

**INTERNATIONAL LAW ON CLIMATE CHANGE ADAPTATION:
HAS THE TIME COME FOR A NEW PROTOCOL?**

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It is generally agreed that irrespective of mitigation measures certain climate change impacts are inevitable and therefore nations will have to invest and implement in climate change adaptation actions. While there is some understanding about how climate change impacts will play out in the coming years, at a micro-level, the predictions are laced in uncertainty. Accordingly, climate change adaptation is an exceptional and even broader challenge than mitigation, particularly in developing nations that are struggling to find resources to meet the basic requirements of its citizenry. Climate change adaptation actions are yet to be mainstreamed in national development efforts in a majority of the developing countries. While the United Nations Framework Convention on Climate Change specifically recognises the need to support adaptation initiatives in developing countries and subsequently, over the years, several financial and other arrangements have been created to support these activities, these are nowhere near projected demands. Promises of financial support and technology transfer remain largely on paper. One important reason that has prevented the maturing of the climate change adaptation regime is the lack of a coherent body of rules and the presence of disparate funding mechanisms. Accordingly, this paper argues that there is an urgent need for an exclusive overarching protocol on climate change adaptation that will help to integrate these rules and financial arrangements, and provide normative support to the fledging regime on climate change adaptation. In the long run, this can help developing nations secure greater benefits and support efforts to mainstream climate change adaptation into their development agenda thereby move towards sustainable development.

I INTRODUCTION

Homo sapiens are generally considered to be the most adaptable among all species, as mankind has a long history of employing ingenuity and planning to mould techniques that have facilitated adaptation to diverse climatic settings.¹ Of late, due to the

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¹ Ian Burton, Elliot Diringer and Joel Smith, 'Adaptation to Climate Change: International Policy Options' (November 2006) 3 <http://www.pewclimate.org/docUploads/PEW_Adaptation.pdf>.

problems posed by climate change, an assortment of adaptation measures has been developed. These include new irrigation management techniques², crop diversification,³ rainwater harvesting,⁴ and floating gardens.⁵ Likewise, programmes like “living with floods” have been implemented, where flood-prone and similarly vulnerable communities are provided with swimming lessons and life jackets.⁶

Prior to the advent of the global warming phenomenon, humans could easily and successfully adapt to the natural climatic variations, since these were limited in space and in time.⁷ But with the shorter time scales at which climatic variations are now taking place, adaptation has become a daunting task. Complicating the situation is the expansion of human settlements into high hazard zones, placing entire communities at greater risk.⁸ The abuse of natural systems due to anthropogenic activities is already so extreme that many critical thresholds have been crossed, making these systems less resilient to climate variability and change. Thus, successfully responding to anthropogenic climate change is a challenge of unfathomable proportions.⁹

At the international level, the climate change regime built on the foundations of the *United Nations Conference on Environment and Development: Framework Convention on Climate Change* (UNFCCC)¹⁰ represents the primary response to deal with the problem. Adopted at the Rio Earth Summit in 1992, the UNFCCC provides the key platform that takes the form of a broad legal framework articulating general objectives and principles refined and developed by subsequent protocols and decisions. The UNFCCC established two primary categories of responses to the problem of climate change, namely, mitigation and adaptation. In the initial days of the development of this regime, to control the dangerous consequences of climate change, the primary focus centred on mitigation of GHG emissions. Subsequently, it became apparent that mitigation alone is not sufficient to halt the journey down the slippery slope, since temperatures will continue to rise on its present trajectory for a

Nicholas A Robinson, 'IUCN as catalyst for a law of the biosphere: Acting globally and locally' (2005) 35 *Environmental Law* 249, 257-258.

² Israel is a leader in drip irrigation that has increased water efficiency. Israel, Ministry of Environmental Protection, *Israel's Second National Communication on Climate Change Submitted under the United Nations Framework Convention on Climate Change* (Ministry of Environmental Protection, 2010) 43.

³ Martin Parry, Osvaldo Canziani and Jean Palutik, 'Technical Summary' in ML Parry et al (eds), *Climate Change 2007: Impacts, Adaptation and Vulnerability: Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2007) 23, 65.

⁴ Stephen N Ngiigi, *Climate Change Adaptation Strategies Water Resources Management Options for Smallholder Farming Systems in Sub-Saharan Africa* (The MDG Centre for East and Southern Africa, Earth Institute at Columbia University, 2009) 84.

⁵ 'Floating Gardens in Bangladesh', Practical Action: Technology Challenging Poverty: Technical Brief <<http://www.fao.org/climatechange/17849-0e277b46b31f98942e6bc81bb22319243.pdf>>.

⁶ Kevin Watkins, *Human Development Report 2007/2008, Fighting Climate Change: Human Solidarity in a Divided World* (UNDP, 2007) 165.

⁷ E Lisa F Schipper and Ian Burton, 'Understanding Adaptation: Origins, Practice and Policy' in E Lisa F Schipper and Ian Burton (eds), *The Earthscan Reader on Adaptation to Climate Change* (Earthscan, 2009) 2.

⁸ Ibid.

⁹ Ibid 1.

¹⁰ *United Nations Conference on Environment and Development: Framework Convention on Climate Change*, opened for signature 4 June 1992, 31 ILM 849 (entered into force 21 March 1994) [UNFCCC].

considerable length of time. Even if the finest and the best thought out mitigation strategies are implemented, it will still take several decades to return to benchmark emission levels that can have any significant impact to stabilise or reduce GHG emissions.¹¹ In short, a certain amount of climate change adaptation is inevitable.

All the same, it is still mitigation that will determine the nature and extent of adaptation in a given context. For instance, the more GHGs are emitted into the atmosphere, the more catastrophic will be the forces of destruction that will be unleashed, against which adaptation may prove to be absolutely useless. In such cases, the costs of adaptation will definitely be much higher and the chances of its success will be much lower. Accordingly, adaptation has to be supported by an effective mitigation programme that reduces emission of GHGs, which in turn will diminish the speed, and the overall magnitude of climate change. Thus, both adaptation and mitigation are equally important in containing climate change impacts and both are considered as necessary accompaniments in a climate change response strategy.¹²

Climate change and the enhanced green house effect are predicted to produce far-reaching and unpredictable climatic changes the world over. It will affect the integrity of a wide array of ecosystems as climate change alters hydrological, coastal, marine, forest, and agricultural regimes, replacing them with “new assemblies”.¹³ A complicated series of impacts will trigger a cascade of direct and indirect, primary and secondary stresses on ecosystems on an unprecedented scale; however it is believed that these changes will be more intense in developing countries.¹⁴ Already many of these developing countries are fraught with a number of socio-economic problems and huge populations that continue to grow as they struggle to comply with the modest targets set out by the Millennium Development Goals.¹⁵ Moreover, we only have broad predictions about possible climate change impacts and there is considerable uncertainty about their precise nature, where exactly will it occur and how we should we respond to them.¹⁶ And therefore, while there is universal agreement that nations must invest and promote adaptation actions, this is not exactly on the agenda of many of these developing nations who are hamstrung by lack of appropriate technology, capacity, and more importantly, financial resources. While at the international level, the UNFCCC stipulations on mitigation and emission control were taken forward through the Kyoto Protocol and presently the Conference of the Parties (COP) at Doha, has agreed on the rules for that second commitment period pushing forward the international mitigation regime to a second commitment period

¹¹ Donald S Lemmen and Fiona J Warren, eds, *Climate Change Impacts and Adaptation: A Canadian Perspective* (Climate Change Impacts and Adaptation Directorate, 2004) 9.

¹² Ibid 15 (noting that the changing titles of the three IPCC Working Group II assessment reports produced between 1990 and 2001, as well as a raft of other international efforts aimed at mainstreaming adaptation is evident of this shift in attitude).

¹³ JB Ruhl, 'Climate change and the endangered species act: Building bridges to the no-analog future' (2008) 88(1) *Boston University Law Review* 1, 11.

¹⁴ UNFCCC, *Climate Change: Impacts, Vulnerabilities and Adaptation in Developing Countries* (2007) 5 <<http://unfccc.int/resource/docs/publications/impacts.pdf>>.

¹⁵ While definite progress is being achieved on many fronts in reducing poverty, close to a billion people will still be living on an income that is less than 1.25 USD per day. See generally UN, *The Millennium Development Goals Report 2012* (United Nations, 2012).

¹⁶ Samuel Fankhauser, 'A Perspective Paper on Adaptation as a Response to Climate Change' (Copenhagen Consensus Center) 10.

(2013-2020).¹⁷ At the same time, the rules on adaptation remain laggard at the international level. While there is universal agreement regarding the importance of climate change adaptation, this is yet to crystallize into a dedicated legal instrument guaranteeing rights and imposing steadfast duties on member states to work the adaptation agenda.

Accordingly, this paper probes the question whether the time has to come to take a closer look at the international climate change adaptation regime and whether there is the need to develop an exclusive protocol on climate change adaptation. In developing this agenda, it is organised into four parts. Part II begins with an analysis of the concept of climate change adaptation and its various classifications. More importantly, it argues that current development activities aimed at sustainable development will be rendered superfluous unless and until states reconfigure present conceptions of sustainable development to take into account the need for climate friendly development (i.e. development that takes into account both mitigation as well as adaptation), as well. Part III is an overview of the state of development of the climate change adaptation rules at the international level. As seen earlier, all discourses at the international level on climate change solutions have centred primarily on mitigation. Consequently, the rules on adaptation are yet to attain maturity, and whatever does exist is fragmented and disparate. For this reason, this paper seeks to identify and collate the various international rules on adaptation, including the diverse funding mechanisms. Based on this foundational understanding and the current status of adaptation in international law, this study in Part IV emphasises that in light of the growing adaptation deficit which most developing countries are currently facing, the time has come to develop an exclusive protocol on climate change adaptation, one that crystallises and links together the incongruent rules and funding mechanisms, thereby helping to secure the mainstreaming of adaptation in all development efforts to secure sustainable development.

II SITUATING CLIMATE CHANGE ADAPTATION IN THE SUSTAINABLE DEVELOPMENT SCHEME

As neither the UNFCCC nor the Kyoto Protocol provides any definition of adaptation or of affiliated concepts such as adaptive capacity and vulnerability, we turn instead to the Intergovernmental Panel on Climate Change (IPCC), which, in the Fourth Assessment Report, has defined adaptation as:

[i]nitiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects. Various types of adaptation exist, e.g., anticipatory and reactive, private and public, and autonomous and planned. Examples are raising river or coastal dykes, the substitution of more temperature-shock resistant plants for sensitive ones, etc.¹⁸

Vulnerability is another critical component in the adaptation semantic. It is defined as

¹⁷ See generally UNFCCC, *Outcome of the work of the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol Draft decision proposed by the President Draft decision -/CMP.8: Amendment to the Kyoto Protocol pursuant to its Article 3, paragraph 9*, FCCC/KP/CMP/2012/L.9 (8 December 2012).

¹⁸ Alfons PM Baede, Paul van der Linden and Aviel Verbruggen, 'Annex II: Glossary' in Core Writing Team, Rajendra K Pachauri and Andy Reisinger (eds), *Climate Change 2007: Synthesis Report* (Intergovernmental Panel on Climate Change, 2007) 76.

the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity.¹⁹

Maladaptation refers to “[a]ny changes in natural or human systems that inadvertently increase vulnerability to climatic stimuli; an adaptation that does not succeed in reducing vulnerability but increases it instead”.²⁰ Another important term in the adaptation lexicon is ‘capacity’, which is society’s degree of ability to adapt to changing climatic conditions. Third Assessment Report defines it as “[t]he ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with the consequences”.²¹ Capacity is determined to a large extent by society’s access to technology and resources, the level of wealth, literacy, and institutional infrastructure.²²

There are different kinds of adaptation measures that have application to human societies and to ecosystems. In cases where measures are initiated prior to the observation of impacts (ex ante), adaptation is treated as anticipatory or proactive.²³ When adaptation measures are designed post-occurrence, they are reactive (ex post).²⁴ Where adaptation is the result of deliberate policy decisions, it is planned or proactive, and in cases where the response is spontaneous, it is treated as autonomous.²⁵ In managed systems, adaptation is generally anticipatory and planned, while in unmanaged natural systems; it is more reactive and autonomous.²⁶ Anticipatory adaptations are considered more effective and cost-efficient.²⁷ Planned adaptation for human societies can take varied forms. These include creating robust designs for infrastructure, fortifying a society’s ability to withstand a range of extreme weather events,²⁸ devising techniques to transfer risks away from communities that are vulnerable (i.e., providing for the collective sharing of losses),²⁹

¹⁹ Ibid 89.

