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International Environmental Law-making and Diplomacy Review 2010

Ed Couzens and Tuula Honkonen (editors)

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Foreword

The papers in the present *Review* are based on lectures given during the seventh University of Eastern Finland[1] – UNEP Course on International Environmental Law-making and Diplomacy, which was held from 15 to 27 August 2010 at the Joensuu campus of the University of Eastern Finland. Previous courses have been held in Joensuu (2004, 2005, 2007), in South Africa (2006, 2008), and at the UNEP headquarters in Kenya (2009). The proceedings of those courses have been published in the previous Course *Reviews*.[2]

The aim of the Course is to convey key tools and experiences in the area of international environmental law-making to present and future negotiators of multilateral environmental agreements and their further development and implementation. In addition, the Course serves as a forum for fostering cooperation between developed and developing country negotiators; and for taking stock of recent developments in the negotiation and implementation of multilateral environmental agreements and diplomatic practices in the field. The ultimate aim of the Course is to improve environmental negotiation capacity and governance worldwide.

The Course is an annual event designed to enhance the negotiation skills of government officials who are, or will be, engaged in international environmental negotiations. In addition, other stakeholders such as representatives of non-governmental organizations and the private sector may apply and be selected to attend the Course. Researchers and academics in the field are also eligible. Altogether 32 participants from 23 countries, with a geographical and gender balance, participated in the seventh Course.

We would like to express our gratitude to all of those who contributed to the successful outcome of the seventh Course. It gives us great pleasure to recognize that the lectures and presentations given during the Course are now recorded in this *Review*. We are grateful that the authors were willing to take on an extra burden by transferring their presentations into article form; thereby making the *Review* such a useful resource. In addition, we would like to thank Ed Couzens and Tuula Honkonen for skilful and dedicated editing of the *Review*, and the members of the Editorial Board for providing guidance in the editing process.

Professor Perttu Vartiainen
Rector
University of Eastern Finland

Achim Steiner
Executive Director
United Nations Environment Programme

[1] Please note that the University of Joensuu is now the University of Eastern Finland.

[2] For electronic versions of the 2004, 2005, 2006, 2007, 2008 and 2009 *Reviews* see the University of Eastern Finland – UNEP Course on International Law-making and Diplomacy website at <http://www.uef.fi/unep>.

Editorial preface

The lectures given on the seventh annual University of Eastern Finland[3] – United Nations Environmental Programme (UNEP) Course on Multilateral Environmental Agreements, from which most of the papers in the present *Review* originate, were delivered by experienced diplomats, government officials and members of academia.[4] One of the main purposes of the Course is to take advantage of the practical experiences of experts working in the field of international environmental law-making and diplomacy – both to train the participants of each Course as well as to contribute to knowledge and research through publication in the present *Review*. As such, the papers in this *Review* and the different approaches taken by the authors reflect the diverse professional backgrounds of the lecturers, resource persons and participants who submitted papers for the *Review* (some of whom are experienced diplomats in their own right). Overall, the *Review* represents various aspects of the broad and complex field of international environmental law-making and diplomacy.

The current *Review* seeks to provide practical guidance, professional perspective and historical background to decision-makers, diplomats, negotiators, practitioners, researchers and stakeholders working in the area of international environmental law-making and diplomacy specifically related to environmental governance in respect of climate change. The *Review* aims to elucidate different approaches, doctrines and techniques in the field, including international environmental compliance and enforcement, international environmental governance, international environmental law-making, environmental empowerment, and the enhancement of sustainable development generally.

The first, second, fourth and seventh Courses were hosted by the University of Eastern Finland, in Joensuu, Finland – an area in which forests and water provide abiding and dominant images, and in which dramatic seasonal changes provide an ever-present reminder of how dominant an aspect of life climate can be. The special themes of the first two Courses were 'Water' and 'Forests'. The third Course was hosted by the University of KwaZulu-Natal, on its Pietermaritzburg campus in KwaZulu-Natal, South Africa. KwaZulu-Natal is an extremely biodiversity-rich area, both in natural and cultural terms, and the chosen special theme was therefore 'Biodiversity'. The fourth Course, which returned to Finland, had 'Chemicals' as its special theme. The chosen focus was appropriate considering the important role Finland has played in international chemicals management. The fifth course focused

[3] It is to be noted that the University of Joensuu merged with the University of Kuopio on 1 January 2010 to constitute the University of Eastern Finland. Consequently, the University of Joensuu – UNEP Course on International Environmental Law-making and Diplomacy has been renamed the University of Eastern Finland – UNEP Course on Multilateral Environmental Agreements. The Course activities are concentrated on the Joensuu campus of the new university.

