however, as impressive and promising as the provisions of the Agreement may be, it is still too early in the day to guess estimate what the effect of the provisions will be, especially in view of the fact that the procedures and modalities for implementing the provisions are still being put in place.[595] Indeed, if the transparency and reporting provisions of the Paris Agreement are implemented to the letters, the current problems bedevilling reporting of climate finance may be minimized, or completely overcome. On this note, the question whether the provisions of the Agreement on climate finance reporting are adequate will be answered in the affirmative, at least in theory.

Whilst the UNFCCC system should be commended for the steps so far taken to establish new guidelines for measuring, reporting and verification of climate finance, the reality remains that whatever guidelines eventually produced by the system may not be fit for purpose, owing to over-reliance on the existing non-related international guidelines.[596] A measuring, reporting and verification framework tailored specifically for climate finance is required. Such a framework should serve as a one-stop shop for climate finance information, searchable by institutions and the public. The present state of measuring, reporting and verification of climate finance poses a significant threat to the realisation of the financial assistance objectives of the climate change regime. Again, the hope is that the Paris Agreement makes a positive difference to existing framework.

[593] Ibid.
[594] See Art.13; Decision 1/CP.21, paras. 85-99.
[595] Decision 1/CP.21, paras. 92-99.
[596] For instance, the Paris Agreement does not envisage complete break away from extant MRV provisions of the UNFCCC pursuant to the provision of Article 13.4.

4.2.8.2 Access to Climate Finance by Developing Countries: Direct Access to Climate Finance

Access to climate finance by developing countries is as important as the obligation to provide climate finance by developed countries. However, developing countries' access to climate finance has been stifled by institutional bureaucracy and bottle-necks. Accessing climate funds indirectly through international implementing agencies, for example, through the GEF and the World Bank, has proved difficult and prone to high administrative costs. The problem of access to fund via the GEF resulted in developing countries demanding for a direct access to mitigation and adaptation funds established under the UNFCCC.

"Direct access" has been described "as a concept making it possible for developing countries to directly access public finance provided by developed countries in order to implement national and local actions to mitigate and adapt to climate change;[597] and that through direct access, the facilitation and project management functions carried out by international, bilateral and multilateral entities, in administering international public finance, are transferred to national entities in developing countries."[598]

In response to reservations made by developing countries regarding problems associated with indirect access to climate funds, the AF innovatively granted direct access to developing countries by providing that a developing country may elect whether to access financial resources of the AF directly or indirectly through implementing and executing entities appointed by a developing country government.[599] The GCF followed the AF by allowing

[597] UNDP, Direct Access to Climate Finance: Experiences and Lessons Learned, Discussion Paper, November 2011, at 3, available at: <http://www.undp.org> Accessed 3 December 2013.
[598] Ibid.
[599] Decision 1/CMP.3, para. 29.

developing countries direct access to its Fund through accredited sub-national, national and regional entities, as well as through accredited international entities.[600]

Granting of direct access to developing countries by the AF and the GCF is a welcome development, however, other climate Funds are still being administer indirectly by the GEF and the World Bank via international implementing agencies. It is desirable that the GEF and the World Bank adopt the "direct access" approach of the AF and the GCF. The expectation was that the Paris Agreement would have done more to institute direct access by developing countries to all categories of climate finance under the umbrella of the UNFCCC, however, the Agreement merely stated that "the institutions serving the Agreement, including the operating entities of the financial mechanism of the Convention, shall aim to ensure efficient access to financial resources through simplified approval procedures . . . for developing countries".[601]

It is submitted that the wording of the Paris Agreement does not mean the same thing as direct access. Moreover, with the GEF retained as one of the two operating entities of the financial mechanism of the Paris Agreement,[602] the problem of indirect access to climate finance remains. If direct access has worked in the administration of funds under the AF and GCF, then there is no reason why it should not be applied to the administration of other climate funds under the UNFCCC.

4.2.8.3 Lack of Political Will and Insufficiency of Climate Fund

Little doubt exists about the fact that developed countries lack the political will, not the financial capability to tackle climate change. The political will to deal with climate change remains the 'holy grail' of the international climate change regime. With political will, a

[600] Decision 3/CP.17, paras. 45 – 49.
[601] Art. 9.9
[602] Decision 1/CP.21, para. 59; Art. 9.8 Paris Agreement.

meagre percentage of annual GDP of developed countries will be sufficient to support climate change mitigation and adaptation activities in developing countries on a yearly basis. The comparative financial advantage of developed countries vis-à-vis developing countries makes the case for developed countries to show more political commitment in mobilising climate finance. Although it must be admitted that historical responsibility of developed countries for climate change should no longer be over-emphasised considering that greenhouse gas emission continues to rise in developing countries, it continues to be relevant in determining responsibility and burden sharing.

Moreover, the COP yearly meetings must be re-conceived to achieve more in terms of addressing substantive impediments to providing adequate financial support to developing countries, rather than handing down decisions that produce little or no impacts. Although the Paris Agreement can be termed a political success,[603] the political will to tackle the climate change problem on the part of developed countries, especially in relation to financial assistance and transfer of technology to developing countries, remains in questionable.

The United States of America occupies an unenviable position in this regard. Global environmental problems, especially climate change, would be addressed more effectively if only the United States can be transformed to an 'environmental super-power'. As a super-power in every capitalist and militaristic respect, the United States commands authority and respect among other countries of the world, developed and developing alike. Had the United States ratified the Kyoto Protocol, the international climate change legal framework would surely have offered more than it did in the last two decades.

[603] An unprecedented 196 countries adopted the Paris Agreement, including the USA, China and India. The bottom-up and non-binding emissions reduction pledges of all state parties to the Paris Agreement through the instrumentality of the INDC/NDC apply to all countries, both developing and developed. This markedly departs from the top-down and binding emissions reduction targets set for only developed countries by the Kyoto Protocol. In this sense, it can rightly be argued that the negotiation of the Paris Agreement was a political success.

The lack of political will exhibited by most developed countries towards international climate governance, especially in the aftermath of the United States refusal to ratify the Kyoto Protocol, surely made provision of climate finance more difficult in the years preceding the negotiation of the Paris Agreement. Australia and Canada are good examples.[604] This contrasts with the European Union which has undeniably been in the vanguard of global climate change governance in every material respect - be it the negotiation of the UNFCCC and the Kyoto Protocol, diplomatic lobbying to bring the Kyoto Protocol into effect, with respect to securing ratification by Russia, amending the Kyoto Protocol to establish a second commitment period, mobilisation of climate finance and support for technology, negotiation of the Paris Agreement, etc.[605]

Indeed, there is no doubt that the modest success registered by international climate diplomacy as of today would have been impossible without the leadership of the European Union. Whether the United States has taken up its deserved responsibility in the effort to address climate change globally, especially in view of the Paris Agreement, remains to be seen. With the inauguration of Donald Trump as the 45th president of the United States, a republican and avowed climate change doubter, the future does not seem to look very bright in that respect.

4.2.8.4 Fragmentation and Duplication of Roles

The core of the fragmentation and duplication in the climate finance framework of the UNFCCC is reflected in the following paragraphs:

[604] In the case of Australia, see generally Rosemary Rayfuse and Shirley Scott, "Australia's Climate Change Law and Diplomacy" (2008) 11 *Asia Pacific Journal of Environmental Law*, 1-11; Alexander Zahar, Jacqueline Peel and Lee Godden, *Australia Climate Law in Global Context* (Cambridge University Press, New York, 2013)
[605] For a comparison of climate policy strength of major GHG emitting countries, including the European Union, see Hugh Compston & Ian Bailey, "Climate policy strength compared: China, the US, the EU, India, Russia, and Japan" (2016) 16:2 *Climate Policy*, 145-164.

The Global Environment Facility is the international entity "entrusted with the operation of the financial mechanism of the Convention on interim basis; the Global Environment Facility shall function under the guidance of and be accountable to the Conference of the Parties, which shall decide on its policies, programme priorities and eligibility criteria."[606] The Global Environment Facility was later confirmed as the operating entity of the Convention's financial mechanism by COP 4, subject to review every 4 years.[607]

The Green Climate Fund is "designated as the operating entity of the financial mechanism under the Convention and will be accountable to and function under the guidance of the Conference of the Parties."[608]

The Conference of the Parties "decides that the Green Climate Fund and the Global Environment Facility, the entities entrusted with the operation of the Financial Mechanism of the Convention . . ., shall serve this [Paris] Agreement;[609] [and that] the Financial Mechanism of the Convention, including its operating entities, shall serve as the financial mechanism of this [Paris] Agreement".[610]

The import of the above paragraphs is that the UNFCCC (including the Kyoto Protocol and the Paris Agreement) maintains two operating entities for its financial mechanism in the Global Environment Facility and the Green Climate Fund. These double operating entities of the financial mechanism of the Convention have virtually similar roles and responsibilities, with the only major exception being that the Global Environment Facility is an international implementing agency not set up by, or under the Convention. So far the COP has not clarified the relationship between the Global Environment Facility and the Green Climate Fund, raising the question as to how both entities will perform the same roles - for the same

[606] Arts. 11 and 21.2 of the UNFCCC.
[607] Decision 3/CP.4, Review of the Financial Mechanism, para. 1.
[608] Decision 3/CP.17, Annex on the Governing Instrument of the Green Climate Fund, para. 4.
[609] Decision 1/CP.21, para. 59.
[610] Art. 9.8

institution - at the same time. As highlighted above, the Paris Agreement has also adopted the Global Environment Facility and the Green Climate Fund as the operating entities of its financial mechanism, notwithstanding that the Green Climate Fund is now operationalized and ought to assume the roles being performed by the Global Environment Facility, especially under the Paris Agreement.

The UNFCCC is supposed to serve as an umbrella for synergy and coordination of climate finance, not as an avenue for fragmentation and duplication of institutions and roles. Creation of double operating entities without defining their respective roles and relationships further aggravates the barriers militating against international climate finance governance, especially with respect to access to finance by developing country beneficiaries. The current problems of measuring, reporting and verification, transparency, coordination, coherence, and accountability in relation to climate finance will be worsened by maintaining two operating entities. The COP should as a matter of urgency deal with this state of affairs. As stated earlier, the better option would be to transfer the roles currently performed by the Global Environment Facility to the Green Climate Fund.

4.2.9 Achievements and Failures of the Climate Change Regime on Financial Assistance to Developing Countries

No doubt, climate finance and financial assistance to developing countries have progressed since the UNFCCC was negotiated in 1992. The creation of the Special Climate Change Fund, Least Developed Countries Fund, Adaptation Fund, and the Green Climate Fund has surely contributed to mobilisation of climate finance globally. The initiative of developed countries at the Copenhagen COP to mobilise climate finance to the tune of USD 30 billion and up to USD 100 billion by 2020 through the mechanisms of Fast Start Finance and Long-term Finance respectively, is laudable. Moreover, the decision of COP 21 to make the USD

100 billion maximum set in Copenhagen in 2009 the "floor" rather than the "ceiling", starting from 2025 is also a sign that parties appreciate that current effort is not adequate.[611] As indicated at the beginning of this chapter, the private sector has also contributed immensely to climate finance, which also points to progress.

However, all the finance generated so far through public and private sources remains insufficient to support climate change mitigation and adaptation activities in developing countries. While the UNFCCC system is still estimating global climate finance budget in billions of USD, recent estimates from a number of international organisations runs into trillions of USD. For instance, in a 2016 report the IEA stated that achieving the 2 °C temperature goal will require investment of USD 35 trillion in energy efficiency alone globally by 2040.[612] Furthermore, in 2013 the World Economic Forum estimates that by 2020 USD 5.7 trillion will have to be invested annually in developing countries to enable a shift to green infrastructure as well as mobilizing at least additional USD 700 billion to attain the 2°C emission stabilization goal (which increases to USD 14 trillion by 2030).[613]

The gap between this estimates and the actual fund reported to have been provided[614] as climate finance, and the future benchmark being set by the UNFCCC COP, is unimaginably wide. Tellingly, while the only offer made by the Paris COP in 2015 with regard to scaling up climate finance to support developing countries is that of making the Copenhagen COP benchmark of USD 100 billion the starting point in 2025, the World Economic Forum estimates USD 5.7 trillion as what will be required annually in developing countries to support mitigation of climate change and sustainable development by 2020.

[611] Decision 1/CP.21, para. 54.
[612] International Energy Agency (IEA), *World Energy Outlook 2016*, Executive Summary, 5.

[613] World Economic Forum, *The Green Investment Report*, Geneva 2013, 13 – 14.
[614] See sub-chapter –'Climate Finance: Global Estimates and the Amount Supplied' above.

While these estimates cannot boast error-free methodologies, the assumption to be drawn from the totality of data assessed earlier on in this chapter with respect to estimates and actual supply of finance, including the estimates reported by the UNFCCC itself, is that current effort by developed countries toward fulfilling their treaty obligations to provide financial assistance to developing countries for mitigation and adaptation to climate change is far from being sufficient. A lot more effort is required. Although South-South climate finance is increasingly becoming a reality,[615] mobilisation of climate finance by developed countries remains the only potent way of achieving set objectives of the UNFCCC (including those of the Kyoto Protocol and the Paris Agreement) relating to financial assistance, transfer of technology and sustainable economic development of developing countries.