²⁰ Robert T Watson, World Bank and Core Writing Team (eds), *Climate Change 2001: Synthesis Report* (Cambridge: Cambridge University Press, 2001) 378.

²¹ Ibid 365.

²² Burton, Diringer and Smith, above n 1, 3.

²³ 'Appendix I: Glossary' in ML Parry et al (eds), *Climate Change 2007: Impacts, Adaptation and Vulnerability: Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2007) 869.

²⁴ Lemmen and Warren, above n 11, at 10.

²⁵ A Barrie Pittock and Roger N Jones, 'Adaptation to What and Why?' in E Lisa F Schipper and Ian Burton (eds), *The Earthscan Reader on Adaptation to Climate Change* (Earthscan, 2009) 35, 37-38.

²⁶ Ibid.

²⁷ Lemmen and Warren, above n 11, at 9.

²⁸ W Neil Adger, Shardul Agrawala and M Monirul Qader Mirza, 'Assessment of Adaptation Practices, Options, Constraints and Capacity' in ML Parry et al (eds), *Climate Change 2007: Impacts, Adaptation and Vulnerability: Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2007) 717, 724.

²⁹ Patricia Park, Anthony Gallagher and Michael Galley, 'What chance adaptive coastal management for climate change? A legal dysfunction in vertical governance' (2010) 3(1) *Sea Grant Law and Policy Journal* 59, 66.

and enhancing the adaptability of vulnerable natural systems by employing setback lines.³⁰

Another important aspect of adaptation is that successful adaptation depends considerably on the availability of sufficient adaptive capacity. In most developing economies, it is often the politically, socially, and economically marginalised groups that have the least adaptive capacity. These groups may include tribal peoples, artisanal fishers, women, children, the elderly, and natural-resource-dependent communities.³¹ Circumstances such as underdevelopment, unemployment, large-scale environmental pollution, natural resource degradation, extreme poverty, gender bias, illiteracy, institutional weaknesses and widespread corruption impair adaptive capability development.³² There is also an increasing tendency in certain countries towards systematically depriving traditional communities from accessing the natural resources that they depend on for their continued existence, further hindering their adaptive capacities.³³ Such barriers can undermine the success of an adaptation process and can contribute to negative consequences. In other words, misguided efforts may result in maladaptation,³⁴ such as planting moisture-sensitive crops in drought-prone areas, constructing dwellings in flood plains, and draining wetlands to construct infrastructure.³⁵

With this synoptic overview of the fundamentals of climate change adaptation, we now proceed to examine how adaptation fits into the sustainable development landscape, arguing that if countries are to truly secure sustainable development they are to mainstream adaptation into existing development efforts.

Even though elemental principles of sustainable development could be seen in many ancient civilisations,³⁶ in modern times, this concept received its first significant recognition when the World Commission on Environment and Development, issued the 1987 landmark report entitled “Our Common Future” (the Brundtland Report),³⁷ defining it as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”.³⁸ At a conceptual level, sustainable development underscores the need to integrate environmental concerns into developmental decision-making viewing the quintessentially discrete concepts of environment protection and development as synergistic and not antagonistic forces.

³⁰ For instance, see *Coastal Regulation Zone Notification 2011* (SO19(E), India) [3].

³¹ Anne T Kuriakose, Livia Bizikova and Carina A Bachofen, *Assessing Vulnerability and Adaptive Capacity to Climate Risks: Methods for Investigation at Local and National Levels*, Social Development Working Papers (Paper No 116/May 2009) 7.

³² Barry Smit and Olga Pilifosova, 'Adaptation to Climate Change in the Context of Sustainable Development and Equity' in James J McCarthy et al (eds), *Climate Change 2001: Impacts, Adaptation, and Vulnerability* (Cambridge University Press, 2001) 877, 895-897.

³³ Ibid 899.

³⁴ See 'Annexes' in Core Writing Team, Rajendra K Pachauri and Andy Reisinger (eds), *Climate Change 2007: Synthesis Report* (Intergovernmental Panel on Climate Change, 2008) 355, 378.

³⁵ John Smithers and Barry Smit, 'Human Adaptation to Climatic Variability and Change' in E Lisa F Schipper and Ian Burton (eds), *The Earthscan Reader on Adaptation to Climate Change* (Earthscan, 2009) 15, 17.

³⁶ See opinion of Vice-President Weeramantry in, *Case Concerning Gabčíkovo-Nagymaros Project (Hungary/Slovakia)* [1997] ICJ Rep 7.

³⁷ See generally World Commission on Environment and Development, *Our Common Future* (Oxford: Oxford University Press, 1987).

³⁸ Ibid 43.

Here, the term development is provided a more comprehensive meaning replacing the context and tenor of economic development, viewing it as qualitative improvement of human life rather than a quantitative expansion of economic wealth.³⁹

To appreciate the relationship between sustainable development and climate change, it is helpful to examine the term “environment” within a sustainable development context.⁴⁰ Environment includes the climate system,⁴¹ which in turn consists of five core components: the atmosphere,⁴² the hydrosphere,⁴³ the cryosphere,⁴⁴ land surface,⁴⁵ and the biosphere.⁴⁶ To maintain the equilibrium,⁴⁷ several complex physical, chemical, and biological interactions take place between and among these systems across a wide range of space and time scales.⁴⁸ However, the enhanced greenhouse effect triggers a series of perturbations that can disrupt climate equilibrium, leading to environmental upheavals. This makes it virtually impossible to balance environmental and developmental considerations, which is the fundamental requisite in the sustainable development paradigm.⁴⁹

Climate change has the potential to impact the entire planet and all sectors of human activity. As observed by the Human Development Report, “[c]limate change may be the single factor that makes the future very different, impeding the continuing progress in human development”.⁵⁰ In a similar vein, the World Development Report also notes that, “[I]f left unmanaged, climate change will reverse development progress and compromise the well-being of current and future generations.... Impacts will be felt everywhere, but much of the damage will be in developing countries”.⁵¹ Clearly, climate change has the potential not only to upset and but to reverse the developmental gains that have been achieved over the years.⁵²

³⁹ Duncan French, *International Law and Policy of Sustainable Development* (Manchester University Press, 2005) 13-14.

⁴⁰ See World Commission on Environment and Development, above n 37, 43, 46.

⁴¹ For instance, see *Canadian Environmental Protection Act 1999* (SC) c 33, s 3(1).

⁴² APM Baede, 'The Climate System: An Overview' in JT Houghton et al, (eds), *Climate Change 2001: The Scientific Basis* (Cambridge University Press, 2001) 85, 87.

⁴³ Ibid 88. In particular, the oceans which cover approximately 70 per cent of the earth and they store and transport a large amount of energy and dissolve huge quantities of carbon dioxide. Moritz Bollmann et al, *World Ocean Review 2010: Living with the Oceans* (Maribus, 2010) 9.

⁴⁴ Baede, *ibid*.

⁴⁵ Ibid 89.

⁴⁶ Ibid.

⁴⁷ For a contrary view on non-equilibrium ecology, see John C Dernbach, *Stumbling Towards Sustainability* (Environmental Law Institute, 2002) 318-319; see also Douglas J Spieles, *Protected Land: Disturbance, Stress, and American Ecosystem Management* (Springer, 1st ed, 2010) 27-28.

⁴⁸ Baede, above n 42.

⁴⁹ Gary W Yohe and Rodel D Lasco, 'Perspectives on Climate Change and Sustainability' in ML Parry et al (eds), *Climate Change 2007: Impacts, Adaptation and Vulnerability: Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2007) 811, 813.

⁵⁰ UNDP, *Human Development Report 2010: 20th Anniversary Edition: The Real Wealth of Nations: Pathways to Human Development* (United Nations Development Programme, 2010) 102.

⁵¹ World Bank, *World Development Report 2010: Development and Climate Change* (World Bank, 2010) 36.

⁵² Ibid 40.

Given the pervasiveness and complexity of climate change, if sustainable development is to be attained as part of the requisite to ensure environmental protection, it is essential that countries reorient their development paths in ways that secure mitigation (i.e. limits on carbon-intensive growth) and adaptation. Indeed, mitigation, adaptation and sustainable development are intrinsically inter-linked, since the various hazards associated with climate change have the potential to undermine progress.⁵³ Accordingly, sustainable development requires that development should not only be environmentally friendly but “climate compatible”.⁵⁴ It is therefore essential that sustainable development initiatives explicitly consider the hazards and risks associated with climate change and seek the means to reduce the same by aggressively pursuing both mitigation and adaptation in all developmental initiatives. For example, development projects should promote climate resilience and leave the smallest possible carbon footprint.⁵⁵ In short, sustainable development becomes the optimal balance between environment and development (social and economic) that is climate-friendly. In other words, development should necessarily encompass measures that are aimed at mitigation and adaptation within the broader goal of securing environmental protection.

Within this balancing act, adaptation plays a critical, multi-faceted role in ensuring sustainable development. Climate change adaptation and sustainable development share several commonalities, such as poverty reduction, improving access to resources, and lowering inter- and intra-generational inequities.⁵⁶ When, due to uncertainty, developmental projects do not provide for adaptation, there is the possibility that the development will result in negative growth and thus prove unviable in the long run. Moreover, the choice of implementing an adaptive programme at a later stage is a more expensive prospect and, in most cases, the chances of its success are remote, since the dangers associated with climate change will have been magnified.

Adaptation, then, is essentially an extension of good development practice.⁵⁷ In situations where there is a higher level of development that is compatible with climate change related variability, there is also enhancement of adaptive capacity.⁵⁸ Conversely, where development patterns do not take into account the need for adaptation, populations are exposed to greater levels of risk, thereby undermining the ability of these groups to adapt.⁵⁹ By mainstreaming adaptation and placing it front and centre in all developmental processes, the possibility of attaining sustainable growth, diversification of economic activity, enhancement of resilience capabilities,

⁵³ See Armin Rosencranz, Dilpreet Singh and Jahnavi G Pai, 'Climate Change Adaptation, Policies, and Measures in India' (2010) 22 *Georgetown International Environmental Law Review* 575, 576.

⁵⁴ 'Defining Climate Compatible Development', *Climate & Development Knowledge Network: Policy Brief* (November 2010).

⁵⁵ See Core Writing Team, Rajendra K Pachauri and Andy Reisinger (eds), *Climate Change 2007: Synthesis Report* (Intergovernmental Panel on Climate Change, 2008) 56-62.

⁵⁶ Smit and Pilifosova, above n 32.

⁵⁷ Nicholas Stern and The Cabinet Office – HM Treasury, *The Economics of Climate Change: The Stern Review* (Cambridge University Press, 2007) 430.

⁵⁸ 'Summary for Policymakers: A Report of Working Group II of the Intergovernmental Panel on Climate Change' in James J McCarthy et al (eds), *Climate Change 2001: Impacts, Adaptation, and Vulnerability* (Cambridge University Press, 2001) 1, 12.

⁵⁹ Burton, Diringer and Smith, above n 1, 5.

and promotion of risk pooling are greatly enhanced.⁶⁰ In the following paragraphs, the principles of precaution and inter-generational equity both of which are central to sustainable development are utilised to justify climate change adaptation actions for sustainable development.

A *Precaution and Climate Change Adaptation*

As the overwhelming magnitude of climate change impacts is primarily theoretical (being yet future events), their precise nature is uncertain.⁶¹ This factor has emerged as the primary impediment to concerted action by national governments in mainstreaming and investing resources to implement climate change adaptation actions. While it may be difficult to lay down a hard and fast rule regarding when threshold levels are crossed in relation to each ecosystem, a certain amount of reliance can be placed on the principle of precaution to justify adaptation actions.⁶²

Based on the theory that it is better to err on the side of caution and prevent environmental harm, than it is to retroactively attempt to deal with irreversible harm, the precautionary principle entails that in cases where there are threats of serious or irreversible damage, lack of full scientific knowledge and certainty should not be used to postpone appropriate measures to prevent environmental harm.⁶³ In other words, from a legal perspective, the principle implies that, “once a prima facie case is made that a risk exists, then scientific uncertainty works against the potential polluter rather than, as in the past, in his/her favour.”⁶⁴ In effect, the precautionary principle provides a legal basis that lowers the threshold under which states are compelled to act to protect or prevent environmental damage even in the face of uncertainty.⁶⁵

Another important aspect of the precautionary principle is that it has led to the development of a special standard of proof in environmental cases where the burden as to the absence of the injurious effect of the proposed action falls on those who want to change the status quo.⁶⁶ In a practical sense, this amounts to a reversal of the burden of proof, since in environmental cases evidentiary burden generally falls upon those opposing the change.⁶⁷ Accordingly, when there is an identifiable risk of serious or irreversible harm (for example, the extinction of a species or widespread toxic

⁶⁰ Stern and HM Treasury, above n 57, 430.