[4] General information on the University of Eastern Finland – UNEP Course on Multilateral Environmental Agreements is available at <http://www.uef.fi/unep>.

on 'Oceans' as its special theme, and was again held in the coastal province of KwaZulu-Natal in South Africa, on the Pietermaritzburg campus of the University of KwaZulu-Natal. The sixth Course was held in Nairobi and at Lake Naivasha in Kenya – with UNEP as the host, it was fitting to have 'Environmental Governance' as the special theme. The seventh Course, and thus this seventh volume of the *Review,* has 'Climate Change' as its special focus, or theme. Given the growing understanding of the importance of climate change as an issue-area in international environmental law and diplomacy, and given its cross-cutting nature, many of the issues raised in the first six Courses are, of course, relevant to the seventh.

The organizers of the Course, and the editorial board and editors of this *Review*, believe that the ultimate value of the *Review* lies in its making a contribution to knowledge and learning in the field of international environmental negotiation and diplomacy. The papers contained in the *Review* are in most cases based on lectures given during the Course, but take their subject matters further as the authors explore their ideas. In particular, the *Review* has been proud to receive ongoing contributions through the various editions – meaning that the same writer has contributed several papers – which has given these writers the opportunity to make wider contributions than would be possible with single contributions only. Many of the writers are persons who have been involved in some of the most important environmental negotiations in the past several decades. Publication of these contributions means that the experiences, insights and reflections of these environmental leaders are now recorded and disseminated, where they might not otherwise have been committed to print. The value of these contributions cannot be overstated. In addition, an ongoing feature of the *Review* has been the publication of papers by Course participants – these papers undergo the same editorial process as the other papers in the Review, which includes careful scrutiny by the editors, numerous iterations of drafts and approval for publication only after consideration by the Board.

The special theme of the 2010 Course was climate change, and consequently that is the special theme of this *Review*. The first convention to deal with climate change as a whole, rather than with particular polluting substances or forms of harm, was the United Nations Framework Convention on Climate Change (UNFCCC),[5] 1992 – allied with its Protocol, the Kyoto Protocol to the UNFCCC of 1997.[6] The UNFCCC has near universal membership with 195 parties; the Kyoto Protocol has 193 parties.[7] The UNFCCC divides its Parties into three es-

[5] United Nations Framework Convention on Climate Change, New York, 9 May 1992, in force 21 March 1994, 31 *International Legal Materials* (1992) 849, <http://unfccc.int>.

[6] Kyoto Protocol to the United Nations Framework Convention on Climate Change, Kyoto, 11 December 1997, in force 16 February 2005, 37 *International Legal Materials* (1998) 22.

[7] See 'Status of Ratification of the Convention', available at <http://unfccc.int/essential_background/convention/status_of_ratification/items/2631.php> and 'Status of Ratification of the Kyoto Protocol', available at <http://unfccc.int/kyoto_protocol/status_of_ratification/items/2613.php> (both visited 14 October 2011).

sential groupings: 'Annex I' parties;[8] 'Annex II' parties;[9] and 'Non-Annex I' parties.[10]

While binding, as a convention in force, the UNFCCC provides a framework for governance and does not provide for specific emissions targets; and it was always intended that binding commitments to lessening those emissions considered potentially damaging would be provided for in a Protocol. The UNFCCC is, of course, binding on all Parties which have ratified or adhered to it. In addition, even states which have signed but not ratified are probably bound not to commit any acts which would defeat the object and purpose of the treaty (see Art. 18[11] of the Vienna Convention on the Law of Treaties, 1969,[12] which strongly arguably now reflects international customary law also). However, and herein lies the rub, the commitments to which states have bound themselves are weak. This is a common problem with multilateral environmental agreements (MEAs), in that Parties bind themselves firmly, but what they bind themselves to tends to be more in the nature of 'guidelines' or 'statements of intent'. How, for instance, can anybody point a finger at, and accuse of non-compliance, a state which has firmly bound itself only to 'endeavour to'?