In keeping with the research question, the question whether the international climate change regime governing financial assistance to developing countries has been effective will be answered in the negative based on the conclusion above. The stabilisation objective set by Article 2 of the UNFCCC remains unattained mainly because developed countries have not fulfilled their treaty obligations to provide adequate financial support to developing countries to enable them cut emissions of greenhouse gases and embrace sustainable development paths, among other things. The link between financial support to developing countries and attaining the stabilisation objective of the UNFCCC is anchored primarily on the provisions of Articles 3.1 and 4.3 of the UNFCCC. The Paris Agreement, notwithstanding the qualifier to CBDRRC in Article 2, also follows the UNFCCC, especially when Articles 4.5, 9.1 and 9.3 of the Agreement are read together with Article 2 of the Agreement.

[615] See Benito Muller, *South-South Solidarity in Climate Finance - A GCF Operated Southern Solidarity Fund: Concept Note*. The Oxford Institute for Energy Studies, April 2014.

4.3 Sustainable Economic Development of Developing Countries under the Climate Change Regime

4.3.1 International Environmental Law and the Evolution of Sustainable Development

International environmentalism and the attendant quest for the protection of the global environment can be said to be less than five decades old. Prior to the birth of the environmental protection era, no distinct branch of international law called 'international environmental law' existed, no textbook on international law discussed the 'environment', and finding any writings on the subject in academic journals was extremely difficult.[616] The apathy that characterised environmental protection in the period preceding the 1970s can be attributed to either lack of awareness of environmental degradation and consequent ecological problems, or the fact that sovereign states and other international actors at the time were preoccupied with other issues completely divorced from the need to protect and preserve the ecological health of the Earth.[617]

Notably, after the end of the Second World War, human rights protection gained unparalleled attention due mainly to the atrocities committed during the war, and the fear that if the international community did nothing to outlaw wanton violation of human rights, that a repeat of the past might not be far away. However, as human rights protection assumed popularity, the initial clues to the fact that the global environment might be ailing and ought to be given attention began to emerge in the 1960s. Notwithstanding, the international community only took the first official step towards environmental protection by kick-starting

[616] Samudu Atapattu, *Emerging Principles of International Environmental Law* (Transnational Publishers, New York, 2006) at 1.
[617] Ibid.

awareness to global environmental problems at the United Nations Conference on the Human Environment of 1972 (Stockholm Declaration).[618]

Thus, the foundation of modern international environmental law was laid in the Stockholm Declaration to the effect that: "States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own natural resources pursuant to their own environmental policies, but have the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or areas beyond the limits of national jurisdiction".[619]

Principle 21 of the Stockholm Declaration has re-incarnated in almost every subsequent international instrument on the environment, binding or non-binding. Twenty years after Stockholm, the 1992 Rio Declaration reiterated the provisions of Principle 21, though with a slight difference.[620] Consequently, Principle 2 of the Rio Declaration has been criticised as having diluted Principle 21 of the Stockholm Declaration by adding '*and developmental policies'*. This has been termed "an 'anthropocentric approach to environmental protection."'[621] Nonetheless, Rio has received credit for reflecting the developments that took place after the adoption of the Stockholm Declaration, principally the concept of sustainable development.[622]

In the course of its evolution, international environmental law crossed many paths - "from cross-border issues to environmental issues of a global nature, which defied traditional principles of international law, based principally on territorial sovereignty and state responsibility, notably the depletion of the ozone layer and anthropogenic climate change,

[618] UN Doc. A/CONF.48/14, June 16, 1972, reprinted in 11 ILM 1416 (1972).
[619] Stockholm Declaration, Principle 21; See also *The Trail Smelter Arbitration (US v Canada)* 3 RIAA 1905, 1911.
[620] Rio Declaration, Principle 2, UN Doc. A/CONF.151/26, reprinted in 31 ILM 874 (1992)
[621] Marc Pallemaerts, "International Environmental Law from Stockholm to Rio: Back to the Future?" in Philippe Sands (ed.) *Greening International Law* (Earthscan, London, 1993) 5.
[622] Atapattu, above n 616, at 5.

which require concerted global response."[623] In response, international conventions were adopted specifically to address these problems: Vienna Convention for the Protection of the Ozone Layer (1985),[624] and the Montreal Protocol on Substances that Deplete the Ozone Layer (1987)[625]; the UN Framework Convention on Climate Change (1992),[626] the Kyoto Protocol,[627] and recently the UNFCCC Paris Agreement, adopted in December 2015.

Broadly-speaking, global environmental problems can be said to have resulted from, and continues to result from the activities of all the states of the international community, although historically and currently, some states may be held more responsible than the others. However, the underlying fact is that every state can be at the receiving end of a negative environmental phenomenon, underlining the importance of all states working together to protect the environment, alleviate the adverse effects of existing environmental problems, and ensure that policies are made proactively to prevent future environmental degradation. To this end, states comprising the global community have superintended the evolution of international concepts and principles, such as: the polluter pays principle; the precautionary principle; the environmental impact assessment; sustainable development and inter-generational equity, including procedural principles relating to participation and access to information.[628]

In furtherance of the foregoing responses by the international community, the Rio Declaration endorsed the concept of sustainable development proposed by the World Commission on the Environment and Development (WCED) in 1987. The concept of sustainable development enjoins states to integrate environmental protection into their

[623] Ibid.
[624] 26 ILM 1529 (1985); 1513 UNTS 293, signed Mar. 22, 1985, entered into force Sept. 22, 1988.
[625] 26 ILM 1541 (1987), 1522 UNTS 3, signed Sept. 16, 1987, entered into force Jan. 1 1989.
[626] 31 ILM 849 (1992), 177 UNTS 107, signed May 9, 1992, entered into force Mar. 21, 1994.
[627] 36 ILM 22 (1998) signed Dec. 11, 1997, entered into force Feb. 16 2005, FCCC/CP/1997/L.7/Add.1. See Atapattu, above n 616, at 5.
[628] Atapattu, above n 616, at 6.

national economic development programs and processes, and to institute a national framework for the assessment of the environmental impacts of development activities through the mechanism of environmental impact assessment (EIA).[629]

It has been observed that "although the normative quality of sustainable development remains undetermined, it has however succeeded in watering down the 'domestic jurisdiction' clause of the United Nations Charter, which stipulates that the United Nations must refrain from interfering in matters which are within the domestic jurisdiction of any state."[630] The domestic jurisdiction clause constituted major obstacles to international development of human rights and environmental law, especially where cross-border elements are not present.[631] Also, by mandating states to integrate environmental protection into national economic development policies, the concept of sustainable development circumscribes the sovereignty of states in dealing with their territories as they wish. The mentioned scenarios represent ways in which the concept of sustainable development has contributed in blunting the hitherto sharp edges of a state-centric international system with sovereign nation-states as the ultimate power brokers.

4.3.2 What is Sustainable Development?

Sustainable development has been defined as a "development which meets the needs of the present generation without compromising the ability of future generations to meet their own needs".[632] The concept of sustainable development consists of two parts: "the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority

[629] Ibid, 7.
[630] Ibid. See also the Charter of the United Nations, Art. 2.7
[631] Ibid.
[632] Our Common Future, Report of the World Commission on Environment and Development (WCED) (1987) ("The Brundtland Report") 43.

should be given; and, the idea of limitations imposed by the state of technology and social organisation, on the environment's ability to meet present and future needs."[633]

The International Union for the Conservation of Nature (IUCN) is convinced "that by ensuring ecological sustainability, economic viability and social desirability, quality of life or standards of living can be maintained for many generations", and the IUCN terms this the true meaning of sustainable development.[634] Sustainable development has also been defined "as the conservation of nature and maintenance of ecological order, which preserves bio-diversity and thereby makes life on Earth possible now and in the future."[635] Furthermore, sustainable development has been defined as "an approach that will permit continuing improvements in the quality of life with a lower intensity of resource use, thereby leaving behind for future generations an undiminished or even enhanced stock of natural resources and other assets."[636]

Among the definitions of sustainable development, the WCED definition remains the most popular. It is relatively hard to find a comprehensive definition of sustainable development. However, instead of engaging in an endless search for a universal definition, writers have opted to view the concept as an umbrella term encompassing several components, both substantive and procedural.[637] Substantive components of sustainable development include: rights of future generations; sustainable use of natural resources; equitable use of natural

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[633] Ibid.

[634] International Union for Conservation of Nature (IUCN), World Conservation Union, Guide to Preparing and Implementing National Sustainable Development Strategies and Other Multi-sectoral Environmental and Development Strategies, 1993, p. 6.

[635] K.C Jena, "Ecology and Environmental Protection Movements: A Brief Conspectus", (2005) 92 *Air Journal*, 288-94, at 289.

[636] M. Munansinghe and E. Lutz, *Environmental-Economic Evaluation of Projects and Policies for Sustainable Development*, Environment Working Paper No. 42, World Bank, 1991.

[637] Vaughn Lowe, *Sustainable Development and Unsustainable Arguments,* in Alan Boyle and David Freestone (eds) *International Law and Sustainable Development: Past Achievements and Future Challenges* (Oxford University Press, Oxford, 1999) at 26; Sumudu Atapattu, "Sustainable Development, Myth or Reality?: A Survey of Sustainable Development under International Law and Sri Lankan Law", (2001) 14 *Georgetown International Environmental Law Review*, 265, at 273.

resources; and the integration of environment and development.[638] Procedural elements of sustainable development are: cooperation between states; environmental impact assessment; public participation in environmental decision-making; and access to information.[639]

A major criticism of 'sustainable development' has been that of lack of a universally acceptable definition. However, it has been stated that "this 'definitional problem' has not precluded international organisations, national institutions and non-governmental organizations from seeking to implement sustainable development."[640] Birnie and Boyle, while assessing the indeterminacy of sustainable development, opined thus:

"Much the same problems [definitional] affect international attempts to define sustainable development, yet this has not rendered futile UN's efforts to promote sustainability as the central objective of international environmental policy, or its use by international courts and inter-governmental bodies as a legal principle which can influence their decisions. Indeterminacy is thus a problem, but not necessarily an insurmountable one".[641]

It has also been submitted that "given the nuances of sustainable development, striving to adopt a precise definition of it may prove impossible," [and that rather than an endless pursuit of a universally acceptable definition], that "identifying and giving content to its components might prove more beneficial."[642]

Although controversy still surrounds the legal status of sustainable development, it is indisputable that the concept of sustainable development has permeated the fabrics of peremptory customary international norms, with the central message that integration of formerly diverse international law policies and practices be undertaken in order to give due

[638] Sands, *et al,* above n 44, at 209-216.
[639] Patricia Birnie, Alan Boyle and Catherine Redgwell, *International Law and the Environment* (3rd edn, Oxford University Press, Oxford, 2009) at 123
[640] Atapattu, above n 616, at 94.
[641] Patricia Birnie and Alan Boyle, *International Law and the Environment* (2nd edn, Oxford University Press, Oxford, 2002) at 257.
[642] Atapattu, above n 616, at 94.

considerations to the need to protect the global environment for present and future generations.[643] For instance, in the *Case Concerning Gabcikovo Project*, the ICJ stipulated that "sustainable development has a legal function".*[644]* Whilst, regrettably, the ICJ did not go further to set out the parameters within which the legal function of sustainable development may be situated in practical terms, the separate opinion of Judge Weeramantry, albeit non-binding, laid the foundation for future consideration of sustainable development as a 'principle' of international environmental law.[645] Judge Weeramantry stated that "sustainable development is more than a mere concept, but that, it is a principle with normative value".[646] Furthermore, Weeramantry submitted that "the right to development and the right to environmental protection . . . are important principles of current international law'[647] and that the principle of sustainable development . . . is an integral part of modern international law."[648] It is submitted that this is judicial activism *per excellence*.

To what extent the *Gabcikovo Case* represents a missed opportunity for the ICJ to develop international environmental law, especially in the area of sustainable development, will remain a muted point of discussion. Although some may argue that sustainable development has not attained the status of customary international law, there is no doubt that attainment of such status is only but a question of time. Whether referred to as a "principle", "concept", or "notion", the undeniable fact is that sustainable development now forms the hardcore of most

[643] Philippe Sands, "International Courts and the Application of the Concept of "Sustainable Development" (1999) 3 *Yearbook of UN Law*, 389.
[644] *Gabcikovo-Nagymaros Project (Hungary v Slovakia) [1997*] *ICJ Reports 7*
[645] *Gabcikovo-Nagymaros Project (Hungary v Slovakia)* (Separate Opinion of Judge Weeramantry) *1997 ICJ Reports,* para. *92*.
[646] Ibid, para. 88.
[647] Ibid, para. 89.
[648] Ibid. See also Kravchenko, Chowdhury and Bhuiyan, "Principles of International Environmental Law" in Shawkat Alam, Md Jahid Hossain Bhuiyan, Tareq M.R Chowdhury and Erika J. Techera (eds.) *Routledge Handbook of International Environmental Law* (Routledge, Oxford, 2013), at 43.

legal instruments for environmental protection at the national, regional, and international levels.