⁶¹ For instance, see Core Writing Team, Pachauri and Reisinger, above n 55, 45.

⁶² Caroline E Foster, *Science and the Precautionary Principle in International Courts and Tribunals: Expert Evidence, Burden of Proof and Finality*, Cambridge Studies in International and Comparative Law (No. 79) (Cambridge University Press, 2011) 10-12. Charmian Barton, 'The status of the precautionary principle in Australia: Its emergence in legislation and as a common law doctrine' (1998) 22 *Harvard Environmental Law Review* 509, 512.

⁶³ *United Nations Conference on Environment and Development: Rio Declaration on Environment and Development*, 31:4 ILM 874 (adopted on 14 June 1992) [*Rio Declaration*], prin 15.

⁶⁴ David Freestone and Ellen Hey, 'Origins and Development of the Precautionary Principle' in David Freestone and Ellen Hey (eds), *The Precautionary Principle and International Law: The Challenge of Implementation*, 31 International Environmental Law and Policy Series (Kluwer Law International, 1996) 3, 13.

⁶⁵ Roda Verheyen, *Climate Change Damage and International Law: Prevention Duties and State Responsibility* (Martinus Nijhoff, 2005) 79.

⁶⁶ See also Foster, above n 62, 240.

⁶⁷ See *Case Concerning Pulp Mills on the River Uruguay (Argentina v Uruguay)* [2010] ICJ Rep 14, [160-64].

pollution), the burden of proof is placed on the person or entity proposing the activity, which is potentially harmful to the environment.⁶⁸

The "precautionary approach"⁶⁹ is one of the central tenets in the UNFCCC. Article 3.3 states:

The Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost.⁷⁰

A close reading of this provision reveals that the precautionary principle applies not only to mitigative actions but that it has equal force in adaptation measures.⁷¹ From an adaptation standpoint, application of the principle of precaution implies the following. First, states are compelled to take measures "according to their capabilities",⁷² even in the absence of conclusive evidence regarding possible future harms brought about by climate change. Scientific certainty is not needed in such cases, as the threshold levels are lowered considerably to justify adaptation actions. Second, the new burden of proof implies that in cases where there is prima facie evidence that a particular development activity may be affected by climate change impacts or that the development activity may magnify climate change impacts, then developers, and those who are interested in changing the status quo, will have to prove that the proposed activity is compatible with the environment and that adaptation to climate change impacts has been taken into account. To elucidate this point, if a developer intends to establish a seaport, then the developer has the burden to show that the possible impacts of sea level rise and extreme weather events has been considered in the port design and secondly necessary adaptation measures have been incorporated. And here, lack of scientific certainty regarding the nature and magnitude of impacts cannot be used as an excuse to postpone necessary adaptation actions. By the same token, the port and its related infrastructure should not cause

⁶⁸ See Barton, *ibid* 549.

⁶⁹ For a discussion on the principles/approach dichotomy, see Simon Marr, *The Precautionary Principle in the Law of the Sea: Modern Decision Making in International Law (Publications on Ocean Development)* (Martinus Nijhoff, 1st ed, 2003) 18; see also Jacqueline Peel, 'Precaution - A Matter of Principle, Approach or Process?' (2004) 5(2) *Melbourne Journal of International Law* 483.

⁷⁰ UNFCCC, above n 10.

⁷¹ Verheyen, above n 65, 74. See also *Draft Decision -/CP.18: Further Guidance to the Least Developed Countries Fund (Advance Unedited Version)* <http://unfccc.int/files/meetings/doha_no_v_2012/decisions/application/pdf/cmp8_lossanddamage.pdf> [*Draft Decision -/CP.18: Further Guidance*] ("[r]eaffirming the need for Parties to take precautionary measures, ... to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects, and underlining that the lack of full scientific certainty should not be used as reason for postponing action").

⁷² *Rio Declaration*, above n 63; see also *Advisory Opinion on Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area*, (No 17 of 2011) The Seabed Disputes Chamber of the International Tribunal for the Law of the Sea [129] ("...by stating that the precautionary approach shall be applied by States "according to their capabilities", the first sentence of Principle 15 introduces the possibility of differences in application of the precautionary approach in light of the different capabilities of each State").

significant or harmful alterations to ecosystems and habitats, such as the clearing of mangroves or destruction of wetlands, as these activities may precipitate and magnify climate change impacts, like storm surges and coastal erosion.

Given the uncertainties and the fast pace of changes associated with climate change, the precautionary principle is increasingly utilised in developmental decision-making (including in judicial, quasi-judicial and tribunal proceedings), particularly in the context of sea level rise and its consequences on coastal environments in certain domestic jurisdictions. This principle has been applied to, for instance, refuse licenses to extract groundwater from coastal aquifers,⁷³ to emphasise the need for a coastal hazard vulnerability assessment for a permit application for dwellings,⁷⁴ to raise the floor level of buildings,⁷⁵ and to decide the appropriateness regarding the sub-division of a lot to provide for a second one.⁷⁶ The precautionary principle has also been applied as grounds for refusal to use and develop a dwelling and remove vegetation from a land located on an isolated peninsula,⁷⁷ and to restrain development on land abutting coastal wetlands.⁷⁸ In light of these applications, it is now not a stretch to say that it is vital that decision-makers utilise the precautionary principle to factor in global warming and climate change while planning for development.⁷⁹

B *Inter-generational Equity and Climate Change Adaptation*

For long, the opulent model, which supports the rapacious exploitation of natural resources was the predominant paradigm implying that the present generation can consume all natural resources without any caps on its exploitation and use them to generate as much wealth as is necessary, since there is no certainty regarding the future.⁸⁰ This stands in contrast to the preservationist view, which, if stretched to its logical extreme, implies continuance of the status quo. In balancing both these perspectives, it is widely acknowledged that the judicious exploitation and utilisation of natural resources should contemplate the interests of future generations. In other words, preservation of the environment and its natural resources – “our common patrimony” – should necessarily focus on the future.⁸¹ The idea that the choices that we make today will have a profound impact on what our future generations will

⁷³ See *Alanvale Pty Ltd v Southern Rural Water* [2010] VCAT 480; see also *Paul v Goulburn Murray Water Corporation* [2010] VCAT 1755.

⁷⁴ *Owen v Casey CC* (includes Summary) (Red Dot) [2009] VCAT 1946; see also *Cooke v Greater Geelong CC* [2010] VCAT 60.

⁷⁵ *Cadzow Enterprises Pty Ltd v Port Phillip CC* [2010] VCAT 634; *Suburban Blue Print Pty Ltd v Hobsons Bay CC* [2010] VCAT 1272.

⁷⁶ *Myers v South Gippsland SC* (includes Summary) (Red Dot) [2009] VCAT 1022; *Myers v South Gippsland SC (No 2)* (includes Summary) (Red Dot) [2009] VCAT 2414 [*Myers v South Gippsland (No 2)*].

⁷⁷ *West Gippsland Catchment Management Authority v East Gippsland SC* [2010] VCAT 1334.

⁷⁸ *Wade v Warrnambool CC* [2009] VCAT 2177.

⁷⁹ “[T]he precautionary approach is an accepted principle in coastal decision making”. Melbourne Water, *Planning for Sea Level Rise: Assessing Development in Areas Prone to Tidal Inundation from Sea Level Rise in the Port Phillip and Westernport Region* (Melbourne Water Corporation, 2010) 11.

⁸⁰ Edith Brown Weiss, *In Fairness to Future Generations: International Law, Common Patrimony, and Intergenerational Equity* (Transnational Publishers, Inc, 1989) 23 [Weiss, *Fairness to Future Generations*].

⁸¹ *Ibid* 23.

experience is encapsulated in the principle of inter-generational equity, which represents the inter-temporal dimension of sustainable development.⁸²

The principle of intergenerational equity is rooted in a compact between the present and future generations, wherein the present generation is bound by a “fiduciary duty” based on “planetary trust” to pass on the environment and natural resources which they inherited from previous generations in a manner that is no worse off than what they received.⁸³ In bequeathing the environment and the resources to future generations, there should be no compromise on its nature and quality that would restrict the ability of future generations to utilise the environment and natural resources to their benefit.⁸⁴ In other words, in requiring the formulation and implementation of specific duties and obligations in respect to future generations, inter-generational equity mandates “conservation of options”, “conservation of quality” and “conservation of access.”⁸⁵

Inter-generational can also be relied to justify climate change adaptation actions.⁸⁶ And what this implies is that states must re-orient actions to implement necessary adaptation measures to ensure that the development comports to climatic changes over longer time scales. Prominent examples include the construction of the Confederation Bridge that connects Prince Edward Island with mainland Canada, and the Qinghi-Tibet railroad. Sea level rise was recognised as an area of concern in the construction of the Confederation Bridge and therefore it has been built one meter higher than currently required to accommodate the rising sea over its 100-year life span. Five hundred kilometres of the Qinghi-Tibet railroad is situated nearly 4,000 meters above sea level on permafrost. Given that temperatures are rising, a combination of cooling and insulations systems has been put in place to ensure that the permafrost absorbs minimum heat.⁸⁷ Both offer excellent examples of how development projects can be designed in a manner as to take into account future climate change impacts thereby unburdening to a significant degree subsequent generations from the need to re-engineer these structures.

C Discussion

Sustainable development has evolved into a seminal principle that exerts influence over all aspects that interface between environment and development, seeking to place development on pathways that are environmentally sound. It has replaced the context and tenor of economic development, viewing it as qualitative improvement of human life rather than a quantitative expansion of economic wealth. So profound is

⁸² Alexandre Kiss, 'The Rights and Interests of Future Generations and the Precautionary Principle' in David Freestone and Ellen Hey (eds), *The Precautionary Principle and International Law: The Challenge of Implementation*, 31, International Environmental Law and Policy Series (Kluwer Law International, 1996) 19, 23.

⁸³ Edith Brown Weiss, 'The planetary trust: Conservation and intergenerational equity' (1983) 11 *Ecology Law Quarterly* 495, 499.

⁸⁴ Ibid 505.

⁸⁵ In her 1983 treatise, Edith Weiss Brown proposes three basic principles of inter-generational equity, namely the “conservation of options”, the “conservation of quality” and “conservation of access”. Weiss, *Fairness to Future Generations*, above n 80, 40–45.

⁸⁶ *Seifert v Coloc-Otway SC* [2009] VCAT 1453 [49]; see also *Taip v East Gippsland SC* (includes Summary) (Red Dot), (2010), VCAT 1222; *Myers v South Gippsland (No 2)*.

⁸⁷ Adger, Agrawala and Mirza, above n 28, 724.

its influence that it has emerged as one of the fundamental values of modern civilisation, akin to democracy, rule of law, justice, liberty, and human rights and no nation will ever want to run the risk of being antagonistic to sustainable development values and principles.⁸⁸ In fact it has emerged as a lodestar to guide the realisation of environmental soundness in all developmental actions.

The preceding discussion points out that if sustainable development is to be realised then it is essential that “win-win options” are to be promoted i.e., adaptation and mitigation aspects of climate change impacts be duly considered and provided for and in particular, these be integrated into larger developmental planning and implementation processes.⁸⁹ Mainstreaming adaptation in existing efforts aimed at, for instance, poverty alleviation, biodiversity conservation, and combating land degradation in coastal zone management can potentially produce greater sustainable results and help increase the adaptive capacities of vulnerable populations.⁹⁰

As the preceding discussion points out, despite the importance and recognition of climate change adaptation as an integral cog of sustainable development most developing countries are reluctant to broach the subject of long-term adaptation, mainly because it is simply not on their priority list. As seen earlier, adaptation in these countries have to be considered against the backdrop of a complex set of social, economic and political variables.⁹¹ They have more pressing problems, like poverty reduction and the limited amount of capital and other resources to meet the fiscal requisites of adaptation.⁹² The “long time horizon and inherent uncertainty” associated with climate change also makes adaptation an unimpressive candidate for investment.⁹³ In tune with the principles of precaution and inter-generational equity, even if legal obligations are embedded in domestic laws calling upon states to adapt, since most developing countries do not have the requisite resources and technology to facilitate and mainstream adaptation into existing development efforts, these principles will not be given juridical effect and initiatives for sustainable development may not fructify. It is in this context that the need for a comprehensive protocol on climate change adaptation is to be evaluated as it can prove to be valuable springboard that can push the adaptation agenda forward by securing necessary support to help developing nations mainstream adaptation within existing development efforts thereby securing sustainable development. As well, a specific protocol on climate change adaptation can impose legal obligations on developing nations to mainstream adaptation into existing developmental efforts.