There is a strong argument to be made that this is the best way in which to proceed toward the eventual establishment of binding international rules – by starting on the broad and non-binding scale and gradually working, through experience and trial and error, toward the specific and binding. Even the operation of the Kyoto Protocol itself, while providing legally binding emissions[13] reduction targets for Annex I countries (in fact, for 37 industrialized countries and the European Community) to meet, has been further refined. Detailed rules for the operation of the Kyoto Protocol were

[8] These are the industrialized countries which were, in 1992, members of the OECD (Organisation for Economic Co-operation and Development), together with countries with 'economies in transition' (or 'EIT Parties') including the Baltic States, several Central and Eastern European States, and the Russian Federation. See UNFCCC, 'Parties and Observers' at <http://unfccc.int/parties_and_observers/items/2704.php> (visited 4 October 2011).

[9] These are the parties who are the OECD members of Annex I, excluding the EIT Parties. See *ibid*.

[10] These are parties, mostly developing countries, which are for various reasons recognized as being especially vulnerable to the adverse impacts of climate change (be these impacts physical or economic), such as countries with low-lying coastal areas or which are prone to desertification and drought; or countries which rely heavily fossil fuel production. Of these parties, 49 are classified by the United Nations as being 'least developed countries' (LDCs) and together form an important sub-group. See *ibid*.

[11] Art. 18 provides that states have an obligation not to defeat the object and purpose of a treaty prior to its entry into force. The wording is that:

> [a] State is obliged to refrain from acts which would defeat the object and purpose of a treaty when:
> (*a*) it has signed the treaty or has exchanged instruments constituting the treaty subject to ratification, acceptance or approval, until it shall have made its intention clear not to become a party to the treaty; or
> (*b*) it has expressed its consent to be bound by the treaty, pending the entry into force of the treaty and provided that such entry into force is not unduly delayed.

[12] Vienna Convention on the Law of Treaties, Vienna, 22 May 1969, in force 27 January 1980, 1155 *United Nations Treaty Series* 331.

[13] Of so-called 'greenhouse gases'.

adopted at the seventh Conference of the Parties (COP) in 2001, and are known as the 'Marrakesh Accords'.[14]

As well as providing emissions reduction targets, the Kyoto Protocol establishes a number of 'mechanisms' which can be used by its parties in meeting the targets. These mechanisms can be described as clean development mechanisms (CDM); an emissions trading system; and joint implementation of emissions-reduction programmes. The Kyoto Protocol entered into force on 16 February 2005, and provides essentially for reductions of an average of five per cent against 1990 levels, over the five year period 2008 to 2012. This period, the first commitment period, is due to expire at the end of 2012.

The Conferences of the Parties to the UNFCCC and the Kyoto Protocol meet annually on parallel tracks – obviously, most of the delegates to one will also be delegates to the other. At time of writing of this Editorial Preface, for instance, the next COP will be that in Durban, South Africa at the end of 2011 – this will see, combined, the 17th COP to the UNFCCC and the 7th Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (CMP).[15]

Realizing, by 2007, that there was a danger that the first commitment period under the Kyoto Protocol might expire without agreement having been reached on either a second commitment period or a replacement agreement, the parties decided – at the 13th CoP of the UNFCCC (3rd CMP of the Kyoto Protocol), held in Bali – on a two-year process to conclude negotiations by the 15th CoP, at the end of 2009. This two-year process was named the 'Bali Action Plan'.[16] The intention of the Bali Action Plan was that agreement would be reached in respect of four main commitment areas – these being adaptation (including agreement on appropriate measures to be supported), financing (including funding provision for developing countries), mitigation (including commitments to reduction targets) and technology (including technology transfer).

At the intended conclusion of the two-year period, at the 15th COP (5th CMP of the Kyoto Protocol) which was held in Copenhagen, the parties proved, however, unable to agree on the way forward. This meeting was considered by many observers to represent a failure on the part of the negotiators to meet their 'obligations' toward

[14] Report of the Conference of the Parties on its seventh session, held at Marrakesh from 29 October to 10 November 2001. Addendum. Part two: Action taken by the Conference of the Parties, Volume I, UN Doc. FCCC/CP/2001/13/Add.1 (2001).