Furthermore, Klaus Bosselmann maintains the view that at any stage the concept of sustainable development is ranked as a peremptory customary norm of international law, its original basis and utility must be traced to the principle of sustainability.[649] Barring the principle of sustainability, sustainable development, which enjoins the integration of developmental and environmental policies, cannot be realistically pursued and attained.[650] An enduring route to the realisation of the normative goals of the concept of sustainable development must be charted based on the notion of sustainability.[651] Thus, the principle of sustainability gives content and purpose to practice of sustainable development.

4.3.3 Climate Change and Sustainable Economic Development of Developing Countries: The Ethical Question

Generally, the international environmentalism that commenced after the adoption of the Stockholm Declaration in 1972 has not appealed to developing countries owing to the inherent conflict between their economic development priorities and environmental protection as spear-headed mostly by developed countries. One writer captures the scenario thus:

Many of the low-income nations of the global South, however, had yet to fully realize the benefits or the burdens of industrialization, or to engage in environmentalism. Instead, they were steadfastly pursuing economic development, which seemed to conflict with international environmentalism. Having fully subscribed to the development narrative of industrialization and economic growth, addressing environmental concerns

[649] K. Bosselmann, "Sustainable Development and International Environmental Law" in in Shawkat Alam, Md Jahid Hossain Bhuiyan, Tareq M.R Chowdhury and Erika J. Techera (eds) Routledge Handbook of International Environmental Law (Routledge, Oxford, 2013), at 679.

[650] Ibid.

[651] Ibid. See also Klaus Bosselmann *The Principle of Sustainability: Transforming Law and Governance* (2nd ed., Routledge, England, 2017).

threatened to slow or impede this process, and to many this scenario was unacceptable. Some viewed environmentalism as luxury that low-income countries (LICs) could ill afford and presenting yet another hurdle imposed by countries in the global North which they themselves did not have to face as they became wealthy; besides, environmental degradation and destruction were primarily due to the excesses of the global North, and thus remedying it was their responsibility.[652]

Although the views expressed in the preceding quotation can be said to be as old as the Stockholm Declaration itself, these views continue to hold even today. The views echo historical, ethical, and equitable imbalances inherent in actions, duties, and obligations of developed and developing countries toward the protection of the global environment. Viewed from the disadvantaged position of developing countries vis-a-vis the advantaged position of developed countries, one writer likened it to "kicking away the ladder"[653] by developed countries. Particularly, the ethical dimension underscores the current issues surrounding continued economic development of developing countries and the need to reduce emission of greenhouse gases that cause climate change.

Ethics has been described as involving questions relating to justice and value.[654] While justice denotes equity and fairness, and is concerned generally with the rights inuring to people, value denotes worth, benefit or good.[655] In relation to climate change, ethical questions that arise include what measure of mitigation is required to avoid 'dangerous interference, how to share the cost of mitigation among countries and between present and future generations, how to approach the issue of historical responsibility for emissions, how to balance policies

[652] Ruth Gordon "Unsustainable Development" in Shawkat Alam, Samudu Atapattu, Carmen G. Gonzalez and Jona Razzaque (eds) *International Environmental Law and the Global South* (Cambridge University Press, New York, 2015), 50 – 51.
[653] H.J Chang, Kicking Away the Ladder: Development Strategy in Historical Perspective (Anthem Press, London, 2002).
[654] Kolstad C., et al, 2014: Social, Economic and Ethical Concepts and Methods. In: *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Edenhofer, et al, (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 211.
[655] Ibid.

relating to mitigation and adaptation, etc.[656] The ethical concepts that characterise the climate change question has been summarised thus:

When a country emits GHGs, its emissions cause harm around the globe. The country itself suffers only a part of the harm it causes. It is therefore rarely in the interests of a single country to reduce its own emissions, even though a reduction in global emissions could benefit every country. That is to say, the problem of climate change is a "tragedy of the commons" (Hardin, 1968). Effective mitigation of climate change will not be achieved if each person or country acts independently in its own interest. Consequently, efforts are continuing to reach effective international agreement on mitigation. They raise an ethical question that is widely recognized and much debated, namely, 'burden-sharing' or 'efforts-sharing'. How should the burden of mitigating climate change be divided among countries? It raises difficult issues of justice, fairness, and rights, all of which lie within the sphere of ethics.[657]

The importance of ethics in the climate change question underlines the need for incorporation of concepts of justice, fairness, responsibility and equity in negotiations leading to climate treaties as well as in national policies relating to climate change.[658] Ethics also relates to the issue of causal and moral responsibility for climate change. Historical emission is one of the elements that can contribute to the determination of causal responsibility.[659] Historical responsibility refers to the contribution of a country to the stock of greenhouse gases.[660]

Considering that developed countries that bear the causal responsibility for climate change will suffer less from its adverse effects, while developing countries that bear no such

[656] Ibid.
[657] Ibid, 214.
[658] Ibid, 215.
[659] Ibid. See also Den Elzen M., J. Fuglestvedt, N. Höhne, C. Trudinger, J. Lowe, B. Matthews, B. Romstad, C. P. de Campos, and N. Andronova "Analysing countries' contribution to climate change: scientific and policy-related choices" (2005) 8 *Environmental Science & Policy*, 614–636; Lamarque J.F., T. C. Bond, V. Eyring, C. Granier, A. Heil, Z. Klimont, D. Lee, C. Liousse, A. Mieville, B. Owen, M. G. Schultz, D. Shindell, S. J. Smith, E. Stehfest, J. Van Aardenne, O. R. Cooper, M. Kainuma, N. Mahowald, J. R. McConnell, V. Naik, K. Riahi, and D. P. van Vuuren, "Historical (1850–2000) gridded anthropogenic and biomass burning emissions of reactive gases and aerosols: methodology and application." (2010) 10 *Atmospheric Chemistry and Physics*, 7017–7039; Höhne N., H. Blum, J. Fuglestvedt, R. B. Skeie, A. Kurosawa, G. Hu, J. Lowe, L. Gohar, B. Matthews, A. C. N. de Salles, and C. Ellermann, "Contributions of individual countries' emissions to climate change and their uncertainty" (2011) 106 *Climatic Change*, 359–391.
[660] Ibid, 217.

responsibility at the present will face most of the damaging effects of climate change, questions relating to justice and moral responsibility become pertinent.[661] Thus, the question goes: Do countries or peoples that suffer disproportionately from climate change have legitimate claims against countries that historically caused the problem or that have benefitted from it?[662] This remains a controversial ethical question.

Historical responsibility for climate change also raises questions about distributive justice.[663] The recognition of CBDRRC in the UNFCCC reflects the acceptance of notions of distributive justice in relation to climate change.[664] CBDRRC is often construed to mean that historical and current emissions determine causal responsibility for climate change which should provide the basis for determining the contributions of countries toward mitigation and adaptation measures.[665] Viewed from this standpoint, with increasing emission in developing countries and a projection that developing countries' emissions will outstrip those of developed countries in the next couple of decades,[666] proportionate greenhouse gas emissions

[661] Ibid. 215. See also Richard S. J. Tol, "The damage costs of climate change toward more comprehensive calculations" (1995) 5 *Environmental and Resource Economics*, 353–374.
[662] For some underlying arguments, see Neumayer E., "In defence of historical accountability for greenhouse gas emissions" (2000) 33 *Ecological Economics*, 185–192; Gosseries A, "Historical emissions and free riding" (2004) 11 *Ethical Perspectives*, 36–60; Caney S. "Environmental degradation, reparations, and the moral significance of history" (2006) 37 *Journal of Social Philosophy*, 464–482.
[663] See Meyer L., and D. Roser, "Distributive justice and climate change: the allocation of emission rights", (2006) 28 *Analyse & Kritik*, 223–249.
[664] Kolstad C., et al, above n 653, 217.
[665] See Lavanya Rajamani, "The principle of common but differentiated responsibility and the balance of commitments under the climate regime" (2000) 9 *Review of European Community and International Environmental Law*, 120–131; Rive N., A. Torvanger, and J. S. Fuglestvedt, "Climate agreements based on responsibility for global warming: Periodic updating, policy choices, and regional costs." (2006) 16 *Global Environmental Change*, 182–194; Brunée J., S. Goldberg, R. Lord, and L. Rajamani, "Overview of legal issues relevant to climate change" in R. Lord, S. Goldberg, L. Rajamani, J. Brunée, (eds.) *Climate Change Liability: Transnational Theory and Practice* (Cambridge University Press, Cambridge UK, 2012).
[666] See P. Capros, et al, *Climate Technology Strategies 1: Controlling Greenhouse Gases - Policy and Technology Options*. Center for European Economic Research , 1999; Eriko Miyama & Shunsuke Managi, "Global environmental emissions estimate: application of multiple imputation" (2014) 16 *Environmental Economics and Policy Studies*, 115-135; D S Ward and N M Mahowald, "Contributions of developed and developing countries to global climate forcing and surface temperature change" (2014) 9 *Environmental Research Letters*, 1-10. For a report about how governments around the world censored the SPM of the Fifth Assessment Report of the IPCC (AR5) in order to remove information relating to respective emissions of countries, see Nick Miller, 'IPCC report summary censored by governments around the world' The Sydney Morning Herald (Online ed.,) April 14 2014. <http://www.smh.com.au/world/ipcc-report-summary-censored-by-governments-around-the-

(historical and current) of a country, and capacity or ability to pay, has been suggested as a more equitable burden-sharing formula.[667]

With respect to fairness or equity, there are two dominant ethical perspectives: the dominant North perspective, and the dominant South perspective.[668] On the one hand, the dominant North perspective construes equity-ethical rationalisation from the standpoint of developing countries undertaking climate change mitigation obligations, primarily as their own contributions to the environmental and economic challenges facing the international community as a whole. Following this view, some developed countries, especially the United States, rejected the Kyoto Protocol for being unfair owing to the fact that developing countries were not under quantified emissions reduction commitment, as were developed countries, and therefore not subject to the economic costs of mitigation.[669]

On the other hand, "the dominant South perspective is to the effect that equity is basically a 'redistributive social justice', and climate change human impacts and adaptation costs as disproportionate causal responsibilities."[670] Pursuant to this view, developing countries raise issues like "over-consumption, historical patterns of development, and the 'right to emit' to reach a level of economic development which satisfies basic human rights and needs, thereby advocating a per capita emissions rights based solution, which proceeds on the assumption

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world-20140414-zqugm.html> Accessed 15 November 2016; David Stern, 'Censored' IPCC summary reveals jockeying for key UN Climate talks' The Conversation (Online ed.,) April 24, 2014. <https://theconversation.com/censored-ipcc-summary-reveals-jockeying-for-key-un-climate> Accessed 15 November 2016.

[667] Daniel Bodansky, Sophie Chou and Christie Jorge-Tresolini, *International Climate Change Efforts Beyond 2012: A Survey of Approaches*, Pew Center on Global Climate Change, December 2014, 19; Jacoby, H., R. Schmalensee, and I. Wing, "Toward a Useful Architecture for Climate Change Negotiations", Report No. 49, MIT Joint Programme on the Science and Policy of Global Change, May 1999; Jacoby, H.D., R. Prinn, and R. Schmalensee, "Kyoto's Unfinished Business" (1998) *Foreign Affairs* (July – August), 54-66.

[668] Michael Richards, "Poverty Reduction, Equity and Climate Change: Global Governance Synergies or Contradictions", Overseas Development Institute (2003) 4. Available online at: <http://www.odi.org.uk/sites/odi.org.uk/files/odi-assets/publications-opinion-files/2408.pdf> Accessed 16 December 2014.

[669] Ibid.

[670] Ibid.

that the global atmosphere is a global commons public good to which all are equally entitled to appropriate".[671]

In essence, developing countries view the climate change problem as a resource-sharing problem, whilst developed countries see it as a burden-sharing problem.[672] For developing countries, developed countries have exacted their own share of the public good (global atmosphere); and it will be equitably and ethically wrong for developing countries to be precluded from taking their own share. If the developed countries want developing countries not to emit their own share of GHGs in order to develop economically, developed countries ought to provide financial and technological support to enable transition to cleaner path of economic development in developing countries. Economic development remains a prerequisite for eradication of poverty in developing countries, and must take priority over the 'luxury' of environmental protection.