III INTERNATIONAL ATTEMPTS AT IMPLEMENTING ADAPTATION

The starting point of any dialogue on the international legal regime on adaptation necessarily begins with the UNFCCC and the Kyoto Protocol, the central pillars of

⁸⁸ Christina Voigt, *Sustainable Development a Principle of International Law: Resolving Conflicts between Climate Measures and WTO Law* (Martinus Nijhoff, 2009) 3.

⁸⁹ The World Bank, *Adaptation Guidance Notes - Key Words and Definitions* <<http://climatechange.worldbank.org/content/adaptation-guidance-notes-key-words-and-definitions>>.

⁹⁰ Ibid.

⁹¹ Adger, Agrawala and Mirza, above n 28, 728.

⁹² JB Ruhl, 'Climate change adaptation and the structural transformation of environmental law' (2010) 40 *Environmental Law* L 364, 385.

⁹³ Smithers and Smit, above n 35, 16.

the climate change regime. Accordingly, the discussion below analyses the implications of the relevant provisions of the UNFCCC and the Kyoto Protocol for climate change adaptation. Thereafter, it provides a succinct description of the various funding mechanisms established to fund adaptation projects. The importance of other international environmental law instruments that can trigger climate change adaptation obligations relevant to the coastal zone will also be examined.

A *Adaptation under the UNFCCC and the Kyoto Protocol*

Out of a total of 26 articles, even though only one in UNFCCC text specifically refers to adaptation, the centrality of adaptation measures in combating climate change finds emphasis in a number of key articles in the UNFCCC text.⁹⁴ Article 2, which outlines the objectives of the international climate change regime, points out the need to stabilise “greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system”. Should the international community achieve the requisite stabilization, adaptation then becomes superfluous. Unfortunately, we have crossed the tipping points and past greenhouse gas emissions commit us to decades of climate change-related impacts. It is unlikely that stabilization of GHG concentrations at sustainable levels will be “achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change...”⁹⁵ A logical adjunct that can be inferred is the interpretation that the UNFCCC has an important unstated objective of promoting adaptation in countries that are particularly vulnerable to the adverse consequences of climate change.⁹⁶

At this juncture, it must be pointed out that equity lie at the very heart of the international climate change regime and it plays a significant role in determining the contours of both the mitigation and adaptation regimes. In particular, the principle of intra-generational equity is relevant. One of the most difficult to realise, due to socio-economic disparities and asymmetries in power that exists between social groups, communities and even nations,⁹⁷ it is premised on the belief that each member of the present generation has a right to access the earth’s natural resources in an equal measure like that of his/her peers.⁹⁸ Intra-generational equity is a recurring and prominent theme in the international regime on climate change, where it manifests as the common but differentiated responsibilities principle.⁹⁹ The intra-generational dimension of equity in respect of atmospheric commons is premised on the

⁹⁴ David Freestone, 'The International Legal Framework for Adaptation' in Michael B Gerrard and Katrina Fischer Kuh (eds), *The Law of Adaptation to Climate Change: U.S. and International Aspects* (American Bar Association, 2012) 603, 604.

⁹⁵ Roda Verheyen, 'The Legal Framework of Adaptation and Adaptive Capacity' in Joel B Smith, Richard JT Klein and Saleemul Huq (eds), *Climate Change, Adaptive Capacity and Development* (Imperial College Press, 2003) 163, 169.

⁹⁶ Yamin Farhana and Joanna Depledge, *The International Climate Change Regime: A Guide to Rules, Institutions and Procedures* (Cambridge University Press, 2004) 216.

⁹⁷ GF Maggio, 'Inter/intra-generational equity: Current applications under international law for promoting the sustainable development of natural resources' (1997) 4 Buffalo Environmental Law Journal 161, 163-164. *Dispute Regarding Navigational and Related Rights (Costa Rica v Nicaragua)* [2009] ICJ Rep 213, 266, [144] (holding that Nicaragua is to respect the fishing by the inhabitants of the Costa Rican bank of the San Juan River for subsistence purposes as a customary right).

⁹⁸ Rajendra Ramlogan, *Sustainable Development: Towards a Judicial Interpretation*, David Freestone (ed) 9 Legal Aspects of Sustainable Development (Martinus Nijhoff, 2011) 231, 234.

⁹⁹ *UNFCCC*, above n 10, art 3(1).

assumption that all human beings have an equal right to the common atmospheric resource and that the sharing of the carbon commons should be based on equity. Since the largest share of historical and current global emissions of green house gases has its origins in developed countries, and in line with the principle of historic responsibility, encapsulated more clearly in the common but differentiated responsibility principle, developed country parties are called upon to take the lead in combating climate change and its adverse effects.¹⁰⁰ As a necessary corollary, the implication is that developing countries are not to be unduly restricted in their access to an equitable share of the global atmospheric resource and carbon space. These themes are echoed in article 3 of the UNFCCC, which states; “the developed country Parties should take the lead in combating climate change and the adverse effects thereof”.¹⁰¹ As well,

[t]he 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.¹⁰²

A combined reading of both articles supports climate change adaptation. This is further reinforced by articles 4.3 and 4.4, which seek to give effect to these principles by mandating that annex II countries shall assist the developing country parties to cope with climate impacts, particularly to “the adverse effects of climate change in meeting costs of adaptation to those adverse effects”. Article 3.3 also has an adaptation dimension, as it calls upon parties to “take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects”.

Article 4.1(b) is described as the “pivotal commitment in the Convention”,¹⁰³ as it requires parties to “[f]ormulate, implement, publish and regularly update national and, where appropriate, regional programmes containing measures to...facilitate adequate adaptation to climate change”. Since all countries, irrespective of the degree of development (i.e. whether developed or developing), are slated to be affected, they are obliged under article 4.1(b) to formulate and implement adaptation programmes even in the wake of uncertainties.¹⁰⁴ However, the respective state parties have been given considerable leeway in determining the nature of the measures, taking into account national and regional development priorities, objectives, and circumstances.¹⁰⁵

Furthermore, article 4.1(e) requires parties to cooperate with each other in preparing to adapt to climate change impacts. Interestingly, this article emphasises the need for international cooperation in tackling the issue and it also calls upon parties to develop and expand upon appropriate adaptation specific actions, like integrated plans for coastal zone management, water resources and agriculture, protection and rehabilitation of certain areas (e.g. Africa) that are affected by drought,

¹⁰⁰ Ibid.

¹⁰¹ Ibid art 3.1.

¹⁰² Ibid art 3.2.

¹⁰³ Farhana and Depledge, above n 96, 218.

¹⁰⁴ UNFCCC, above n 10, art 3.3 (outlining the precautionary approach).

¹⁰⁵ Ibid art 4.1.

desertification, and floods. Even though this article stresses cooperation, parties are to develop these adaptive actions into their platforms, taking into account their specific national and regional development priorities, objectives, and circumstances.¹⁰⁶

Additionally, article 4.1(f) is relevant to adaptation. It provides that, where feasible, parties are to take climate change considerations into account in their relevant social, economic and environmental policies and actions. Parties are also to employ appropriate methods, such as impact assessments, to minimise the adverse effects from projects or measures undertaken by them to adapt to climate change on the economy, public health and the quality of the environment. In effect, this provision seeks to caution societies regarding the possibility of the social, economic and environmental policies and actions that do not take into account how climate change considerations degenerate into maladaptation.¹⁰⁷ Again, the use of terms “to the extent feasible” and “as formulated and determined nationally” leaves the matter of integration and the scope and application of impact assessment as issues best determined by respective state parties.¹⁰⁸

Implementing adaptation actions requires huge amounts of capital, which developing countries are rarely in a position to raise due to other compelling priorities and constraints. To this end, the UNFCCC incorporates provisions that provide for financial support to developing nations.¹⁰⁹ A related aspect is that most developing countries are presently seeking to advance to more sustainable forms of development by bypassing development phases that are driven by more polluting, less efficient, and costlier technologies. It is by employing these ineffective technologies that industrialised nations managed to traverse several cycles, which, while degrading the global commons, enabled them to attain the present economic development. By providing direct access to technologies that are more advanced, less polluting and green, developing nations can now circumvent the pollution-intensive cycles. Realistically, the challenge, then, is how we can ensure that these new technologies can be accessed, as there are restrictive technology transfer regimes, such those relating to intellectual property. The UNFCCC seeks to address these issues by calling upon developed country parties to take practicable steps to “promote, facilitate, and finance” the transfer of or access to environmentally sound technologies and know-how to other parties, particularly to developing countries to enable them to implement the terms of the convention.¹¹⁰ The term “environmentally sound technologies” is broad enough to encompass adaptation technologies.¹¹¹

Another important feature of the adaptation scheme embodied in the UNFCCC is that it underscores the need for all parties to consider the specific needs, concerns and special situations of developing country parties and the least developed countries (LDCs). Article 4.8 of the UNFCCC mandates that to meet the specific needs and concerns of developing country parties (particularly small island countries and

¹⁰⁶ Ibid.

¹⁰⁷ Farhana and Depledge, above n 96, 222.

¹⁰⁸ Ibid.

¹⁰⁹ See Part III.2, below, for a discussion on how UNFCCC secures financial assistance to developing nations for implementing its obligations.

¹¹⁰ UNFCCC, above n 10, art 4.5.

¹¹¹ Friedrich Slotau, *Fairness in International Climate Change Law and Policy* (Cambridge University Press, 2009) 195.

countries with low-lying coastal areas) arising from the adverse effects of climate change, the parties are to give full consideration as to what actions are necessary under the Convention, including those related to funding, insurance and technology transfer. The LDCs constitute a bloc of nearly 48 countries representing some of the poorest nations in the world that have the least capacity to adapt to the adverse impacts of climate change. In recognising this reality, article 4.9 provides 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”. This provision is also wide enough to facilitate adaptation actions in LDCs.

Broadly, these are the some of the salient provisions in the UNFCCC that support adaptation actions. As can be seen, these provisions are worded generally and are not adaptation specific. It does not identify clear plans that can facilitate the application of adaptation in different contexts like water management, coastal planning, forestry, and biodiversity conservation.¹¹² A considerable amount of interpretative ingenuity is required to inter-link several of these provisions to weave out a scheme that triggers adaptation. As we shall see, the situation under the Kyoto Protocol is no different. Being loaded primarily in favour of mitigation, reliance again has to be placed on creativity to support adaptation actions. Some major provisions in the Kyoto Protocol from the standpoint of adaptation are detailed below.

Articles 2.3 and 3.14 of the Kyoto Protocol require that annex I parties minimise the adverse effects of climate change and the impacts of response measures on developing country parties. These provisions, which lead to “integration of climate considerations in non-climate policy and in the greater use of tools such as EIA”,¹¹³ can also be examined from another angle. As noted earlier, the primary responsibility for emissions-induced global warming lies squarely on the doorsteps of developed countries. Moreover, by requiring annex I parties to implement measures to reduce their overall emissions of GHGs by at least five per cent below 1990 levels in the first commitment period (2008 to 2012), the Kyoto Protocol practically facilitates the successful implementation of adaptation measures in developing countries. This is so because if annex I countries persists with a 'business as usual' approach in the matter of emissions, adaptation in developing countries will be unsuccessful.

Other notable provisions include article 10(b), which requires parties to formulate, implement, publish and update programmes containing measures to facilitate adequate adaptation to climate change, and article 10(c), which requires all parties to cooperate in the promotion of effective modalities for the development, application and diffusion of environmentally sound technologies, know-how, practices and processes pertinent to climate change in particular to developing countries. The term “environmentally sound technologies” includes both mitigation and adaptation technologies within its fold. Similarly, article 10(g) requires that in implementing the commitments enumerated under this article, parties should give full consideration to article 4.8 of the UNFCCC, while article 11.1 specifies that in implementing article 10 of the Kyoto Protocol, parties have to give consideration to article 4.9 of the

¹¹² Jeffrey A McNeely, 'Symposium: A Climate of Disruption: Legal Measures for Adaptation and Mitigation: Applying the Diversity of International Conventions to Address the Challenges of Climate Change' (2008) 17 *Michigan State Journal of International Law* 123, 124.