[15] As various other bodies have been formed, this meeting will also see the 35th session of the Subsidiary Body for Implementation (SBI); the 35th session of the Subsidiary Body for Scientific and Technological Advice (SBSTA); the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG-KP); and the Ad Hoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA). See UNFCCC, 'Meetings: Durban Climate Change Conference – November 2011', available at <http://unfccc.int/meetings/cop_17/items/6070.php> (visited 14 October 2011).

[16] Decision 1/CP.13 'Bali Action Plan', in Report of the Conference of the Parties on its 13th sess., UN Doc. FCCC/CP/2007/6/Add.1 (2008), Appendum.

'humanity' and 'the planet'. The 15th COP was, however, not a complete failure and some progress was made, especially in that a document known as the 'Copenhagen Accord'[17] was adopted. The word 'adopted' requires clarification, in that the Accord was not adopted formally but was, instead, 'noted' by both the COP and the CMP. The Accord therefore provided a statement of will, rather than a formal commitment, but did include a number of significant references to future commitments, including on the major goal of long-term reductions in greenhouse gas emissions, as well as on elements such as reduced emissions, reduced deforestation, and climate-related financing to assist developing countries. At the time of writing, 141 states had indicated their intention to be listed as parties which have agreed to the Accord.[18]

Much had been expected of the 15th COP, and by comparison very little was expected of the 16th COP (6th CMP of the Kyoto Protocol). However, strongly arguably, more was achieved than had been anticipated. The 15th COP was held in Cancún at the end of 2010, and a set of documents known as the 'Cancún Agreements'[19] was formally adopted. The Agreements include the establishment of innovations such as an 'Adaptation Framework', an 'Adaptation Committee', 'nationally appropriate mitigation commitments or actions' by both developed and developing countries, and a 'Green Climate Fund'. The Cancun Agreements also deal with aspects such as capacity-building; technology development and transfer; the economic and social consequences of actions taken; market approaches; and deforestation. Importantly, there is a general affirmation of the goal of limiting global warming to a high of 2 degrees Celsius above agreed pre-industrial levels; and agreement even to consider a 1.5 degree limit.[20]

This will hopefully provide a solid platform for the next, crucial, meeting – the 17th COP (7th CMP of the Kyoto Protocol) to be held in Durban at the end of 2011. This meeting will provide the last opportunity, before its expiry, to negotiate a second commitment period under the Kyoto Protocol, or a successor agreement. As in the run up to the 16th COP, not a great deal is expected of the 17th COP. Nevertheless, after the final set of formal preparatory negotiations for the 17th COP concluded in Panama City in October 2011, the Executive Secretary of the UNFCCC, Christiana Figueres, declared that 'good progress' had been made. Figueres declared that 'Durban will have to resolve the open question over the future of the Kyoto Protocol and

[17] Decision 2/CP.15 'Copenhagen Accord', in Report of the Conference of the Parties on its 15th sess., UN Doc. FCCC/CP/2009/11/Add.1 (2010), Addendum.

[18] See UNFCCC, 'Copenhagen Accord', available at <http://unfccc.int/meetings/cop_15/copenhagen_accord/items/5262.php> (visited 14 October 2011).

[19] The Cancun Agreements: Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention', in 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, UN Doc. FCCC/CP/2010/7/Add.1 (2011).

[20] See UNFCCC, 'The Cancun Agreements: An assessment by the Executive Secretary of the United Nations Framework Convention on Climate Change' available at <http://cancun.unfccc.int/> or ClimateFocus.com, 'CP16/CMP6:Cancun Agreements: Summary and Analysis', available at <http://www.climatefocus.com/documents/cp16cmp6_cancun_agreements> (both visited 12 October 2011).

what that means for a future global climate agreement'; but that while '[g]overnments retain different positions, … many technical issues related to this have already been brought to conclusion and there is a strong desire from all sides to see a final political decision made'.[21]

This sense of optimism bodes well for the future, but it remains to be seen whether any significant steps will be taken at the 17th COP. Arguably, it is not a bad thing that greater care and more time are taken about setting up new institutional structures, despite the urgency of responding to the problems posed by climate change – given the importance of the issue-area, it is essential that the architecture be as inclusive of different viewpoints, and as broadly representative, as possible. The cross-cutting nature of the climate change issue-area, the wide range of different economic, environmental and social aspects affected by climate change, and the importance of creating effective structures, make it imperative that responses be chosen as wisely as possible.