The foregoing exposition notwithstanding, it should be noted that all developing countries are not cast in the same mould or "cut-and-shaped alike" on every issue relating to climate change. For instance, within the bigger developing countries' negotiating group of G77/China lays smaller sub-groups of alliances pursuing regional or other interests underscored by, for example, vulnerability to climate change (in the case of the LDCs, SIDS and AOSIS) or maintenance or furtherance of economic competitiveness (e.g., OPEC, BASIC countries). Thus, there is not one Southern perspective on climate change. As a matter of fact, climate change negotiations, especially at international forums, now mirror tensions cutting across North-North, North-South, and South-South divides.[673] Moreover, while the preceding perspectives of developing and developed countries on the equity-ethical questions raised by

[671] Ibid.
[672] Ibid.
[673] See Rowena Maguire and Jiang Xiaoyi, "Emerging Powerful Southern Voices: Role of BASIC Nations in Shaping Climate Change Mitigation Commitments" in Shawkat Alam, *et al* (eds.) *International Environmental Law and the Global South* (Cambridge University Press, New York, 2015), 214.

climate change may now seem not central owing to the fact that the mitigation framework of the Paris Agreement now applies to developing and developed countries alike, climate change as a resource-sharing and / or burden-sharing problem continues to characterise negotiations under the UNFCCC.

Primarily, the international climate change legal regime is largely based on historical responsibility for past emissions, and the capability to address the problem.[674] The utilisation of historical emission patterns to determine climate change mitigation and adaptation responsibilities of states can be explained in two ways. First, is the classic application of principles of responsibility following common sense rationalisation of "you broke it, you fix it" and "clean up your own mess".[675] The foregoing finds practical expression in the polluter pays principle, which stipulates that those who cause problems have a duty to fix them, and also expect further surcharge, such as for compensation, if the problems cause others to suffer bodily harm or economic costs.[676]

Second, there is the issue of guaranteeing fair access to the global atmosphere to all states of the international community. The concept of "fair access" treats the global atmosphere's capacity to absorb greenhouse gases without adverse effects as a finite resource that ought to be held in common for all states."[677] Consequently, if some states (early-comers), knowingly or unknowingly appropriated the resource (global atmosphere), thereby denying other states (late-comers) equal access to the resource, then compensation or reparation may accrue in favour of the late-comers, considering that the early-comers have denied them of their right

[674] Although the Paris Agreement has charted a relatively different course compared to the UNFCCC and the Kyoto Protocol, its recognition of CBDRRC, albeit with a qualification, still makes historical responsibility one of the elements to be considered in apportioning burdens in relation to climate change governance. See Article 2 of the Paris Agreement.
[675] H. Shue "Global Environment and International Inequality" (1999) *75 International Affairs* 531-545. See also P. Singer, *One World: The Ethics of Globalization* (Yale University Press, New Haven, 2002); S. M Gardiner, Ethics and Climate Change: An Introduction, *(2010) 1 WIREs Climate Change*, 54-66, 56.
[676] Ibid, Gardiner, 56.
[677] Ibid.

of fair access.[678] In practical terms, developing countries represent the broad category of 'late-comers', while developed countries are seen as the 'early-comers'.

To developing countries, equity, fairness and justice (with respect to climate change) demand that economic development be given priority over measures tackling climate change, considering that poverty reduction and eradication remain their ultimate objective. The developmental gap between developed and developing countries inherently and ethically justifies this stance. This stance also finds expression in the right to development narrative. The United Nations General Assembly Declaration on Right to Development states that:

"the right to development is an inalienable human right by virtue of which every human person and all peoples are entitled to participate in, contribute to, and enjoy economic, social, cultural and political development, in which all human rights and fundamental freedoms can be fully realized".[679]

Moreover, the basic elements of the right to development are present in the International Bill of Rights - the United Nations Declaration of Human Rights (UDHR), the International Covenant on Civil and Political Rights (ICCPR), and the International Covenant on Economic, Social and Cultural Rights (ICESCR). Specifically, the ICESCR provides for rights to an adequate standard of living, education, housing, work and food.[680] The Rio Declaration is the first international instrument to refer to right to development, principally in the context of sustainable development.[681] Although the right to development has not been codified as part of international human rights law, meaningful enjoyment of other basic human rights recognised internationally depends, to a greater extent, on the level of development (economically, socially, culturally, etc.) of a country. Thus, is it ethically right

[678] Ibid.
[679] GA Res. 41/128, Dec.4, 1986, Declaration on the Right to Development, Art. 1.
[680] International Covenant on Economic, Social and Cultural Rights (ICESCR) 1966, Arts. 6, 7, 11 and 13.
[681] Rio Declaration, Principle 3.

for developing countries to insist on prioritising economic development over environmental protection – for example, commitment to reduce greenhouse gas emissions?

Ethically, developing countries that lack economic and technological capacity to integrate climate policies into their national development plans can defensibly give priority to economic development in a bid to reduce or eliminate poverty. Although the pledge and review emissions reduction approach of the Paris Agreement now applies to all state parties to the Agreement, emissions reduction pledges by most developing countries will amount to nothing if requisite financial and technical support to promote sustainable development is not forthcoming from developed countries. For instance, in the days before the adoption of the Paris Agreement, it was reported that "some developing countries seem convinced, though, that the developed nations have little desire to help them adapt to a greener environment; and that there are some developing countries who believe they are being asked to put off their much-needed development, which could happen faster if they used cheap but damaging fossil fuels. India, for one, has made clear that economic development should come before everything else".[682] Thus, the stand on 'development first' by most developing countries has not changed, even with the Paris Agreement.

Furthermore, the question also goes – must economic development in developing countries be sustainable? Every developing country is likely to answer this question in the negative. Why? They would argue that developed countries attained their level of economic development without having to contend with the demands of 'sustainable development'. Historical responsibility aside, most developed countries are still high emitters of GHGs, and thus continue to develop / live unsustainably. What, then, is the ethical justification in

[682] Mark Stone, 'Climate Change Deal Ultimately Down to Money' (Sky News, Friday 11 December 2015). Available online at: <http://news.sky.com/story/1604229/climate-change-deal-ultimately-down-to-money> Accessed 14 December 2015.

developed countries 'preaching' sustainability and sustainable development to developing countries?

Sustainable economic development of developing countries entails transition from high GHG emitting fossil fuel based economy to a cleaner low-carbon economy. Such transition requires massive technological and financial power which no developing country boasts of at the moment, except China, arguably. The technological and financial strength to move developing countries to adopt sustainable economic development policies currently lay with developed countries. Have developed countries effectively matched 'words with action' in assisting developing countries to develop sustainably? As shown in the first two parts of this chapter, the obligations placed on developed countries by the UNFCCC to render financial assistance and transfer technology to developing countries have not been fulfilled. The overall effect, in essence, is that whilst the concept of sustainable development has found its way into the national laws of most developing countries, its integration into national economic plans remains nascent or non-existent.

Sustainable development and poverty eradication must go hand-in-hand. A society plagued with poverty cannot pursue sustainable development. Poverty precipitates violation of human rights such as the right to health, right to adequate standard of living, right to food, right to housing, etc. Moreover, issues relating to poverty eradication have continued to re-define the North-South divide in relation to development and environmental protection.[683] Several environmental treaties refer to the need to eradicate poverty. The UNFCCC, for instance, noted that "response to climate change should be coordinated with social and economic development in an integrated manner with a view to avoiding adverse impacts on the latter *(economic development)*, taking into account the legitimate priority needs of developing

[683] Atapattu, above n 616, at 111.

countries for the achievement of sustained economic growth and the eradication of poverty''.[684]

Recently, the Paris Agreement emphasised "the intrinsic relationship that climate change actions, responses and impacts have with equitable access to sustainable development and eradication of poverty."[685] Furthermore, the Paris Agreement in setting out its overarching purpose states, among other things, that it ". . . aims to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty…"[686]

As further examples outside the climate change framework, the Convention on Biological Diversity (CBD) stipulates that "economic and social development and poverty eradication are the first and overriding priorities of developing countries",[687] while the Convention to Combat Desertification (CCD) provides that "parties shall integrate strategies for poverty eradication into efforts to combat desertification."[688] However, it should be noted that whilst the CCD embodies provisions relating to poverty eradication as a general obligation, the UNFCCC and the CBD merely refer to poverty eradication in their Preambles.[689]

Thus, are developing countries right to channel their limited resources toward economic development and eradication of poverty, rather than sustainable development and environmental protection?

Pursuant the foregoing treaty provisions, the answer would seem to be in the affirmative. Are developing countries ethically right to do so? The ethical question ought to be looked at from two angles. Do developing countries command the resources to accommodate economic

[684] Preamble. (emphasis added)
[685] Preamble.
[686] Art. 2.1.
[687] Preamble.
[688] UN Convention to Combat Desertification (UNCCD), Art. 4.2(c)
[689] Atapattu, above n 616, at 112.

development, poverty eradication and sustainable development? If the answer is 'yes', then developing countries would be ethically wrong not to pursue economic development, poverty eradication and sustainable development / environmental protection in parallel. Specifically, in the case of climate change, the climate change problem as a common concern of humankind[690] justifies every state that possesses requisite capacity to contribute fairly in addressing the problem, whether developed or developing.[691]

However, if the answer to the question is 'no', then ethically, developing countries would be right to pursue economic development and poverty eradication as a matter of priority, notwithstanding the dictates of international environmentalism in general, and the climate change regime in particular. '*Developing countries cannot give what they do not have'*.

The foregoing notwithstanding, it should be noted that economic development and poverty eradication in developing countries are not necessarily incompatible with the concept of sustainable development. However, to avoid potential conflicts due attention must be paid to inherent systemic financial and technological incapacitations in developing countries that pose threats to sustainable development.[692] In the case of climate change, reducing emission of GHGs in line with the dictates of sustainable development will practically be impossible in developing countries without financial and technology assistance from developed countries. Reconciling the economic development needs of developing countries and solving the climate change problem raises fundamental questions pertaining to sustainable development

[690] UNFCCC, Preamble.
[691] Based on this point, a rich and high GHG emitting developing country like China must now be held accountable. Thus, the question relates to developing countries that do not possess the capacity to solely deal with the climate change problem.
[692] See generally Gordon, above n 652, 50.

that must be answered for global progress in the fight against climate change to be effective.[693]

4.3.4 Review of Provisions of the Climate Change Regime on Sustainable Development, Economic Development and Poverty Alleviation / Eradication in Developing Countries

I shall first highlight the relevant provisions of the UNFCCC, the Kyoto Protocol and the Paris Agreement on sustainable development, economic development and poverty eradication before proceeding to discuss them.

The UNFCCC provides that "Affirming that responses to climate change should be coordinated with social and economic development in an integrated manner with a view to avoiding adverse impacts on the latter, taking into full account the legitimate priority needs of developing countries for the achievement of sustained economic growth and eradication of poverty;[694] that "The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system, and that such a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner";[695] that "The parties have a right to, and should, promote sustainable development, and that policies and measures to protect the climate system against human-induced change should be appropriate for the specific conditions of each Party and should be integrated with national

[693] Christina Voigt, "From Climate Change to Sustainability: An Essay on Sustainable Development, Legal and Ethical Choices" (2005) 9(1) *Worldviews*, 112-137, 116
[694] Preamble.
[695] Art. 2.

development programmes, taking into account that economic development is essential for adopting measures to address climate change."[696]

With respect to sustainable development, the Kyoto Protocol provides that "All Parties, taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances,… and continuing to advance the implementation of these commitments in order to achieve sustainable development…;[697] that "Each Party included in Annex I, in achieving its quantified emission limitation and reduction commitments under Article 3, in order to promote sustainable development, shall…;[698] that "The purpose of the clean development mechanism shall be to assist Parties not included in Annex I in achieving sustainable development and in contributing to the ultimate objective of the Convention, and to…"[699]

The Paris Agreement in addition to "Emphasizing the intrinsic relationship that climate change actions, responses and impacts have with equitable access to sustainable development and eradication of poverty,"[700] also aims as one of its main objectives, "to strengthen the global response to the threat posed by climate change, in the context of sustainable development and efforts to eradicate poverty".[701] The Agreement also "…aims to reach global peaking of greenhouse gas emissions as soon as possible, recognising that peaking will take longer for developing countries… on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty,"[702] and also "…recognize that some parties [may] choose to pursue voluntary cooperation in the implementation of their nationally determined contributions… in their adaptation and mitigation actions and to

[696] Art. 3.4.
[697] Art. 10.
[698] Art. 2.1.
[699] Art. 12.2.
[700] Preamble.
[701] Art. 2.1.
[702] Art. 4.1.

promote sustainable development…"[703] and, that "Parties recognize the importance of integrated, holistic and balanced non-market approaches being available to parties… in the context of sustainable development and poverty eradication..."[704]

It is worth mentioning again that poverty eradication is only mentioned in the Preamble of the UNFCCC, however, references to economic development as the major preoccupation of developing countries in the Convention should also be construed as references to poverty alleviation or eradication. Economic growth begets improved standard of living, and poverty reduction, or eradication. It is commendable that the Paris Agreement recognises the relationship between climate change responses, sustainable development and poverty eradication in Article 2 which sets out the purpose of the Agreement. Although the Paris Agreement does not have titles, Article 3 identifies Article 2 as embodying the purpose of the Agreement.