¹¹³ Farhana and Depledge, above n 96, 223.

UNFCCC. Both articles 4.8 and 4.9 of the UNFCCC are directly relevant to adaptation. Perhaps the most important provision in the Kyoto Protocol that facilitates adaptation activities is the one that requires that proceeds from certified project activities be used to assist developing country parties meet the costs of adaptation.¹¹⁴

1 *Conference of the Parties and Adaptation: Incremental Development of the Rules*

The various COPs have played important roles in highlighting the importance of adaptation and in developing the rules. However, as will be seen in the following discussion, the COPs have not been able to create a coherent body of adaptation principles. Apart from the COPs, the UNFCCC regime has fostered the creation of an innovative mechanism to promote adaptation; namely, the Nairobi Work Programme, whose salient features are also detailed below.

One of the first COPs that dealt with the issue of adaptation is decision 5/CP.7, which implements article 4, paras. 8 and 9. Other highlights of this decision from the perspective of adaptation are as follows: 1) it recognises that the LDCs are most vulnerable to the consequences of climate change and that widespread poverty limits their adaptive capacity;¹¹⁵ 2) to avoid maladaptation, adaptation actions should follow an assessment and evaluation process based on national communications or other relevant information;¹¹⁶ 3) the Global Environment Facility (GEF) should support activities related to “information and methodology”¹¹⁷ and “vulnerability and adaptation”;¹¹⁸ and 4) the Special Climate Change Fund (SCCF) and the Adaptation Fund (AF) should be utilised to implement activities like integrated coastal zone management.¹¹⁹ More importantly, this decision also creates a work programme for the LDCs and a fund to support this work programme.¹²⁰ After this decision, adaptation began to receive attention by subsequent COPs.

The next major decision is the Buenos Aires Programme of Work on Adaptation and Response Measures adopted at the COP 10, which seeks to strengthen the implementation of actions enumerated under decision 5/CP.7.¹²¹ It also urges annex II parties to contribute to the special climate change fund and to support adaptation actions as a matter of “top priority”.¹²²

Established as a five-year programme in 2005 at the eleventh COP, the Nairobi Work Programme on impacts, vulnerability, and adaptation to climate change is yet another

¹¹⁴ *Kyoto Protocol to the United Nations Framework Convention on Climate Change*, opened for signature 16 March 1998, 37 ILM 32 (adopted at Kyoto 11 December 1997, entered into force 16 February 2005) [*Kyoto Protocol to the UNFCCC*] art 12(8).

¹¹⁵ *Implementation of Article 4, paragraphs 8 and 9, of the Convention (decision 3/CP.3 and Article 2, paragraph 3, and Article 3, Paragraph 14, of the Kyoto Protocol)*, recital <http://unfccc.int/files/cooperation_and_support/ldc/application/pdf/13a01p32.pdf> [*Implementation of Article 4*].

¹¹⁶ *Ibid* [2].

¹¹⁷ This includes providing training in specialized fields relevant to adaptation like ICZM. *Ibid* [7(a)(iii)].

¹¹⁸ *Ibid* [7(b)].

¹¹⁹ *Ibid* [8].

¹²⁰ *Ibid* [11-12].

¹²¹ UNFCCC, *Decision 1/CP.10: Buenos Aires Programme of Work on Adaptation and Response Measures*, FCCC/CP/2004/10/Add.1 (17-18 December 2004) [5-14].

¹²² *Ibid* [3].

milestone that seeks to assist all parties, particularly developing countries, to augment their adaptive capacity.¹²³ The programme piloted by the Subsidiary Body for Scientific and Technological Advice (SBSTA) of the UNFCCC is categorised based on two thematic areas: “impacts and vulnerability” and “adaptation planning, measures and actions”. Each theme has five action-oriented sub-themes,¹²⁴ implemented via nine work areas,¹²⁵ of which two are directly related to adaptation.¹²⁶ In its entirety, the programme involves several players, such as parties, organisations (nearly 250 partner organisations),¹²⁷ experts, the private sector, the global community and the UNFCCC secretariat. These sectors were in two phases. Phase I (2005 to mid-2008) saw over 100 organisations engaged in various activities (e.g. identification of calls for action and pledged activities), while the second phase (from mid-2008 to 2010) involved the addition of several more activities.¹²⁸ Despite the conclusion of the programme’s second phase at the SBSTA’s 33rd session in Cancun (30 November – 4 December 2010), it was decided to continue activities, with the SBSTA pledging to carry out a review and submit a report at its 34th session.¹²⁹

The Bali Action Plan (BAP) was adopted at the COP 13 held in 2007. It identifies adaptation as one of the key pillars “to enable the full, effective and sustained implementation of the Convention through long-term cooperative action, now, up to, and beyond 2012...”¹³⁰ It also seeks to address the need for “enhanced action on adaptation” through a series of measures like international co-operation to support urgent implementation of adaptation actions, risk management and risk reduction strategies, disaster reduction strategies, and economic diversification to develop resilience.¹³¹ The BAP also stresses the need for innovative means of funding to assist developing country parties, especially those who are particularly vulnerable, in meeting adaptation costs.¹³²

The Cancun Adaptation Framework (CAF) adopted at COP 16 as an “Outcome of the Work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention” affirmed that adaptation should be addressed on a level equal to mitigation.¹³³ With this in mind, it seeks to implement enhanced action on adaptation

¹²³ UNFCCC, *The Nairobi Work Programme: An Overview*, 1, <http://unfccc.int/resource/docs/publications/09_nwp_overview_en.pdf> [UNFCCC, *Nairobi Work*]; UNFCCC, *Progress Made in Implementing Activities under the Nairobi Work Programme on Impacts, Vulnerability and Adaptation to Climate Change: Note by the Secretariat*, FCCC/SBSTA/2012/INF.1 (16 April 2012) [UNFCCC, *Progress Made in Implementing Activities 2012*].

¹²⁴ UNFCCC, *The Nairobi Work Programme: The Second Phase* (United Nations Framework Convention on Climate Change (UNFCCC) Secretariat, 2008) 8-9 .

¹²⁵ Ibid 10-11.

¹²⁶ See generally UNFCCC, *The Nairobi Work Programme on Impacts, Vulnerability and Adaptation to Climate Change: The Nine Work Areas of The Nairobi Work Programme* <http://unfccc.int/resource/docs/publications/09_nwp_wp_9areas_en.pdf>.

¹²⁷ See UNFCCC, *Progress Made in Implementing Activities 2012*, above n 123.

¹²⁸ UNFCCC, *Nairobi Work*, above n 123, 2.

¹²⁹ *Nairobi Work Programme: Negotiations and Decisions* <http://unfccc.int/adaptation/nairobi_work_programme/negotiations_and_decisions/items/3916.php>.

¹³⁰ UNFCCC, *Decision 1/CP.13 Bali Action Plan*, FCCC/CP/2007/6/Add.1, [1] <<http://unfccc.int/resource/docs/2007/cop13/eng/06a01.pdf#page=3>>.

¹³¹ Ibid [1(c)].

¹³² Ibid [1(e)(iii)].

¹³³ Ibid [1.2.(b)].

and invites all parties to work towards securing the same.¹³⁴ The CAF seeks to achieve this by enumerating a series of enhanced adaptation actions grouped under five headings: implementation, support, institutional arrangements, principles, and stakeholder engagement.¹³⁵ The CAF also resulted in the creation of the Adaptation Committee “to promote the implementation of enhanced action on adaptation in a coherent manner under the Convention.”¹³⁶

The COP17 at Durban, recognised the need to address adaptation planning in the broader context of sustainable development planning was recognised.¹³⁷ Apart from launching the Green Climate Fund (GCF), it draws attention to the importance of developing national adaptation plans by adopting initial guidelines for the formulation of national adaptation plans for use by LDCs and even invites developing countries that are not LDCs to prepare the same based on these guidelines, taking into account their national circumstances.¹³⁸

At Durban, the COP 17 requested that the SBSTA reconsider the work areas of this programme with a view to making recommendations to the 19th COP on how best to support its objectives.¹³⁹ A request was also made to organise a series of workshops around themes like water, climate change impacts and adaptation strategies, ecosystem-based approaches for climate change adaptation, and the importance of disseminating the outcomes.¹⁴⁰ As a programme of far-reaching impacts, its legacy in creating a critical mass of knowledge and experience to support adaptation activities has been summed up by the SBSTA as follows: “[t]he Nairobi work programme has been successful in creating significant momentum for adaptation through engaging a large number of organizations representing a wide range of adaptation stakeholders”.¹⁴¹ Thus, it can be affirmatively stated that the programme has been able to galvanise a large number of players to generate a corpus of knowledge and information on adaptation.

At the Qatar COP 18, it was decided to provide guidance to developing countries particularly vulnerable to the adverse effects of climate change to enhance their

¹³⁴ Ibid [14].

¹³⁵ UNFCCC, *Cancun Adaptation Framework* (2012) <http://unfccc.int/adaptation/cancun_adaptation_framework/items/5852.php>.

¹³⁶ See 'Decision 1/CP.16: The Cancun Agreements: Outcome of the Work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention' in UNFCCC, *Report of the Conference of the Parties on its Sixteenth Session, Held in Cancun from 29 November to 10 December 2010: Addendum, Part Two: Action Taken by the Conference of the Parties at its Sixteenth Session*, FCCC/CP/2010/7/Add.1 (15 March 2011) [20] ["Decision 1/CP.16"].

¹³⁷ See generally UNFCCC, *Conference of the Parties: Report of the Conference of the Parties on its Seventeenth Session, Held in Durban from 28 November to 11 December 2011: Addendum: Part Two: Action Taken by the Conference of the Parties at its Seventeenth Session*, FCCC/CP/2011/9/Add.1 (15 March 2012) [UNFCCC, *Report of the COP on its Seventeenth Session*].

¹³⁸ Ibid 83.

¹³⁹ For the text of the Decision 6/CP.17, titled "Nairobi Work Programme on Impacts, Vulnerability and Adaptation to Climate Change", see Ibid 3.

¹⁴⁰ Ibid.

¹⁴¹ UNFCCC, *Progress Made in Implementing Activities under the Nairobi Work Programme on Impacts, Vulnerability and Adaptation to Climate Change: Note by the Secretariat*, FCCC/SBSTA/2010/INF.7 (4 November 2010) [46(a)].

adaptive capacity.¹⁴² Originally the National Adaptation Programmes of Action (NAPA) preparation and implementation was restricted only to the LDCs. In a marked departure from this approach, the COP 18 enhanced the scope of the process by calling upon developed country parties to mobilise financial support through bilateral and multilateral channels including the SCCF for developing countries, which are not LDCs to implement the NAPA process.¹⁴³ As well, the COP also approved the three-year work plan of the Adaptation Committee, which represents an important effort in “promoting coherence in adaptation under the Convention and synergies with organisations, centres and networks outside the Convention and providing technical support and guidance to the Parties”.¹⁴⁴ Furthermore, it also calls upon the Adaptation Committee to consider the establishment of an annual adaptation forum, to *inter alia* raise awareness and to facilitate enhanced coherence of adaptation actions.¹⁴⁵

Thus, it is evident from the above that the rules of adaptation are unclear primarily because of the bias implicit in the international climate change regime, which is titled in favour of mitigation. Compounding the situation is the ad hoc development of the rules on adaptation at the different COPs, which impedes coherence. Consequently, it is clear that there is room for an exclusive protocol on climate change adaptation that can support the implementation of adaptation actions to reduce vulnerability and build resilience in developing countries against climate change impacts.

At this point, it must be noted that global warming has potentially significant implications for the entire panoply of human rights. Therefore, international human rights law and its prescriptions can play an important role in triggering and supporting adaptation actions in relation to climate change impacts. On this basis, the logical adjunct that emerges in articulating a human rights-based approach to adaptation is that decision-makers must increasingly be guided by core human rights standards in developing and implementing adaptation programmes.¹⁴⁶ Apart from these the primary climate change related instruments,¹⁴⁷ a plethora of other international

¹⁴² *Draft Decision -/CP.18: Approaches to Address Loss and Damage Associated with Climate Change Impacts in Developing Countries that are Particularly Vulnerable to the Adverse Effects of Climate Change to Enhance Adaptive Capacity (Advance Unedited Version)* [57] <http://unfccc.int/files/meetings/doha_nov_2012/decisions/application/pdf/cmp8_lossanddamage.pdf>.

¹⁴³ See generally *Draft Decision -/CP.18: National Adaptation Plans (Advance Unedited Version)* <http://unfccc.int/files/meetings/doha_nov_2012/decisions/application/pdf/cop18_naps.pdf>.

¹⁴⁴ See generally *Draft Decision -/CP.18: Work of the Adaptation Committee (Advance Unedited Version)* <http://unfccc.int/files/meetings/doha_nov_2012/decisions/application/pdf/cop18_adapt_committee.pdf>.

¹⁴⁵ *Draft Decision -/CP.18: Agreed Outcome Pursuant to the Bali Action Plan (Advance Unedited Version)* [57] <http://unfccc.int/files/meetings/doha_nov_2012/decisions/application/pdf/cop18_agreed_outcome.pdf>.

¹⁴⁶ See *Human Rights Council, Human Rights and Climate Change, Res 7/23*, 41st Meeting (28 March 2008) <http://ap.ohchr.org/documents/E/HRC/resolutions/A_HRC_RES_7_23.pdf>. It goes without saying that climate change has significant implications for the right to life. Therefore, the first and foremost among the different human rights, namely, the right to life which is guaranteed by a series of international human rights instruments can impose positive obligations on the state to implement adaptation measures. In this regard, article 3 of the Universal Declaration of Human Rights, 1948, article 6(1) of the *International Covenant on Civil and Political Rights*, 1976 and article 6 of the *Convention on the Rights of the Child*, 1989 are relevant.

¹⁴⁷ Slotau, above n 111, 195-199.

environmental law instruments can also trigger and support climate change adaptation actions,¹⁴⁸ of which the CBD and the UNCCD are particularly relevant. There is in fact a close relationship between these Rio Conventions, which can be deciphered from an examination of article 2 of the UNFCCC, which recognises the importance of limiting climate change to levels that will allow ecosystems to naturally adapt to it. This is an objective, which both the CBD and the UNCCD likewise espouse. Among the three conventions, the UNCCD expressly fosters this by highlighting the need to coordinate activities under relevant international agreements, particularly among the Rio instruments, to maximise benefits and avoid duplication of effort.¹⁴⁹ To build inter-linkages between the Rio instruments, a Joint Liaison Group (JLG) consisting of the secretariats of the CBD, the UNCCD and the UNFCCC was established in 2001. The JLG works to enhance co-ordination between the three Conventions on a broad range of issues, including those relating to climate change adaptation.¹⁵⁰

In short, a number of opportunities exist to integrate climate change adaptation into several ongoing and future programmes by referencing a range of biodiversity relevant instruments. However, to secure a more coherent response in relation to coastal zones, it is necessary that the JLG extend its mandate well beyond the Rio Conventions, build synergies, and facilitate cross-pollination between other relevant environmental instruments like the Ramsar Convention. No review of the international regime on climate change adaptation would be complete without scrutinising financing arrangement, which is what the subsequent sections will attempt to do.

B *Financing Adaptation*

The implementation of climate change adaptation measures is a costly endeavour. The UNFCCC secretariat estimates that by 2030, developing countries will require about USD28-67 billion to adapt to climate change, a figure which is beyond most developing nations, particularly the LDCs.¹⁵¹ Consequently, environmental justice postulates that these vulnerable countries and societies must be provided with sufficient and sustained assistance that will enhance their adaptive capacities. In putting this into effect and in consonance with the principles of equity and common but differentiated responsibilities, the UNFCCC articles provide that developed countries are to extend financial assistance to developing countries to enable them to comply with their legal obligations to adapt.¹⁵² In emphasising this aspect, in a veiled warning, the UNFCCC text observes:

¹⁴⁸ There are several others like the *Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar), 1971*, the *Convention Concerning the Protection of the World Cultural and Natural Heritage, 1972*, the *Convention on the Conservation of Migratory Species of Wild Animals, 1979*, and Forestry Principles that are relevant to climate change adaptation and marine and coastal biodiversity conservation.

¹⁴⁹ *United Nations: Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa*, opened for signature October 14, 1994, 33 ILM 1328 (entered into force December 26, 1996), art 8.1.

¹⁵⁰ Convention on Biological Diversity, *Joint Liaison Group* <<http://www.cbd.int/cooperation/liaison.shtml>>.

¹⁵¹ Presently, there are 48 LDCs, out of which 33 are in Africa, 14 in Asia and one in Latin America and the Caribbean. UN-OHRLLS, *Least Developed Countries: Country Profiles* <<http://www.unohrrlls.org/en/ldc/25/>>.

¹⁵² See UNFCCC, above n 10, arts 4.3, 4.4, 4.5 and 4.9.

[t]he 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...¹⁵³

Adequacy and predictability in the flow of funds is *sine qua non* for the successful implementation of climate change adaptation activities. To ensure the same, the UNFCCC established a financial mechanism under the COP¹⁵⁴ that decides policies, programme priorities and eligibility criteria.¹⁵⁵ This financial mechanism, accountable to the COP, has “an equitable and balanced representation of all Parties within a transparent system of governance”.¹⁵⁶

Set up in 1991 as a pilot under the World Bank to protect the global environment and promote sustainable development,¹⁵⁷ the GEF was restructured at the Earth Summit, and included the participation of the UNDP and the United Nations Environment Programme. It was then taken out of the World Bank system to confer it with greater autonomy and independence. The GEF’s central role in the financial dynamics of the climate change regime is that it acts as the financial mechanism of the UNFCCC on an interim basis. A memorandum of understanding between both of these entities articulates the relationship between the GEF and the COP to the UNFCCC.¹⁵⁸ Here, the GEF functions under the guidance of COP, to which it is also accountable.¹⁵⁹ Subsequently, different funds have been established to finance adaptation activities, and the GEF is responsible for their administration as well. The overview below reveals the major sources of funding and their relevance to adaptation.

While the 6th COP in Bonn in 2001 created three funds to assist developing country parties to meet adaptation costs (namely, the Special Climate Change Fund, the Least Developed Countries Fund [LDCF] and the AF), the 7th COP allotted GEF the responsibility to administer the first two funds.¹⁶⁰ However, prior to operationalising these funds, it was considered ideal to call upon the GEF to finance pilot projects “that would demonstrate the practical and successful use of adaptation planning and assessment”.¹⁶¹ Accordingly, the GEF established the strategic priority on adaptation (SPA), in 2001, with a USD50 million corpus trust fund with the object “to support pilot and demonstration projects to show how adaptation planning and assessment can be practically translated into projects that provide real benefits and can be integrated

¹⁵³ Ibid art 4.7.

¹⁵⁴ Ibid art 11.

¹⁵⁵ Ibid art 11.1.

¹⁵⁶ Ibid art 11.2.

¹⁵⁷ GEF, *What is the GEF?* <<http://www.thegef.org/gef/whatisgef>>; Bonizella Biagini et al, *Global Environment Facility: Financing Adaptation Action*, 6 <http://www.thegef.org/gef/sites/thegef.org/files/publication/adaptation-actions_0.pdf>.

¹⁵⁸ See UNFCCC, *Decision 12/CP.2: Memorandum of Understanding Between the Conference of the Parties and the Council of the Global Environment Facility*, FCCC/CP/1996/15/Add.1 (19 July 1996) annex.

¹⁵⁹ Ibid, annex [2].

¹⁶⁰ GEF Evaluation Office, GEF Council, *Evaluation of the GEF Strategic Priority for Adaptation*, (GEF/ME/C.39/4, 22 October 2010) 3.

¹⁶¹ *Evaluation of the GEF Strategic Priority for Adaptation: Full Report*, Evaluation Rep No 61 (Global Environment Facility Evaluation Office, July 2011) 1 [*Evaluation of the GEF: Full Report*].

into national policy and sustainable development planning”.¹⁶² The SPA is essentially a pioneering initiative, since, until that time, there were no “on-the-ground adaptation interventions and the entire focus was on research, assessments, and screening tools”.¹⁶³ All countries otherwise eligible for GEF funding can access the funds under the SPA. By the end of 2009, the funds financed 26 projects.¹⁶⁴

The LDCF traces its origin to article 4.9 of the UNFCCC, which, in recognising the special situation and vulnerability of LDCs, states that parties should “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”.¹⁶⁵ The LDCF was established at COP 7 in Marrakech to support the identification of and to fund urgent and immediate adaptation actions for the LDCs.¹⁶⁶ To implement article 4.9, Decision 5/CP.7 envisages a work programme for the LDCs¹⁶⁷ by establishing the LDCF, which is operated by the GEF.¹⁶⁸ The LDCF also supports the preparation and implementation of the NAPA, which are basically country-driven strategies that identify the pertinent and immediate adaptation requirements of LDCs. Eligibility for project funding under the LDCF is reserved to all LDCs who are parties to the UNFCCC and have completed the preparation of their NAPA. Annex II countries along with some annex I countries of the UNFCCC can contribute funds to the LDCF.¹⁶⁹

At their annual meetings, the COPs have provided additional guidance to streamline the operation of the LDCF at regular intervals.¹⁷⁰ With a corpus close to half a billion dollars, due to voluntary contributions from nearly 25 donor countries, this fund has enabled 48 of the world’s most vulnerable countries to climate change impacts to access resources for NAPA preparation and implementation.¹⁷¹ As of September 2012, the fund has supported the preparation of 48 NAPAs, of which 47 have been completed, and 75 NAPA projects and 1 program in 45 countries, representing the largest portfolio of adaptation projects of its kind.¹⁷² While 59 per cent of the approved funds are dedicated to increasing resilience of LDCs in Africa, 18 per cent is for adaptation projects in Asia, and 23 per cent is for Small Island Developing States (SIDS).¹⁷³

¹⁶² GEF, *Adaptation* <<http://www.thegef.org/gef/adaptation>>.

¹⁶³ Biagini et al, above n 157, 11.

¹⁶⁴ GEF, *GEF-Administered Trust Funds* <http://www.thegef.org/gef/trust_funds>; see also *Evaluation of the GEF: Full Report*, above n 161, 20-21.

¹⁶⁵ UNFCCC, above n 10.

¹⁶⁶ GEF, *Least Developed Countries Fund* (2012) <<http://www.thegef.org/gef/ldcf>>.

¹⁶⁷ See *Implementation of Article 4*, above n 115, part II.

¹⁶⁸ See UNFCCC, *Decision 7/CP.7: Funding under the Convention*, FCCC/CP/2001/13/Add.1 (10 November 2001) [6] [UNFCCC, *Decision 7/CP.7*]; GEF, *Governance of the Fund* (2012) <http://www.thegef.org/gef/LDCF_Governance>; GEF, *Governance of the Fund* (2012) <http://www.thegef.org/gef/SCCF_Governance>.

¹⁶⁹ UNFCCC, *Decision 7/CP.7*, *ibid* [1(c)(iii), 6].

¹⁷⁰ For instance, see *Draft Decision -/CP.18: Further Guidance*, above n 71.

¹⁷¹ *Least Developed Countries Fund: Financing Adaptation Action*, 5 <http://www.thegef.org/gef/sites/thegef.org/files/publication/LDCF_Brochure_CRA.pdf>.

¹⁷² *Ibid*.

¹⁷³ *Ibid*.

Another product of the Marrakesh Accords, the SCCF, seeks to “finance activities, programmes and measures relating to climate change.”¹⁷⁴ These are in the areas of adaptation, technology transfer, energy, transport, agriculture, forestry, and waste management, and include activities that seek to assist developing countries that are fossil fuel-dependent to diversify their economies.¹⁷⁵ Among these various activities, adaptation receives the highest priority in addressing the adverse impacts of climate change.¹⁷⁶ In implementing adaptation activities, consideration is given to national communications and NAPA, as well as to other relevant information provided by the party. The SCCF is operated by the GEF.¹⁷⁷

Subsequently, various COPs have provided initial¹⁷⁸ and further¹⁷⁹ guidance to the GEF regarding the different modalities for operationalising the SCCF. COP guidance lists the following areas for adaptation under the SCCF: water resources management; land management; agriculture; health; infrastructure development; fragile ecosystems (including mountain ecosystems); integrated coastal zone management; and climatic disaster risk management.¹⁸⁰ Additionally, for 39 projects under its adaptation programme, the SCCF has approved nearly USD150 million and leveraged about USD1.03 billion in co-financing.¹⁸¹ The importance of the SCCF as a funding for adaptation projects can be gauged from the fact that, in recent years, the demand for SCCF adaptation resources exceeds the current supply.¹⁸²

The genesis of the AF can be traced to the Kyoto Protocol, which calls upon the COP to ensure that a share of the proceeds from certified project activities is used to assist vulnerable developing nations in the Kyoto Protocol to meet the costs of adaptation.¹⁸³ Noted in the annex to decision 5/CP.6 of the Bonn Agreements on the Implementation of the Buenos Aires Plan of Action (from the Sixth COP of the UNFCCC) is that an AF should be established to finance concrete adaptation projects and programmes in countries that are parties to the Protocol.¹⁸⁴ It was also

¹⁷⁴ Bonizella Biagini and Saliha Dobardzic, *Accessing Resources under the Special Climate Change Fund* (GEF, 2011) 7.