However, the practical implementation of the Agreement to achieve its stated purpose, especially that of "holding the increase in global average temperature to below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels …" entails prioritisation of sustainable economic development of developing countries through technology transfer and financial assistance. Although the Paris Agreement can be said to be innovative in some respects,[705] it remains to be seen how the Agreement fares in providing a solid international framework for moving developing countries to low-carbon economic development path.[706]

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[703] Art. 6.1.
[704] Art. 6.8.
[705] See Articles 2, 3, 4, 6, 8, 13 and 14 of the Paris Agreement.
[706] The fact that the NDCs submitted by parties so far does not meet the 2°C objective of the Agreement as set out in Article 2, not to talk of achieving 1.5°C remains a concern. See UNFCCC, 'INDCs as communicated by Parties', online at: <http://www4.unfccc.int/submissions/indc/Submission%20Pages/submissions.aspx
[706] UNFCCC, Synthesis report on the aggregate effect of the intended nationally determined contribution (30 October 2015), FCCC/CP/2015/7, online at: <http://unfccc.int/resource/docs/2015/cop21/eng/07.pdf>;

It can be deduced from the above highlighted provisions that "climate change is as much an economic and developmental question as it is an environmental one…"[707] How a state responds to climate change will inevitably impact its future economic development program.[708] For most developing countries, future economic development cannot be sacrificed in order to respond to climate change. Balance between future economic development of developing countries and response to climate change can be struck through implementation of policies engendering sustainable development. However, presently, the provisions of the climate change regime on sustainable development are so vague and generalized to be capable of any effect. While Kyoto Protocol's CDM is partially geared towards supporting sustainable development in developing countries,[709] so far attaining the set objective of the CDM is far from being successful.[710]

The Paris Agreement provides for a CDM-like framework via a voluntary cooperation mechanism through which parties may promote sustainable development and environmental

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UNFCCC, 'Aggregate effect of the intended nationally determined contributions: an update'. Synthesis report by the Secretariat (2 May 2016), FCCC/CP/2016/2, online at: <http://unfccc.int/resource/docs/2016/cop22/eng/02.pdf> See also Decision 17/CP.21.

[707] Duncan A. French, "Climate Change Law: Narrowing the Focus, Broadening the Debate" in Marie-Claire Cordonier and C.G Weeramantry (eds.) *Sustainable Justice: Reconciling Economic, Social and Environmental Law* (Martinus Nijhoff, Leiden, 2005) at 275.

[708] Ibid.

[709] Kyoto Protocol, Art. 12. See also Saleemul Huq and Hannah Reid "Benefit Sharing under the Clean Development Mechanism" in David Freestone and Charlotte Streck (eds.) *Legal Aspects of Implementing the Kyoto Protocol Mechanisms: Making Kyoto Work* (Oxford University Press, Oxford, 2005), 229; Friedrich Soltau, *Fairness in International Climate Change Law and Policy* (Cambridge University Press, New York, 2009), 79 – 85.

[710] Nhan T. Nguyen, Minh Ha-Duong, Sandra Greiner and Michael Mehling "Improving the Clean Development Mechanism Post-2012: A Developing Country Perspective" (2010) 1 *Carbon and Climate Law Review*, 76 – 85; Esteve Corbera and Noelia Jover "The Undelivered Promises of the Clean Development: Insights from Three Projects in Mexico" (2012) 3(1) *Carbon Management*, 39 – 54; Nicolas Kreibich, Lukas Hermwille, Carsten Warnecke and Christof "An Update on the Clean Development Mechanism in Africa in Times of Market Crisis (2016) *Climate and Development*, 1 – 13; Tyson Dyck "Enforcing Environmental Integrity: Emissions Auditing and the Extended Arm of the Clean Development Mechanism" (2011) 36(2) *Columbia Journal of Environmental Law*, 259 – 358; Christina Voigt, "The Deadlock of the Clean Development Mechanism: Caught between Sustainability, Environmental Integrity and Economic Efficiency" in Benjamin J. Richardson, Yves Le Bouthillier, Heather McLeod-Kilmurray and Stepan Wood (eds.) Climate Change and Developing Countries: Legal and Policy Challenges for the World Economy (Edward Elgar, Cheltenham, UK, 2009), 240-241.

integrity.[711] Sustainable development policies of the climate change regime, if effectively implemented, can provide answers to questions relating to response to climate change, economic development and poverty eradication in developing countries. For this to be possible, financial assistance and transfer of technology are indispensable. The extent that developed countries commit to meeting their finance and technology obligations under the international climate change regime will determine whether the sustainable development objectives of the climate regime will be met.

4.3.5 Sustainable Economic Development of Developing Countries: Future Challenges to the International Climate Change Legal Regime

A convergence between climate change and sustainable development is embodied in the Kyoto Protocol's clean development mechanism (CDM), pursuant to which developed countries partly fulfil their limitation and reduction commitments by utilizing emission reductions obtained via CDM projects executed in developing countries, and assisting developing countries, through the same CDM projects, to achieve sustainable development.[712]

Thus, one of the cores of the sustainable development framework of the climate change regime is entrenched in the CDM of the Kyoto Protocol. The policy underpinning the CDM as a market mechanism with dual roles – emission limitation / reduction for developed countries, and assisting developing countries achieve sustainable development, looked promising at the beginning. The CDM criteria guidelines published in 2004 by UNEP laid out a set of general and basic sustainable development criteria for CDM projects thus:

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[711] Art. 6.

[712] Massimiliano Montini, "Sustainable Development within the Climate Change Regime" in Hans Christina Bugge and Christina Voigt (eds) *Sustainable Development in International and National Law* (Europe Law Publishing, Groningen, 2008) at 530. See also Christina Voigt "Is the Clean Development Mechanism Sustainable?" (2008) 8 Sustainable Development Law and Policy, 15-21.

- *social criteria - improve quality of life; alleviate poverty; improve equity;*
- *economic criteria - provide financial returns to local entities; result in a positive impact on balance of payments; transfer new technology;*
- *environmental criteria - reduce greenhouse gas (GHG) emissions and the use of fossil fuels; conserve local resources; reduce pressure on local environments; provide improved health and other environmental benefits; meet local renewable energy portfolio standards and other environmental policies.*[713]

UNEP further expanded the guidelines by proposing a set of more specific sustainable development criteria, which also relate to the economic, social and environmental dimensions:

- *economic dimension - generate employment; reduce economic burden of energy imports; provide financial returns to local entities; positive impact on the base of the pyramid (bop); technological change; cost-effectiveness;*
- *social dimension - increase equity; increase energy access; gender issues; education and training; health; alleviate poverty; improve legal framework; governance; information and sharing;*
- *environmental dimension - GHG emission reductions; local environmental benefits; use of exhaustible resources; use of renewable resources; biodiversity.*[714]

The UNEP guidelines provide a potent tool for testing the sustainable development usefulness of a CDM project executed by Annex I countries in non-Annex I countries. Moreover, it would also serve as a useful tool for developing countries while preparing their national sustainable development policies in readiness for consideration of a proposed CDM project. Whilst Annex I countries have registered some sustainable development achievements through execution of CDM projects in non-Annex I countries,[715] such

[713] UNEP (2004), CDM Sustainable Development Impacts. Available online at <http://cd4cdm.org> Accessed 16 December 2013.
[714] Ibid. See also Montini, above n 712, at 533-4.
[715] See Heleen De Coninck, Frauke Haake and Nico Van Der Linden, "Technology Transfer in the Clean Development Mechanism" (2007) 7:5 *Climate Policy*, 444 -456; Kevin Murphy, Grant A. Kirkman, Stephen Seres and Erik Haites "Technology Transfer in CDM: An Updated Analysis" (2015) 15:1 *Climate Policy*, 127-145.

achievements when tested under the criteria provided by UNEP in its guidelines, prove a far cry from expectation. The CDM needs to be re-positioned to make its sustainable development goals achievable.

Whether the new mechanism provided under Article 6 of the Paris Agreement will improve on Kyoto's CDM remains to be seen. The current climate change legal framework was never tailored to specifically address sustainable development in developing countries. If it had been so tailored, the CDM would have been structured differently and closely monitored for efficiency. A global South placed on a formidable path to sustainable development will be vital in answering the climate change question. The fact that projected future GHG emissions in developing countries might outweigh what the present developed countries pumped into the atmosphere following industrial revolution, makes finding answers to the challenges posed by sustainable development even more urgent.

Whereas developing countries can pursue economic development on their own via traditional unsustainable means adopted by current developed countries in the past (the emerging economies of China and India, being good examples), they lack the resources - financially and technologically, to unilaterally pursue 'sustainable economic development'. For developing countries to be able to pursue sustainable economic development, traditional means of energy production (fossil fuel sources) must be transformed, or abandoned completely, for low-carbon climate-friendly sources of energy. For this to be possible, financial assistance and technology transfer obligations of the climate regime must be met. Transition from high-carbon to low-carbon economy in developing countries summarises the future sustainable development challenges of the climate change regime in particular, and international environmental law in general. To most developing countries, environmental protection remains secondary to economic development. Elevation of sustainable

development as a priority in developing countries must be championed by developed countries, and championed with determination and commitment.

Nonetheless, it must be stated that the position of parties has not been stagnant since the negotiation of the UNFCCC in 1992. Bearing this in mind, this thesis will recommend how to strengthen the Paris Agreement, and also propose and develop a tripartite framework that may hold the key to the transformation of the international climate change regime to attain sustainable development in developing countries through effective transfer of technology and financial assistance. However, it should be noted that the tripartite framework is not intended to overreach the Paris Agreement. The Agreement must be given a chance, notwithstanding genuine doubts as to its potential to succeed as highlighted above.

4.4 Conclusion

In this chapter, an investigation into the effectiveness of the climate change regime in transferring technology and providing financial assistance to developing countries was undertaken. It was found that although technology has been transferred and finance supplied by developed countries in line with their treaty obligations, current effort remains inadequate to achieve sustainable development and attain the stabilisation objective of the UNFCCC in developing countries.

With respect to transfer of technology, intellectual property rights continue to pose barrier to transfer of climate-friendly technology to developing countries. Although TRIPS may offer a framework for an international deliberation on the relationship between climate change and intellectual property rights, progress continues to be difficult. To set an initial forum for a dialogue on the problem posed by intellectual property rights to transfer of climate technology to developing countries, support was lent to a ‘Declaration on Intellectual

Property and Climate Change', modelled after the Doha Declaration on TRIPS and Public Health, as a possible starting point for finding consensus on the issue.

A number of reasons were also identified as to why financial assistance to developing countries has not been effective. These include lack of coherence and coordination; issues relating to transparency and measuring, reporting and verification of climate finance; impediments to access to available finance by developing countries; weak political will on the part of developed countries to scale up climate finance; and, duplication of roles and institutions in relation to climate finance. Practical ways of addressing these challenges were suggested. The provisions of the Paris Agreement on finance and technology were criticised for their non-robustness and for not meeting the expectations of a climate change agreement negotiated in the twenty-first century following over two decades of experience from the UNFCCC and the Kyoto Protocol. However, the Agreement was commended for its comprehensive provisions on transparency and review.

Sustainable economic development of developing countries was identified as a crucial element in attaining the greenhouse gas stabilisation objective of the UNFCCC, and that the ineffective nature of the frameworks governing technology transfer and financial assistance has made attainment of sustainable development in developing countries an ongoing impossibility.

Following the conclusions from this chapter, the final chapter will suggest ways of strengthening the Paris Agreement for effective transfer of technology and financial assistance to developing countries; and also expound alternative tripartite framework that should be considered in any event the Paris Agreement does not lead to the desired transformation of the international climate change legal regime on transfer of technology, financial assistance and sustainable development of developing countries.

CHAPTER 5

CONCLUSION, RECOMMENDATIONS AND OUTLOOK

5.1 Key Findings

Climate change is truly a global problem. To effectively address climate change, global change of behaviour remains an imperative. To exact the change of behaviour required to reduce greenhouse gas emissions drastically, the international community of states that primarily control and order societal behaviour through law and policy occupy position of ultimate responsibility. Following from this responsibility, states adopted the UNFCCC at the Rio Conference in 1992, the Kyoto Protocol in 1997, and the Paris Agreement in 2015.

Under the UNFCCC, the Kyoto Protocol, and the Paris Agreement, and based on the principle of common but differentiated responsibilities and respective capabilities (CBDRRC), all the states comprising the global community share a common responsibility to work towards solving the climate change problem, however, owing to comparative advantage of developed countries over developing countries in terms of economic and technological capacity, developed countries are to transfer technology and render financial support to developing countries to enable the latter deal with the adverse effects of climate change, and embrace sustainable development.

Underlining the justification for CBDRRC, which anchors the differentiated responsibility placed on developed countries vis-a-vis developing countries, is the fact that developed countries are undoubtedly historically responsible for the climate change problem owing to centuries of fossil fuel driven economic industrialisation. Nonetheless, with the rising greenhouse gas emissions in developing countries, especially China and India, the common responsibility and respective capabilities aspects of CBDRRC are now assuming relevance

based on the premise that while historical responsibility refers to activities undertaken in the past without any benefit of hindsight that greenhouse gas emissions will lead to climate change in the future, the present and the future with respect to the impacts of emissions are now known and predictable.