¹⁷⁵ Ibid.

¹⁷⁶ UNFCCC, *Decision 5/CP.9: Further Guidance to an Entity Entrusted with the Operation of the Financial Mechanism of the Convention, for the Operation of the Special Climate Change Fund*, FCCC/CP/2003/6/Add.1 (12 December 2003) [1(c)] [UNFCCC, *Decision 5/CP.9*].

¹⁷⁷ See UNFCCC, *Decision 4/CP.7: Development and Transfer of Technologies* (Decisions 4/CP.4 and 9/CP.5), FCCC/CP/2001/13/Add.1 (10 November 2001) [3].

¹⁷⁸ See UNFCCC, *Decision 7/CP.8: Initial Guidance to an Entity Entrusted with the Operation of the Financial Mechanism of the Convention, for the Operation of the Special Climate Change Fund*, FCCC/CP/2002/7/Add.1 (1 November 2002) [1(a)-(d)].

¹⁷⁹ UNFCCC, *Decision 5/CP.9*, above n 176, 11-12.

¹⁸⁰ Biagini and Dobardzic, above n 174, 7.

¹⁸¹ GEF, *Special Climate Change Fund (SCCF)* (2012) <<http://www.thegef.org/gef/SCCF>>.

¹⁸² Ibid.

¹⁸³ See *Kyoto Protocol to the UNFCCC*, above n 114, arts 10, 11 and 12(8); see also UNFCCC, *Adaptation Fund* (21 December 2012) <http://unfccc.int/cooperation_and_support/financial_mechanism/adaptation_fund/items/3659.php>. As at 31 August 2011, the total accrual of proceeds from the monetization of certified emission reductions have reached about USD166 million. See UNFCCC, *Report of the COP on its Seventeenth Session*, above n 137, 4 (detailing Decision 6/CMP.7 re: Nairobi work programme on impacts, vulnerability and adaptation to climate change).

¹⁸⁴ UNFCCC, *Review of the Implementation of Commitments and of Other Provisions of the Convention Preparations for the First Session of the Conference of the Parties Serving as the Meeting of the Parties to the Kyoto Protocol* (Decision 8/CP.4), *Decision 5/CP.6*:

emphasised that the AF should be financed from proceeds from the clean development mechanism (CDM) project activities as well as other sources of funding.¹⁸⁵ These advances in subsidisation were taken a step further at the seventh COP held in Marrakech, where it was decided that two per cent of the certified emission reductions issued for a CDM project activity were to be used towards the AF.¹⁸⁶ The parties at Marrakech also delineated which activities were to receive support from the AF.¹⁸⁷

Once the Kyoto Protocol entered into force, further modalities relating to the AF were worked out at the COP in Montreal in 2005, which, incidentally was also the first meeting of the parties to the Kyoto Protocol. Decision 28/CMP.1 lays down principles to guide the operation of this fund, specifying a country-driven approach, sound financial management and transparency, separation from other funding sources, and a learning-by-doing method.¹⁸⁸ Decision 5/CMP.2, made at Nairobi in 2006, added more principles¹⁸⁹ and also decided on operational specifics.¹⁹⁰ The COP held in Bali in 2007, which served as the third meeting of Kyoto Protocol parties, decided that the AF would be supervised and managed by the Adaptation Fund Board (AFB)¹⁹¹ under the authority and guidance of the COP, with full accountability to the COP.¹⁹² Furthermore, the AFB would be serviced by a secretariat¹⁹³ and a trustee,¹⁹⁴ the former which would be guaranteed functional independence (with its head accountable to AFB),¹⁹⁵ and the latter which would be given “fiduciary responsibility and the administrative competence to manage the adaptation fund”.¹⁹⁶ Rules regarding functions,¹⁹⁷ composition,¹⁹⁸ financial interest,¹⁹⁹ quorum,²⁰⁰ decision-

Implementation of the Buenos Aires Plan of Action, FCCC/CP/2001/L.7 (24 July 2001), annex part II (funding under the Kyoto Protocol).

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Ibid.

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See generally UNFCCC, *Decision 10/CP.7: Funding under the Kyoto*, FCCC/CP/2001/13/Add.1 (10 November 2001). In addition to the two per cent share of proceeds from clean development mechanism activities, there are other two sources namely, voluntary funding by Annex I parties that have ratified the Kyoto Protocol and the political pledge made by some of the annex I parties. Ibid.

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See *Implementation of Article 4*, above n 115, [7].

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UNFCCC, *Decision 28/CMP.1: Initial Guidance to an Entity Entrusted with the Operation of the Financial Mechanism of the Convention, for the Operation of the Adaptation I*, FCCC/KP/CMP/2005/8/Add.4 (9-10 December 2005) [3].

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UNFCCC, *Decision 5/CMP.2: Adaptation Fund*, FCCC/KP/CMP/2006/10/Add.1 (17 November 2006) [1].

190

Ibid [2].

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Adaptation Fund, *Adaptation Fund Board* (2011) <<http://www.adaptation-fund.org/about/the-board>>.

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UNFCCC, *Decision 1/CMP.3: Adaptation Fund*, FCCC/KP/CMP/2007/9/Add.1 (14-15 December 2007) [3-4].

193

Ibid [18-19].

194

The AF is to have a trustee who has fiduciary responsibility and administrative competence to manage the AF. Ibid [20]. The World Bank has been requested to perform the functions of a trustee on an interim basis. Ibid [23].

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Ibid [18].

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Ibid [20].

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Ibid [5(a)-(m)].

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The AFB is composed of 16 members and 16 alternates representing parties to the Kyoto Protocol, taking into account fair and balanced representation among different groups determined as follows: Two representatives from each of the five United Nations regional groups; one representative of the SIDS; one representative of the LDC Parties; two representatives from annex I parties; two representatives from non-annex I parties. Ibid [6].

making procedures,²⁰¹ chairmanship,²⁰² and other miscellaneous matters were also detailed.²⁰³

The COP that served as the fourth meeting of the parties to the Kyoto Protocol (CMP) was held in Poznan in 2008. At this meeting, it was decided to confer AFB with legal capacity to enable it to discharge functions more effectively.²⁰⁴ As well, the COPs serving as the CMPs also adopted the rules of procedure to regulate AFB's business conduct. Other notable aspects were also decided upon, such as a memorandum regarding secretariat services to be provided to the AFB;²⁰⁵ the terms and conditions of services to be provided by the World Bank, as trustee for the AF;²⁰⁶ and the strategic priorities, policies and guidelines of the AF.²⁰⁷

At the 15th COP in Copenhagen in 2009, which served as the fifth meeting of the parties to the Kyoto Protocol, the parties endorsed the decision by the AFB to accept Germany's offer to confer it legal capacity.²⁰⁸ The CMP also adopted amendments to the rules of procedure of the AFB,²⁰⁹ and the parties decided to encourage annex I parties and international organisations to provide additional funding to the AF, over and above the shares from the CDM proceeds.²¹⁰ The Subsidiary Body for Implementation (SBI) was requested to initiate a review of the AF and report to the COP (serving as the CMPs at its sixth session).²¹¹ However, as the SBI could not carry out the review (it was considered premature),²¹² the Body concluded that the CMP, at its sixth session, should consider undertaking the review of the AF at CMP.7, with the CMP providing the terms of reference.²¹³

¹⁹⁹ The members including alternate members are not to have any personal financial interest in any aspect of a project activity. Ibid [10].

²⁰⁰ A simple majority of the members of the AFB is necessary at a meeting to constitute a quorum. Ibid [11].

²⁰¹ Decisions are to be taken by consensus and in its absence; decisions are to be taken by a two-thirds majority of the members present at the meeting. Ibid [12].

²⁰² The AFB shall elect its own Chair and Vice-Chair with one being a member from an annex I party and the other from a non-annex I party. The positions of the Chair and the Vice-Chair shall alternate annually between the annex I and non-annex I parties. Ibid [13].

²⁰³ For instance, rules have been provided regarding frequency of meetings (generally, twice a year); monetization of certified emission reductions; basic rules regarding access to funding; etc. Ibid [15, 28-30].

²⁰⁴ UNFCCC, *Report of the Conference of the Parties Serving as the Meeting of the Parties to the Kyoto Protocol on its Fourth Session, Held in Poznan from 1 to 12 December 2008: Addendum, Decision 1/CMP.4, Adaptation Fund*, FCCC/KP/CMP/2008/11/Add.2 (19 March 2009) [11].

²⁰⁵ Ibid 12.

²⁰⁶ Ibid 15.

²⁰⁷ Ibid 21.

²⁰⁸ UNFCCC, *Decision 4/CMP.5: Report of the Adaptation Fund Board*, FCCC/KP/CMP/2009/21/Add.1 (18–19 December 2009) recital [1].

²⁰⁹ Ibid [5].

²¹⁰ Ibid [5, 9].

²¹¹ See generally UNFCCC, *Decision 5/CMP.5: Review of the Adaptation Fund*, FCCC/KP/CMP/2009/21/Add.1 (18–19 December 2009) <<http://unfccc.int/resource/docs/2009/cmp5/eng/21a01.pdf>>.

²¹² See UNFCCC, *UN Framework Convention on Climate Change: Subsidiary Body for Implementation Report of the Subsidiary Body for Implementation on its Thirty-second Session, Held in Bonn from 31 May to 9 June 2010*, FCCC/SBI/2010/10 (25 August 2010) [114-15].

²¹³ Ibid.

Accordingly, at the COP 16/CMP.6, held in Cancun in 2010, the parties decided to undertake a review of the AF at its seventh session, with subsequent reviews to be conducted every three years.²¹⁴ The CMP.6 also confirmed the terms of reference for the review whose objective is to “ensure the effectiveness and adequacy of the Adaptation Fund and its institutional arrangements”.²¹⁵ Additionally, the CMP.6 requested annex I parties and international organisations provide funding to the AF, in addition to the share of proceeds from CDM project activities;²¹⁶ it also requested that the secretariat conduct regional or sub-regional workshops to enable parties to familiarise the process and requirement of accreditation of national implementing entities.²¹⁷

At the COP 17, held in Durban in 2011 (which served as the seventh meeting of the Parties to the Kyoto Protocol), the AFB submitted its report.²¹⁸ It was decided that the initial review of the AF be completed at the eighth session.²¹⁹ Even though the initial review carried out at the COP 18, at Qatar concern was expressed regarding the uncertainty over the prices of certified emission reductions and the continuation of the fund during and beyond the second commitment period of the Kyoto Protocol.²²⁰ Accordingly, the Subsidiary Body for Implementation was asked to initiate a second review of the AF and report back its findings to the COP 9.²²¹

The latest addition to the string of funding mechanisms is the GCF, established at the 16th COP in Cancun, with the objective to allocate resources between adaptation and mitigation activities to contribute to the achievement of the ultimate objective of the UNFCCC.²²² As noted,

[i]n the context of sustainable development, the Fund will promote the paradigm shift towards low-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.²²³

²¹⁴ UNFCCC, *Draft Decision-/CMP.6: Review of the Adaptation Fund, Advance Unedited Version*, [1], <http://unfccc.int/files/meetings/cop_16/conference_documents/application/pdf/20101204_cop16_cmp_review_afb.pdf>.

²¹⁵ Ibid annex [3].

²¹⁶ Ibid [6].

²¹⁷ Ibid [8].

²¹⁸ See generally UNFCCC, *Report of the Adaptation Fund Board: Note by the Secretariat*, FCCC/KP/CMP/2011/6 (22 November 2011).

²¹⁹ See 'Decision 7/CMP.7: Review of the Adaptation Fund' in UNFCCC, *Report of the Conference of the Parties Serving as the Meeting of the Parties to the Kyoto Protocol on its Seventh Session, Held in Durban from 28 November to 11 December 2011: Addendum Part Two: Action Taken by the Conference of the Parties Serving as the Meeting of the Parties to the Kyoto Protocol at its Seventh Session*, FCCC/KP/CMP/2011/10/Add.2 (15 March 2012) 5.

²²⁰ *Draft decision -/CMP.8: Initial Review of the Adaptation Fund*, [9 and 10] <http://unfccc.int/files/meetings/doha_nov_2012/decisions/application/pdf/cmp8_initial_review_af.pdf>.

²²¹ Ibid.

²²² 'Decision 1/CP.16', above n 136, 17.

²²³ UNFCCC, 'Annex: Governing Instrument for the Green Climate Fund' in *Green Climate Fund - Report of the Transitional Committee, Draft Decision -/CP.17 (Advance Unedited Version)* [2] [UNFCCC, 'Annex'].

The parties also entrusted the work of designing the details of this fund with the Transitional Committee.²²⁴ Subsequently, at the 17th COP, the report of the Transnational Committee was accepted and approval granted to the governing instrument for the GCF.²²⁵ The COP also decided to designate the GCF as an operating entity of the financial mechanism of the Convention, in accordance with Article 11 of the UNFCCC.²²⁶ The governing instrument of the GCF confers on it juridical personality and it is to be managed by a board consisting of 24 members representing, in equal numbers, developing and developed country parties.²²⁷ All developing country parties are eligible to receive resources from this fund, which will have thematic funding windows. Furthermore, the Fund will finance and support enhanced action on adaptation, mitigation, technology development and transfer, capacity building and the preparation of national reports by developing countries. It will also support developing countries in pursuing project-based and programmatic approaches in accordance with climate change strategies and plans, such as low-emission development strategies or plans, nationally appropriate mitigation actions, and national adaptation plans of action.²²⁸ As of now, the fund has windows only for adaptation and mitigation.²²⁹ In allocating resources for adaptation, the board has been tasked to take into account the urgent and immediate needs of developing countries that are particularly vulnerable to the adverse consequences of climate change, including LDCs, SIDS and African States, using minimum allocation floors for these countries, where appropriate.²³⁰

In recognising the important role of the GCF in the climate finance architecture, the COP 18 stressed on the need to confer juridical personality and legal capacity to the Green Climate Fund.²³¹ In addition, it also called for the expeditious implementation of the work plan and related policies and emphasised the need to balance the allocation of the GCF resources between adaptation and mitigation activities.²³²

It can be seen from the above that even though the international community has been able to spell out foundational normative rules on adaptation there are several challenges in effectuating adaptation funding. First and foremost is the lack of a reliable system to accurately predict the precise amounts of funds needed for adaptation since most climatic impacts are primarily futuristic and consequently, there are varied estimates as to the precise amounts that will be needed.²³³ Then there is also concern that, due to the overlap between adaptation assistance and official development assistance, donors may divert their current official development assistance for adaptation activities rather than provide additional and a more secure

²²⁴ 'Decision 1/CP.16', above n 136.

²²⁵ See generally 'Decision 3/CP.17: Launching the Green Climate Fund: FCCC/CP/2011/9/Add.1' in UNFCCC, *Conference of the Parties: Report of the Conference of the Parties on its Seventeenth Session, Held in Durban from 28 November to 11 December 2011: Addendum: Part Two: Action Taken by the Conference of the Parties at its Seventeenth Session*, FCCC/CP/2011/9/Add.1 (15 March 2012).

²²⁶ *Decision 3/CP.17*, *ibid*.

²²⁷ *Ibid*.

²²⁸ *Ibid* 63 [36].

²²⁹ *Ibid*.

²³⁰ UNFCCC, 'Annex', above n 223 [52].

²³¹ *Draft Decision -/CP.18: Further Guidance*, above n 71.

²³² *Ibid*.

²³³ Fankhauser, above n 16.

stream of funds for the same.²³⁴ Then for several of the developing countries accessing funds from the diverse mechanisms itself is a formidable task.²³⁵ More importantly, in a top-down approach to adaptation where international institutions are tasked with the duty to administer and supply funds and facilitate technology transfer to developing countries, the ultimate responsibility to ensure that these funds and the technology benefit vulnerable communities, like women, children, aged and indigenous populations lie with national governments. Institutionalised corruption is a major factor that hampers the success of adaptation efforts at national levels and very often the benefits of these projects may not trickle down to these vulnerable groups.²³⁶

IV THE CLARION CALL FOR A NEW PROTOCOL ON CLIMATE CHANGE ADAPTATION

The writing on the wall is clear: carrying the magnitude of a universal problem, climate change is the biggest crisis of our time with which our future generations and we will have to grapple with. Anthropogenic emissions, past and present, have profoundly impacted the climate system and have set in motion chaotic changes, which will be played out over for a very long time. To compound matters, the scale and severity of environmental degradation and poverty at the global level, has reached unprecedented scales than at any time in human history. Climate change is projected to compound the pressures on natural resources and the environment, already stressed due to rapid urbanisation, industrialisation and economic development. It will lead to tumultuous consequences like massive population displacement, loss of biodiversity, food and water shortages, destruction of infrastructure, etc. affecting life and livelihoods across the spectrum.

Therefore all nations as a matter of necessity will at some point have to invest in adaptation. Even though both developed and developing countries are already moving in this direction, developed nations are better positioned to implement adaptation actions, as they already have in place good governance, responsible and responsive institutions, adequate legal support, technology, and the economic capacity to absorb even extreme climate shocks.²³⁷ More importantly, as seen earlier, ever since sustainable development entered the environmental law horizon, it has changed the tenor of development and absent consideration of climate change impacts and related adaptation and mitigation measures, development may prove superfluous on long-term scales. Therefore, it is essential that adaptation and mitigation be juxtaposed into the development process. While most nations subscribe to the principle of sustainable development, hamstrung by financial, capacity and technological limitations, developing nations generally are unable to view development through a climate

²³⁴ Jordan Diamond and Carl Bruch, 'The International Architecture for Climate Change Adaptation Assistance' in Ryo Fujikura and Masato Kawanishi (eds), *Climate Change Adaptation and International Development: Making Development Cooperation More Effective* (Earthscan, 2010) 291, 292.

²³⁵ Deepa Badrinarayana, 'Financing of Adaptation Measures' in Michael B Gerrard and Katrina Fischer Kuh (eds), *The Law of Adaptation to Climate Change: U.S. and International Aspects* (American Bar Association, 2012) 623, 647.

²³⁶ See generally Transparency International, *Global Corruption Report: Climate Change* (Earthscan Ltd, 2011).

²³⁷ Watkins, above n 6, 168.

change lens, and in particular, adaptation continues to be a “fringe activity”.²³⁸ In these developing countries, the primary impediment in implementing adaptation measures is financial unavailability and systemic inefficiencies.²³⁹ Consequently, the incremental dangers that accompany climate change will be superimposed on societies that are characterised by massive poverty, low living standards, poor livelihood opportunities, environmental pollution, over-exploited natural resource systems, food and water insecurity, low economic growth, and high human vulnerability.²⁴⁰

Right from the time of its inception, the focus of the international regime on climate change was on mitigation. Even with imperfections and serious doubts cast over its ability to ensure that the global increase in temperature is maintained below 2 degrees Celsius, the international regime on mitigation has entered the second commitment period, while the rules on climate change adaptation still remain nascent and vague. Despite the significance of adaptation in the climate change equation, and a two-decade existence, the international legal regime on adaption draws its sustenance primarily from a patchwork of multifarious rules and initiatives rather than a full-fledged dedicated legal instrument. Moreover, the international rules on climate change adaptation continue to grind rather slowly and they remain basically fragmented. As seen, the international regime on adaptation is riddled with ambiguity primarily because nations are unwilling to admit that the international regime on mitigation has accomplished very little to prevent the spewing of GHGs into the atmosphere and that nations will have to adapt.²⁴¹ Then there is also the uncertainty regarding the true nature and magnitude of climate change impacts. While there is strong scientific consensus that we have crossed the tipping scales in relation to several ecosystems *vis-à-vis* climate change we may have only limited information regarding all possible scenarios. Given the complexity of climatic systems, uncertainty in adaptation is unavoidable and therefore we will have to build adaptation strategies around this uncertainty, as it’s a question of survival for many.

Again, while the UNFCCC in conformance with the principles of intra-generational equity and the common but differentiated responsibilities, calls upon developed country parties to take the lead in supporting adaptation actions in developing nations. As it stands, four primary funding mechanisms have been established under the climate change regime tasked with the responsibility to disburse funds. However, as seen the amounts available through these windows are nowhere near projected requirements and demands. Despite efforts to secure adequate funds for adaptation activities in developing countries, the reality is that we are “drifting into a situation of global adaptation apartheid,”²⁴² as the flow of funds does not come close to the projected needs.²⁴³ Given this wide disparity between the actual demand and the

²³⁸ Ibid 172.

²³⁹ World Commission on Environment and Development, above n 37, 49 (noting that “(g)lobally, wealthier nations are better placed financially and technologically to cope with the effects of possible climate change”).

²⁴⁰ Watkins, above n 6, 171.

²⁴¹ Freestone, above n 94.

²⁴² Watkins, above n 6, 166.

²⁴³ See generally Diamond and Bruch, above n 234 (noting that as of January 10, 2010, the total funds made available under the five primary global adaptation assistance programmes was nearly USD581 million, whereas, the UNFCCC estimates that the annual adaptation costs in developing countries stood somewhere between USD6 billion to USD27 billion).

supply of funds for adaptation activities, the current framework is analogous to using a sponge to mop up floodwaters.²⁴⁴ Technological transfers to facilitate climate change adaptation actions in developing countries have also not taken place on the scale that the impending crisis warrants. In certain parts of the world, the situation is so desperate that people are using imported garbage to construct sea walls,²⁴⁵ while in more affluent societies, adaptation takes diverse forms, like the construction of luxurious floating houses.²⁴⁶

Adaptation to the adverse consequences of climate change is an integral pillar of the climate change regime as it rebuilds confidence in communities by reducing the negative impacts of climate change and in certain cases draws advantage from possible opportunities. It represents the only possible way to cope up with impacts of climate change over the next few decades. Countries will have to expend aggressive efforts to combat climate change by investing resources on both low-carbon development in terms of mitigation and adaptation. However, most of the developing countries have limitations, in terms of capacity and resources, in carrying out adaptations. In light of the growing adaptation deficit, it seems, that the time has emerged for marshalling an effective adaptive response at the international level which may take the form of an exclusive protocol on adaptation that provides for the development of a more coherent and substantive legal regime on climate change adaptation. As well, given the extreme nature of the problems posed by climate change on coastal regions, coastal ecosystems and coastal communities, strong nudges will be needed to galvanise the international community into taking more concrete actions on helping developing countries. The protocol should at minimum set out the basic rules on climate change adaptation in terms of affirming the need for cooperation at the international and regional levels; create legal obligations on national governments to mainstream adaptation into existing development initiatives; streamline funding mechanisms so as to ensure adequacy and predictability in their supply; broaden access to funding and diversify revenue streams into the fund. In addition, it should create or streamline existing institutional mechanisms and ensure opportunities for states, to participate in the administration of these funds; ensure technology transfer; guarantee transparency and accountability to the whole process.

V CONCLUSION

International climate change adaptation law is at crossroads. Even with imperfections the international regime on mitigation has entered the second commitment period, while the rules on climate change adaptation still remain nascent and vague. This when we have already committed ourselves to climate change impacts, which will unleash a domino effect of destruction to impose massive costs in terms of human lives, economic development, and environmental stability. As the discussion clarifies, there is a growing adaptation deficit, and the backbone of the international legal regime on climate change adaptation is weak. In fact, as climate change adaptation being reflected in the provisions of the various treaties as well as in the work of the different COPs and in financing programmes, etc. do not produce a composite framework supportive of adaptation actions. Instead, the inconsistent and diffused

²⁴⁴ Watkins, above n 6, 167.

²⁴⁵ ITVS, *Rising Waters: The Islands* <<http://archive.itvs.org/risingwaters/islands.html>>.

²⁴⁶ Watkins, above n 6, 167.

obligations preclude the formation of a holistic approach to climate change adaptation. Thus, there is scope for a new protocol that can help transform adaptation from a “poor relation”,²⁴⁷ to an equal and integral constituent of the climate change regime. The Protocol can help codify and prescribe new rules on climate change adaptation, streamline financial arrangements, promote technology transfer and create appropriate institutions to ensure that the funds are being appropriately utilised to further adaptation at the ground-level. A protocol on adaptation in unison with the Kyoto protocol can help create win-win situations for sustainable development in developing countries.

²⁴⁷ Freestone, above n 94, 603.