Thus, developing countries ought to take steps toward reducing their own emissions. While this view seems unassailable from the perspective of investing every effort needed to address climate change now and in the future, it does demand huge sacrifices from developing countries – sacrificing the all-important 'carbon space'[1] needed to attain economic development and eradicate poverty. As exacting as the demand on developing countries in this respect proves to be, it is not an inherently impossible task to achieve. However, for developing countries to trade their entitlement to emit-to-develop as developed countries did in the past, developed countries ought to effectively provide support in the form transfer of technology and financial assistance to facilitate low-carbon or zero-emission economic development in developing countries. The obligation of developed countries to provide the support was first created by the UNFCCC, and later reflected in the Kyoto Protocol, and now further confirmed in the Paris Agreement.

So have developed countries effectively performed their obligation? Has the international legal regime governing transfer of technology and financial assistance to developing countries been effective? This is exactly what this thesis set out to investigate. Now, I will briefly recap my findings chapter by chapter with a view to re-establishing the basis for answering the research question.

[1] See Hans Opschoor, "Sustainable Development and a Dwindling Carbon Space" (2010) 45(1) *Environmental and Resources Economics*, 3-23. See also, Lavanya Rajamani, "Ambition and Differentiation in the 2015 Paris Agreement: Interpretative Possibilities and Underlying Politics" (2016) 65:2 *International and Comparative Law Quarterly,* 493-514, 496.

As stated in the beginning under the section that elaborated the research question, the stabilisation objective of the UNFCCC as set out in Article 2 serves as the main criterion upon which an answer to the question whether the international regime governing climate has been effective in transferring technology and rendering financial assistance to developing countries will be based, owing to acute limitations inherent in tracking climate technology and finance. Among other objectives of the UNFCCC, the stabilisation objective captures every other interest of the parties – mitigation, adaptation, capacity-building, technology, finance, etc.

After the introduction chapter, chapter two evaluated the international legal regime governing climate change with a view to establishing how effective it has been in supporting the attainment of the stabilisation objective of the UNFCCC. It was found that the regime has not been effective. The main shortcoming of the regime remains the failure to attain the ultimate objective of the UNFCCC as enshrined in Article 2: "to stabilise greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system".

While the UNFCCC represents a 'rallying' treaty with no binding emission reduction obligation on the parties, the Kyoto Protocol which imposed legally binding emission reduction commitments on developed countries fell short of achieving the objective of the UNFCCC. Although, individually and collectively, developed countries that participated in the first commitment period of Kyoto till the end achieved their targets, the first commitment period produced no impact on reduction of emissions globally.[2] The overall result is that global emissions of GHGs have increased significantly over the last two decades (IPCC

[2] See Igor Shishlov, Romain Morel and Valentin Bellassen "Compliance of the Parties to the Kyoto Protocol in the First Commitment Period" (2016) 16:6 *Climate Policy*, 768-782, 775. See also Michael Grubb, "Full Legal Compliance with the Kyoto Protocol's First Commitment Period – Some Lessons" (2016) 16:6 *Climate Policy*, 673-681.

2013-14). Some of the reasons why the Kyoto Protocol has not been effective include non-inclusion of major greenhouse gas emitting countries, especially the USA and China; flexibility mechanism bedevilled with significant shortcomings; and, a flawed enforcement and compliance mechanisms.

While the adoption of the Paris Agreement, and the Agreement taking effect late 2016, represent positive developments in the international governance of climate change, whether the Agreement will solve the deficiencies of the Kyoto Protocol remains largely unknown. Although the Agreement broke new grounds in a number of ways, especially the NDC framework applying to all parties in contradistinction with the Kyoto Protocol which applied only to developed countries, the NDC framework may also end up being the weakest point of the Paris Agreement, notwithstanding the Agreement's normative expectations of "progression" and "highest possible ambition". This conclusion is informed by the gap between the national contributions so far submitted by the parties and what is required to attain the temperature goal of the Agreement. This inherent weakness of the NDC has led to a call for further minilateral agreement to be negotiated within the Paris Agreement by major emitters of greenhouse gases.[3]

Chapter three assessed the relationship between developing and developed countries with specific reference to the central or main obligations, obligations relating to implementation, and obligations pertaining to technology transfer and financial assistance. The relationships between developing and developed countries under the climate change regime are founded on the principle of differentiation as originally enshrined in Principle 7 of the Rio Declaration. Under the UNFCCC, Principle 7 of the Rio Declaration metamorphosed into the principle of common but differentiated responsibilities and respective capabilities, which primarily

[3] Charlotte Streck, Paul Keenlyside and Moritz von Unger, "The Paris Agreement: A New Beginning" (2016) 13 Journal of European Environmental & Planning Law, 3-29, 28.

defines the relationships between developing and developed countries to the effect that: the global nature of climate change calls for the widest possible cooperation by all countries in accordance with their common but differentiated responsibilities and respective capabilities and their social and economic conditions.[4] Accordingly, developed country parties should take the lead in combating climate change,[5] and that the specific and special needs of developing country parties should be given full consideration.[6]

CBDRRC underscores the vast disparity between developing and developed countries – economically and technologically. It also underscores the bigger contribution to global environmental problems by developed countries through past fossil fuel driven industrialisation. CBDRRC also recognises the fact that developed countries command far more resources to expend on environmental problems than developing countries; that developing countries require all the resources they can muster to tackle poverty and under-development; and that technology transfer and financial assistance from developed countries to developing countries are indispensable if global environmental problems, especially climate change, are to be dealt with effectively.

The justification for retaining the CBDRRC principle in future climate change governance arrangements lays in the fact that the major reasons necessitating differentiation of responsibilities between developing and developed countries *ab initio* remains even today. To this end, the recognition of CBDRRC by the Paris Agreement is a welcome development. However, differentiation as practiced under the UNFCCC and the Kyoto Protocol no longer obtains following the nuanced and dynamic approach of the Paris Agreement. The Paris Agreement employment of the qualifier: "in the light of different national circumstances" represents the core of the Agreement's deviation from CBDRRC under the UNFCCC;

[4] UNFCCC Preamble, para. 6
[5] Ibid, Art .3.1
[6] Ibid, Art. 3.2.

however, caution is advised in interpreting the qualifier in order to avoid untoward consequences, especially from the standpoint of developing countries. Thus, while it may be justified to interpret the qualifier strictly against big and high GHG emitting developing countries, especially the emerging economies, such justification may be difficult to sustain with respect to smaller and capacity-constrained developing countries that depend mostly on financial assistance and technology transfer from developed countries in order to undertake climate change mitigation and adaptation measures.

Differentiating between developing countries for the purposes of applying the qualifier will surely pose some problems when implementation of the Paris Agreement gets underway considering that the Agreement offers no clue as to what should be considered in applying the qualifier. Although CBDRRC cannot be said to have been effective in ordering the relationship between developing and developed countries as it has neither led to the realisation of the stabilisation objective of the UNFCCC nor succeeded in placing developing countries on a sustainable economic development path through transfer of technology and financial assistance, it remains essential in defining the relationship between developing and developed countries in the international legal regime governing climate change.

In chapter four, a critical analysis of the climate change legal regime governing transfer of technology and financial assistance to developing countries was undertaken with a view to establishing its effectiveness or otherwise. It was found that although technology has been transferred and finance supplied by developed countries in line with their treaty obligations, current effort remains inadequate to attain the stabilisation objective of the UNFCCC and achieve sustainable development in developing countries.

Technology development and technology transfer remain central to implementation of multilateral environmental agreements (MEAs) in developing countries. This is especially the

case in the climate regime considering that a move away from high GHG polluting activities in developing countries requires development and transfer of low carbon technologies to developing countries by developed counties pursuant to the obligation placed on the latter by the UNFCCC. However, while low GHG emitting technologies have been transferred to developing countries under the UNFCCC, especially through the clean development mechanism (CDM) in fulfilment of the mechanism's objective of assisting developing countries attain sustainable development, the rate and frequency of technology transfer remain inadequate leading to continuing rise in GHG emissions in developing countries. Thus, the international climate regime governing transfer of technology to developing countries has not been effective due to the fact that the large-scale technology transfer requisite for placing developing countries on a sustainable development path has not been achieved in the over two decades of international climate change diplomacy.

Furthermore, it was found that intellectual property rights (IPRs) continue to pose a barrier to transfer of climate-friendly technology to developing countries, notwithstanding contentions to the contrary. The issue of IPRs constituting barrier to technology transfer to developing countries remain a sticking point between developing and developed countries since the negotiations leading to the adoption of the UNFCCC. Reaching consensus on the issue remains elusive as developed countries continue to maintain their original stance that issues relating to IPRs are inherently private rights issues that fall outside developed countries' precinct of authority. Developing countries, on their part, insist that solution to IPRs as a barrier to transfer of climate technologies must be found for the attainment of the technology transfer objectives of the climate regime to be possible. To set a further international forum for a dialogue on IPRs and climate technologies between developing and developed countries, this thesis supports a 'Declaration on Intellectual Property Rights and Climate

Change', in line with the Doha Declaration on Trade-Related Aspects of Intellectual Property Rights (TRIPS) and Public Health.

With respect to financial assistance to developing countries, it was emphasised that the role of financial assistance to developing countries is to aid implementation of obligations under MEAs, considering that developing countries lack the financial capacity to effectively implement MEAs compared with developed countries. Consequently, the obligation placed on developed countries by the climate regime to render financial assistance to developing countries to enable the latter effectively implement their obligations under the regime remains justifiable and crucial to the success of the regime. However, although financial assistance has been rendered by developed to developing countries under the climate regime, the financial needs of developing countries to meet their mitigation and adaptation obligations remain unmatched by developed countries, leading to the regime being adjudged ineffective.

A number of reasons were identified as to why the regime has not been effective.[7] These include lack of coherence and coordination; issues relating to transparency and measuring, reporting and verification of climate finance; impediments to access to available finance by developing countries; weak political will on the part of developed countries to scale up climate finance; and, duplication of roles and institutions in relation to climate finance.

For instance, with respect to scaling up of climate finance, while independent international bodies estimate present and future climate finance in upper USD billions and significant trillions,[8] the UNFCCC system is still setting a floor of USD100 billion from 2025.[9] The

[7] See generally Alexander Thompson, "The Global Regime for Climate Finance: Political and Legal Challenges" in Cinnamon P. Carlarne, Kevin R. Gray and Richard G. Tarasofsky (eds.,) *The Oxford Handbook of International Climate Change Law* (Oxford University Press, Oxford, 2016), 137-160.

[8] For instance, In 2016, the IEA reported that to achieve the 2°C temperature goal $35 trillion is needed for energy efficiency improvement globally by 2040, while the World Economic Forum estimates that by 2020 $5.7 trillion will have to be invested annually in developing countries to enable a shift to green infrastructure as well as mobilizing at least additional $700 billion to attain the 2°C emission stabilization goal (which increases

provisions of the Paris Agreement on finance and technology were criticised for their non-robustness and for not meeting the expectations of a climate agreement negotiated in the twenty-first century following over two decades of experience under the UNFCCC and the Kyoto Protocol. However, the Agreement was commended for its comprehensive provisions on transparency and review.

Sustainable economic development of developing countries was identified as a crucial element in attaining the greenhouse gas stabilisation objective of the UNFCCC, and that the ineffective nature of the frameworks governing technology transfer and financial assistance has made attainment of sustainable development in developing countries an ongoing impossibility.

Thus, the research question set out by this thesis in the first chapter: Has the international climate change legal regime governing transfer of technology and financial assistance to developing countries been effective? – has been answered in the negative. Technology transferred, and financial assistance rendered, under the regime have not been adequate to actualize the stabilization objective of the UNFCCC and achieve sustainable development in developing countries.

Attaining the stabilisation objective in developing countries entails emission reduction to a level that leads to prevention of dangerous interference with the climate system. Latest IPCC Report confirms that global emissions continue to rise, and that emissions outputs from developing countries are skyrocketing (AR5). As a reference point, in 1992, when the UNFCCC was adopted, developed countries were acknowledged to be responsible for 'the

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to $14 trillion by 2030). See International Energy Agency (IEA), *World Energy Outlook* 2016, Executive Summary, 5; and, World Economic Forum, *The Green Investment Report*, Geneva 2013, 13 – 14.

[9] Decision 1/CP.21, para. 54.

largest share of historical and current global emissions'.[10] What is the situation after over two decades of the international climate change regime?

According to latest WRI CAIT Climate Data Explorer,[11] the top ten highest emitters of GHG in gross terms globally are China, United States, India, Russian Federation, Indonesia, Brazil, Japan, Canada, and Mexico. Notably, unlike in 1992, five non-Annex I developing countries are now in the top ten highest emitters of GHG, with China, which still belongs to developing country category under the UNFCCC, the overall highest emitter. Moreover, it has been projected that by 2050, developing countries will surpass developed countries in cumulative historical emissions, if the current emissions trend continues.[12] Thus, the technology transfer and financial assistance regime has not been effective in assisting developing countries implement the UNFCCC to be on course to attain its ultimate emission stabilisation objective.

With the years of the Kyoto Protocol now numbered following the coming into effect of the Paris Agreement, I will now suggest ways of strengthening the Paris Agreement, not only for effective transfer of technology and financial assistance to developing countries, but also with respect to attaining the stabilisation objective of the UNFCCC which also encompasses achieving the long-term temperature goal of the Agreement. As stated in the first chapter, the stabilisation objective of the UNFCCC and the obligation relating to technology and financial support go *in tandem.* With respect to developing countries, one cannot be attained in isolation of the other.

[10] Preamble, para. 3

[11] CAIT Climate Date Explorer, World's top ten emitters <http://www.wri.org//blog/2014/11/6-graphs-explain-world%E2%80%99s-top-10-emitters>

[12] See D S Ward and N M Mahowald, "Contributions of developed and developing countries to global climate forcing and surface temperature change" (2014) 9 *Environmental Research Letters*, 1-10.

5.2. Strengthening the Paris Agreement

5.2.1 Nationally Determined Contributions (NDCs)

The Paris Agreement has been criticised for lacking a formula for bridging the emissions gap inherent in the NDCs submitted by parties[13] taking into account the emission reduction required to attain the long-term temperature goal of "Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels".[14] The fact that the NDCs submitted by the parties as at the time of adoption of the Paris Agreement in 2015 did not add up to the level needed to be on track to achieving the temperature goal of the Agreement was noted by the Paris COP in its decision adopting the Agreement,[15] leading to the COP requesting the UNFCCC Secretariat to update the 2015 synthesis report in 2016 to cover the NDCs submitted by parties as of April 4 2016.[16]

However, the updated report made no difference to the earlier one notwithstanding the additional NDCs from parties which were not covered in the 2015 report.[17] Of course, this thesis appreciates the intention behind "progression" and the "highest possible ambition" clauses present in the Agreement, however, the possibility of Parties to the Agreement making ambitious contributions required to attain the long-term temperature goal of the Agreement in the future seems a herculean task.

[13] Meinhard Doelle, "The Paris Agreement: Historic Breakthrough or High Stakes Experiment?" (2016) 6 *Climate Law*, 1-20, 9.
[14] Art. 2
[15] Decision 1/CP. 21, para. 17.
[16] See UNFCCC, Aggregate effect of the intended nationally determined contributions: an update. Synthesis report by the Secretariat (2 May 2016), FCCC/CP/2016/2.
[17] See the aggregate effect of the 2016 update on the long-term temperature goal of the Agreement in the sub-chapter – 'Fundamental Provisions of the Paris Agreement' under Chapter 2.

To support the preceding conclusion, negotiation of further agreements between major emitters has been suggested as one possible way of closing the emissions gap.[18] Such "bilateral or plurilateral agreement" among major emitters can be accommodated within the Agreement as the flexibility to do so exists.[19] While this suggestion is indeed a viable option for closing the emission gap, it is submitted that the NDC framework of the Paris Agreement should have been based on a global emissions budget, even if not binding to attract wide participation.

Such global budget will be based on a reduction benchmark set by the IPCC based on current climate science (say 2°C or 1.5°C limit above pre-industrial era as already reflected in the Paris Agreement), based upon which states parties will be invited to make national contributions consistent with the set budget. Contributions forwarded by states will be pooled and reviewed (something in the nature of the UNFCCC synthesis report on the NDCs in 2015 and 2016) until the set budget is reached. Following the first set of contributions, it will be clear to the parties, other stakeholders, and non-governmental organisations, which country or countries are lagging behind in making deserving contributions[20] based on objective criteria such as capacity, historical, current and projected future emissions, and commensurate political and media pressures applied on such countries to review their contributions upwardly.

This way, the increasing emissions in emerging developing countries will be sufficiently accounted for, thereby making mitigation every country's business. This is a viable way of

[18] Streck, *et al*, above n 3, 28.
[19] Ibid.
[20] Of course, some NDCs submitted by parties to the Paris Agreement have been deemed inadequate and unambitious. See the Climate Action Tracker (CAT), Tracking (I)NDCs <http://www.climateactiontracker.org/> NDCs deemed 'inadequate' include those of Argentina, Australia, Canada, Japan, Chile, New Zealand, Russia, Saudi Arabia, Singapore, South Africa, South Korea, Turkey, UAE, and Ukraine. Those deemed to be in the 'medium' range include those of Brazil, China, India, Indonesia, Kazakhstan, Mexico, Norway, Peru, Philippines, Switzerland, and the USA. Those adjudged 'sufficient' include those submitted by Bhutan, Costa Rica, Ethiopia, Gambia, and Morocco. CAT marked some countries as "we do not rate", for example, Nepal.

making the NDC framework of the Paris Agreement effective from day one. Like the proposal on major emitters negotiating further agreements within the Paris Agreement to close the emission gap, the emissions budget option can also be accommodated in the Agreement in its present form following an amendment under Article 15 of the UNFCCC and Article 22 of the Agreement. Since the voluntary nature of the NDCs will still be retained under the emissions budget option, parties to the UNFCCC will likely not object to the amendment. The benefit of this option is that while it preserves the voluntary nature of the NDCs, it gives parties a benchmark to aspire to from the beginning. Thus, states that are fearful of substantive binding emissions reduction obligation will have nothing to worry about. If, as expected, the NDC framework of the Agreement proves too weak, this option stands a chance of strengthening the mitigation framework of the Agreement.

5.2.2 Financial Assistance

The same budget approach can be utilised for climate finance - for instance, a "global climate finance budget", but with a slight difference. Considering that the gap between finance being supplied presently and the estimates projected by institutions outside the UNFCCC is quite significant, as indicated above and in chapter four, setting an actual budget through a dedicated independent international institution (just like IPCC for mitigation, etc.) seems a viable option. Such international institution can undertake a region by region assessment of what climate finance is needed each year and based on the outcome set an annual global budget that parties will use as a guide in making contributions. Of course, there is the possibility that parties may not meet the budget in their annual voluntary contributions; however, the system will serve as a known international platform for ascertaining what amount is required globally to pursue mitigation and adaptation measures each year, especially in developing countries.

The current system where developed countries arbitrary set financial targets for themselves without any reference point isn't just working. Scaling up of climate finance[21] based on the actual needs of countries ought to be accorded due weight under the Paris Agreement. Of course, any contribution by developed countries or any other country will remain voluntary; however, a budget-based contribution stands a chance of proving more effective than the extant practice.

Moreover, the issue of discordant climate finance estimates from diverse institutions and bodies without any back-up statistics or methodology as to how they arrived at the estimates can be confusing as well. Having a system like the one proposed will surely reduce the confusion. How would the proposal be brought into the Paris regime? This might not necessary require an amendment of the Agreement at first instance.

The Conference of the Parties serving as the Meeting of the Parties to the Paris Agreement (CMA) can appoint and mandate an independent international institution that will undertake the task through a decision of the COP. Considering that multilateral environmental agreements seldom confer on their COPs the power to make decisions that are legally binding,[22] in this case a normal non-legally binding decision of the CMA appointing such an institution would be sufficient.[23] The role to be performed by the institution will be purely advisory, just like IPCC's role. The designated institution can be one of the renowned

[21] See Alexander Zahar, "The Paris Agreement and the Gradual Development of a Law on Climate Finance" (2016) 6 *Climate Law*, 75-90; Yulia Yamineva, "Climate Finance in the Paris Outcome: Why Do Today What You Can Put Off Till Tomorrow" (2016) 25(2) *Review of European Community & International Environmental Law*, 174-185.

[22] See J. Brunee, "COPing with Consent: Law-Making under Multilateral Environmental Agreements" (2002) 15:1 *Leiden Journal of International Law*, 1-52.

[23] Moreover, issues relating to the legal character or bindingness of the Paris Agreement and some of its provisions remain subjects of controversy. See generally Daniel Bodansky, "The Legal Character of the Paris Agreement" (2016) 25(2) *Review of European Community & International Environmental Law*, 142-150; Sebastian Oberthur, "Legal Form and Nature of the Paris Outcome" 6 *Climate Law*, 40-57; [23] David A. Wirth, "Cracking the American Negotiator's Hidden Code: United States Law and the Paris Agreement" (2016) 6 *Climate Law*, 152-170; Anne-Marie Slaughter, "The Paris Approach to Global Governance" Project Syndicate, Sustainability & Environment (28 December 2015).

international accounting or auditing firms, with the requisite expertise to carry out the assessment and publish its report.

5.2.3 Transfer of Technology

As noted earlier in chapter four and in this chapter, notwithstanding the new but yet to be constituted technology framework created by the Paris Agreement,[24] the provisions of the Agreement on technology lack robustness and specificity needed to address extant impediments to technology development and transfer to developing countries. For instance, although "facilitating access to technology"[25] was mentioned in the Agreement and reference to "enhancement of enabling environments for and the addressing of barriers to the development and transfer of socially and environmentally sound technologies" made in the COP decision,[26] no substantive provision of the Agreement dealt with the important issue of barrier to transfer of technology to developing countries.[27]

Likewise, apart from the decision relating to linkages between the Technology Mechanism and the Financial Mechanism of the Convention,[28] the Agreement and the COP decision are silent on actual "technology commitment"[29] to developing countries. Although the obligation of developed countries to provide "support" to developing countries to implement the Agreement covers finance, technology and capacity-building,[30] a degree of specificity on technology commitment of developed countries in financial terms is highly recommended.

[24] See Decision 1/CP.21, para. 68; Art. 10.4 of the Agreement
[25] Art. 10.5 Paris Agreement.
[26] Decision 1/CP.21, para. 68(d).
[27] Matthew Rimmer, *Intellectual Property and Climate Change – Inventing Clean Technologies* (Edward Elgar, UK, 2011).
[28] Decision 13/CP.21.
[29] Ross Garnaut, *The Garnaut Climate Change Review: Final Report* (Cambridge University Press, Melbourne, 2008), 221.
[30] See Art. 4.5 Paris Agreement.

Thus, with respect to technology under the Paris regime, the CMA should consider pronouncements on an actual technology commitment by developed countries. The idea of lumping together the support provided by developed countries to cover finance, technology and capacity-building[31] should be revisited. For instance, no such thing exists under extant regime as technology fund, capacity-building fund, etc., although it must be stated that the different funds discussed under climate finance in chapter four perform multiple roles. For the sake of clarity and efficiency, the current climate financing architecture should be unbundled.

Secondly, intellectual property rights (IPRs) as a barrier to transfer of technology to developing countries was not pointedly addressed under the Paris Agreement. The Paris CMA should also take further steps on the issue building on COP 21 decision to enhance development and transfer of technology through the Technology Mechanism.[32] Further collaboration with relevant international organisations like the World Trade Organisation (WTO) may be necessary to give the issue the level of international attention it requires.[33]

The suggestion for a Declaration on Intellectual Property Rights and Climate Change, in line with the Doha Declaration on the TRIPS Agreement and Public Health is worth exploring.[34] While the effect of such declaration on the issue may not be fully conjectured, such a declaration will surely be a good starting point for the international collaboration and consensus needed to address the problem. Such a declaration will serve to put the parties back on track for consensus building on how to resolve the problem. Currently, there exists no formal international forum for discussing the problem. The UNFCCC framework alone has proved inadequate.

[31] See Arts. 4.5, 9, 10 and 11 Paris Agreement.
[32] Decision 12/CP.21.
[33] Rimmer, above n 27, at 102.
[34] Ibid.

5.3 Outlook on a future framework: A tripartite framework for effective transfer of technology and financial assistance to developing countries

In addition to the preceding recommendations on how to strengthen the Paris Agreement, this thesis also proposes a tripartite treaty framework as a possible solution to the problem of global governance of climate change in general, and attaining the objectives of transfer of technology, financial assistance, and sustainable economic development of developing countries in particular. The tripartite framework serves as a futuristic alternative to the Paris Agreement, if the Agreement fails. In essence, the tripartite framework seeks to institutionalize transfer of technology and financial assistance to developing countries through separate protocol, which forms part of a three-prong treaty system.

The tripartite framework will consist of a broad treaty (Framework / Founding Treaty), protocol on technology (Climate Technology Development and Transfer Protocol), and protocol on climate finance (Allied Climate Finance Protocol). The tripartite system will establish a three-tier division of responsibilities on mitigation and adaptation, technology development and transfer, and climate finance and financial assistance. 'Graduation' of a country from a lower tier to the intermediate or the highest tier, especially with respect to emission reduction commitment and provision of technology and financial support, will be determined objectively – for example, increased emission output, outstanding economic and technological progress and capacity, etc. The actual constituents of the tripartite framework are laid out below.

I. Framework / Founding Treaty

As an alternative to negotiating a new framework treaty, the UNFCCC can be amended[35] taking into account developments since its adoption in 1992. In fact, it is recommended that the UNFCCC be amended to incorporate some of the 'innovative' provisions of the Paris Agreement,[36] if the Agreement proves ineffective. Amending the UNFCCC for this purpose will dispense with the need to negotiate a new broad treaty, and available resources channelled toward negotiating protocols on technology development and transfer, and on climate finance. An outstanding development since the negotiation of the UNFCCC is that of rising greenhouse gas emissions in the emerging economies, especially China and India. To deal with this, an amended UNFCCC (or a new broad treaty) should contain a three-tier division of responsibilities on mitigation (and adaptation). The three-tier arrangement will be structured as follows:

Tier 1: Developed Countries

Under the tripartite framework, developed countries are to take up binding commitment to reduce greenhouse gas emissions.[37] They can afford to do so considering their better economic and technology capacity. Moreover, historical responsibility for climate change justifies such binding obligation to cut emissions. Also, the fact that the emerging developing countries will also assume some emission reduction obligations makes this proposal realistic, making any argument regarding past controversy surrounding developed countries taking up binding commitments alone, while developing countries had none untenable. Furthermore,

[35] Article 15 of the UNFCCC provides that "any Party may propose amendments to the Convention".
[36] Notable novel provisions of the Paris Agreement include provisions on 'loss and damage' and 'periodic stocktaking'. See Articles 8 and 14 of the Paris Agreement.
[37] For instance, see the views of the Dutch Supreme Court in Urgenda Foundation v. Kingdom of the Netherlands with respect to the inadequacy of the voluntary emissions reduction target of the Netherlands till 2020. See generally, Roger Cox, "A Climate Litigation Precedent: Urgenda Foundation v. The State of the Netherlands, Centre for International Governance Innovation (CIGI) Papers, No. 79. Available online at: <https://www.cigionline.org/sites/default/files/cigi_paper_79.pdf> Accessed 16 December 2015.

the ‘graduation mechanism’ through which state parties on lower tiers can be objectively upgraded to higher tiers provides another reason why this proposal is deemed fair to all parties – developing and developed.

Tier 2: Emerging Developing Countries (‘Rich’ developing countries with reasonable annual gross GHG output)

Emerging economies, especially China and India, should undertake voluntary commitment to reduce emission under a pledge and review scheme. Some of the ‘innovative’ provisions of the Paris Agreement, especially the one on “periodic stocktaking”[38] can be adapted to ascertain periodically to what extent developing countries under this category implement their obligations. The nationally determined contributions (NDCs) framework will suit the situations of developing countries under this tier. Although it is submitted that China may be the only outstanding candidate for this category, considering that India continues to face serious development and poverty challenges, an attractive package on technology transfer and financial assistance may encourage other developing countries to want to identify with this tier.

Most developing countries with reasonable GDP per capita and sizeable annual emission output might see some benefits in doing so, for example, cooperation benefits which can be economic, political, etc. In practical terms, the BASIC,[39] BRIC,[40] or MINT[41] group of developing countries might see the benefit of taking up voluntary commitments individually

[38] Art. 15.

[39] ‘BASIC’ is an acronym for describing the alliance between the industrialising developing countries of Brazil, South Africa, India and China. On the increasing power of the BASIC nations in shaping climate change mitigation commitments, see Rowena Maguire and Xiaoyi Jiang “Emerging Powerful Southern Voices: The Role of BASIC Nations in Shaping Climate Change Mitigation Commitments” in Shawkat Alam, Samudu Atapattu, Carmen G. Gonzalez and Jona Razzaque (eds) *International Environmental Law and the Global South* (Cambridge University Press, New York, 2015), 214 -236.

[40] ‘BRIC’ represent the acronym referring to the economic alliance between developing countries of Brazil, Russia, India and China, or ‘BRICS’, when South Africa is included.

[41] The acronym ‘MINT’ refers to the growing economies of Mexico, Indonesia, Nigeria and Turkey.

to further their political and economic alignments, and to form powerful sub-groups for negotiation purposes. Although China stands out as the primary candidate for this tier, the scenario painted above may attract more developing countries to take up voluntary commitment to cut emissions.

Tier 3: Other Developing Countries

This tier will comprise developing countries considered as 'not having emerged', least developed countries (LDCs), and the small island developing countries (SIDS). This set of countries may not assume any emission reduction commitment at all. The sheer status of these countries, economically and otherwise, justifies this position. These are developing countries with the highest poverty levels; most of them occupy geographical locations that make them more prone to the adverse effects of climate change. Moreover, most of the countries in this tier generate an insignificant amount of emission owing to scant economic and industrial activities.

It should be noted that the fact that the tripartite framework does not dwell on adaptation does not mean that adaptation to climate change will not feature in the arrangement. Of course, climate change adaptation can no longer be divorced from mitigation. Moreover, adaptation to climate change primarily revolves around capacity building, financial assistance and technology transfer.

As stated earlier, the 'graduation mechanism' of the tripartite framework will ensure seamless promotion of countries from the lower tiers to the higher tiers based on objective assessment of annual gross emission output, level of economic progress and capacity, say in a decade, and other factors acceptable to the parties. As a practical example, while a call for China to assume emission reduction commitment in 1992 when the UNFCCC was negotiated would have been deemed unacceptable by many considering its level of development, emission

output, and overall wealth then, similar call today would surely be viewed differently owing to the fact that China is now the highest gross emitter of GHGs with attendant improved economic status. Thus, the objective test as to when a developing country should be 'graduated' into a higher tier will not pose much difficulty. Following from these criteria, China will most likely be the first developing country to be promoted to the first tier developed countries group.

II Climate Technology Development and Transfer Protocol[42]

The tripartite framework has Climate Technology Development and Transfer Protocol as the second arm. First, any such Protocol must establish a Climate Technology Fund (CTF) which will support research and development and facilitate diffusion of available climate-friendly technologies to developing countries. The CTF is to be administered by a Committee drawn from developing and developed countries based on a pre-agreed quota system. The Committee will have the responsibility of setting the annual budget of the Fund, recording and publicising contribution by parties, and disbursing funds towards R & D and overseeing the transfer of available technologies to member countries in need of them, especially developing countries. The technology protocol will go a long way in addressing current problems associated with funding technology development and technology transfer to developing countries, barrier to technology transfer, and tracking of transfer of climate technologies, thereby improving transparency and accountability. Further explanation of the composition of the protocol is discussed in the paragraphs below.

Second, part of the CTF can be utilised to establish and fund an International Climate Technology Institute (ICTI). Creation of such institution will afford technicians and inventors

[42] Although Cedric Philibert assessed the viability of a technology protocol in one of his writings, however, the proposal presented in this thesis differs in material respects. See Cedric Philibert, "Flexible Options for Future Action" in Velma I. Grover (ed.) *Global Warming and Climate Change: Ten Years after Kyoto and Still Counting* (vol. 2, Science Publishers, Enfield, 2008) 915-931, at 922.

from every part of the globe the opportunity of working together in a learning environment dedicated to fast-tracking the discovery of sustainable means of interacting with the Earth's atmosphere. Candidates from state parties, especially developing countries, may be admitted into the institute on annual basis, based on CTF scholarship or other pre-agreed criteria. An institution of this sort will also go a long way in contributing towards solving the problem of capacity building, especially in developing countries, by helping trained citizens of state parties to learn how to acquire, develop and utilize technologies relevant to addressing climate change. Moreover, such institution will serve as a forum for "brainstorming" on ways of finding solutions to the barriers posed by intellectual property rights to transfer of existing climate technologies.

Third, part of the CTF can be channelled towards paying private owners of climate technology rights and patents in developed countries to facilitate transfer of such technology to developing countries. Actions to be taken by developing countries receiving such technology on how to create enabling environment to facilitate transfer, especially through national legislation / regulation, will be pre-agreed in the Protocol.

Fourth, contribution to the CTF will be voluntary, however, the CTF Committee after setting an annual budget may communicate same to the parties, stating what percentage of the budget is expected from tier one and tier two countries. Tier three countries are not expected to make any contribution. The fact that contribution by the parties will be announced, or made available to the public through electronic media, will serve as a check as it will reveal which party that is not making contribution commensurate to its status. Moreover, the annual technology budget of the Committee will fill the current gap with respect to actual technology commitment in financial terms.

III. Allied Climate Finance Protocol

The third arm of the tripartite framework is the 'Allied Climate Finance Protocol'. The word "allied" is meant to signify that the current disparate categories of climate finance under the UNFCCC will be subsumed under this Protocol. The Protocol will essentially consolidate all climate funds into 'allied climate finance' with a sole operating entity. However, the different funds may retain their current names based on the functions they perform, and for administrative convenience. The sole operating entity may create internal divisions / departments to oversee individual funds. Such divisions or departments will be accountable to the sole operating entity. In essence, the Protocol will serve as a 'one-stop shop' for all climate finance contributions and administration.

The Protocol will establish a Committee with the mandate to set annual climate finance budget based on estimates for each distinct fund managed by the Protocol, taking into account mitigation and adaptation needs of parties, especially those of developing countries. Such budgets when set should be publicly announced and parties' contributions made available to the public through electronic media. The publicity aspect will aid transparency and accountability, and also contribute to addressing the measuring, reporting and verification deficiencies of the current regime. Although contributions under the allied finance protocol will be largely voluntary, except for funds with external sources of income,[43] the Committee following its annual budget may indicate what percentage of the budget is expected from individual tier one and tier two countries.[44] Again, public announcement will help put pressure on rich countries, especially developed countries that are not making contributions in proportion to their wealth. This will make for improved political will to

[43] For example, the Adaptation Fund is largely financed through the carbon market – the 2% levy on Certified Emission Reductions (CERs) from CDM projects. See Chapter 4.

[44] Tier one countries (developed countries) are expected to contribute more. Tier two countries (emerging developing countries) may contribute considerably less than tier one countries. Tier three countries ('non emerging developing countries, least developed, and pacific island countries) may contribute nothing.

contribute according to economic capacity. Moreover, the annual budget by the Committee will also fill the current gap of lack of global quantification of climate finance. Currently, developed countries arbitrarily set budgets for themselves.

Meanwhile, if a universal international carbon tax system[45] as a means of cutting emissions and generating climate finance ever becomes a reality, the three-tier system of this framework may apply to determine grades of tax responsibilities. Following from the same logic, emissions in tier one countries (developed countries) will attract more tax, while emissions in tier two countries (emerging developing countries) will be taxed less. Emissions in tier three countries (other developing countries) may not attract any tax.

As indicated earlier, a single operating entity should be appointed to manage all the funds under the Protocol. While the Committee deals with issues pertaining to budgets and contributions, the operating entity will oversee disbursement of readily available climate finance, and report and account to the Committee. It is recommended that any such operating entity must grant 'direct access' to climate funds to developing countries to avoid current high administrative cost associated with developing countries accessing some climate funds indirectly through international agencies, as mentioned in chapter four. It is also recommended that the Green Climate Fund (GCF) be utilised as the sole operating entity of the climate finance protocol. The current role being performed by the Global Environment Facility (GEF) as a parallel operating entity should be transferred to the GCF. This will assist in addressing the current problem of cohesion and coherence in the climate finance regime.

In conclusion, practically, this thesis has proposed ways of improving the international legal regime governing climate change to attain the objectives of climate change mitigation and

[45] However, it has been opined that cap-and-trade systems are superior to taxes for limiting greenhouse gas emissions. See Nathaniel O. Keohane "Cap-and-trade Is Preferable to a Carbon Tax" in Richard B. Stewart, Benedict Kingsbury, and Bryce Rudyk (eds) *Climate Finance: Regulatory and Funding Strategies for Climate Change and Global Development* (New York University Press, New York & London, 2009), 57.

adaptation through transfer of technology and financial assistance to developing countries. It should be noted that sustainable development of developing countries through transition to low-carbon means of development will naturally follow from a robust and effective regime for technology transfer and financial assistance. Thus, this thesis sees sustainable economic development of developing countries, as it relates to international climate change governance, as more of an outcome than a process. The proposed tripartite framework underlines the imperative of institutionalising transfer of technology and financial assistance to developing countries through separate protocols founded on a universal treaty. The constituent elements of the protocols proposed are determined by lessons learned from the comprehensive assessment of extant regime on transfer of technology and financial assistance, especially with respect to trackability, transparency, accountability, cohesion, coherence, measuring, reporting and verification.

The challenges and dangers posed by an increasingly warming planet owing to spiralling greenhouse gas emission will remain unsolved as long as the international climate legal regime governing transfer of technology and financial assistance remain ineffective in attaining the emission stabilisation objective of the UNFCCC and the promotion of sustainable economic development in developing countries. The expectation of every global citizen is that the Paris Agreement finally sets the international community on a path to addressing the climate change problem. However, if that expectation happens to be unrealistic in the future, one possible way of institutionalising transfer of technology and financial assistance to developing countries is by dedicating separate international legal instrument to each, as this thesis has advocated. While the proposal developed by this thesis may not be termed perfect in every material respect, it arguably provides a strong basis for any future framework, if the need for one arises.

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