In the meantime, while global responses are being negotiated, it is important that mitigation and adaptation measures continue to be taken, and that research continues to increase our understanding of all aspects of climate change – diplomatic, economic, legal, scientific, social and related. One aspect which must not be overlooked, but which too frequently is, is that there are many reasons to take measures in respect both of mitigation of climate change and adaptation thereto. These reasons include that mitigation and adaptation measures have, almost necessarily, positive effects in respect of improving awareness and understanding, increasing the protection of biological diversity, and reducing pollution. It is the hope of the editors, the editorial board, and all involved with this *Review* that its publication will contribute to the body of research in the area of climate change and, indeed, to the development of international environmental law and diplomacy generally.

The present *Review* is divided into five Parts. Part I contains papers which address general issues relating to international environmental law-making and climate change. The first paper in the 2010 *Review*, by Mikko Alestalo, lays the foundation for the papers on law-making and diplomacy by presenting the scientific evidence for human-induced climate change.

The second paper, by Daniel Bodansky, explains generally how international environmental law came into existence, has evolved through several definable stages, and has reached its present stage of development. Professor Bodansky delivered the keynote lecture on the 2010 Course.

[21] See UNFCCC, 'Press Release: Panama climate talks mean governments can push ahead strongly in Durban with concrete help for developing world to deal with climate change', 7 October 2011, available at <http://unfccc.int/files/press/press_releases_advisories/application/pdf/pr20111007awg_panama_closing_eng.pdf> (visited 12 October 2011).

Part II contains papers which deal with various aspects of the international climate change regime and papers on particular issues of relevance to law-making in the climate change field. The first of these papers, by Kati Kulovesi, considers the importance of the access which international negotiators have to relevant information – particularly when they are actually involved in negotiations and may face difficulties related to delegation size and available resources. As what amounts to a case study, the paper describes an information resource which appears to have a very useful role to play in informing negotiators.

The second paper in Part II of the 2010 *Review*, by Tuomas Kuokkanen, provides an overview of the international legal regime in respect of climate change. The paper explores the ways in which different perspectives, within the climate change-related legal regime, operate in both contrasting and mutually supportive ways.

The third paper, by Harri Laurikka and Anna-Pia Schreyögg (who was involved in 2010 both as a course participant and as a lecturer), describes the carbon trading market created under the international climate change regime. The paper considers successes and failures of the carbon market to date, and draws conclusions as to how the market might be strengthened in the future.

One of the most important aspects of an international legal regime, in fact often the issue which 'makes or breaks' the regime, is that of compliance. As the success or failure of the climate change regime will depend, in large part, on contracting parties meeting at home the commitments they have made on the international stage, compliance is of particular importance. In the fourth paper in Part II, Sebastian Oberthür and René Lefeber explain, and examine the strengths and weaknesses of, the compliance system developed within the climate change regime.

The fifth paper in Part II, by Maria Pohjanpalo, considers the role of the United Nations headquarters within the climate change-related law-making process. The paper shows that there are different levels within the United Nations structures which deal with climate change-related issues, and that an understanding of these provides useful understanding of the coordinating and convening roles which the UN plays.

The sixth and final paper in Part II, by Mark Radka, deals with technology transfer. After reviewing the development of the concept; the paper explains how the concept can be used to enhance measures to combat climate change.

Part III contains papers which address regional and national legal regimes, related of course to climate change. How countries incorporate their international obligations into their national law is, obviously, of crucial importance to the success or failure of the international initiatives. In the first paper in this Part, course participant Lisa Benjamin considers a regional block of states – the Alliance of Small Island States (AOSIS) – and examines how these states have sought to position themselves within

the international network of states contributing to the climate change-related legal framework.

The role of countries which are both developing countries but significant carbon emitters is particularly interesting in understanding climate change-related negotiations, providing as they do an important link between rich and poor interests. The second and third papers in Part III provide case studies of South Africa and Brazil. The paper by Michael Kidd gives an overview of South Africa's position relating to climate change emissions, and canvasses the history of the country's legislative efforts in the area. With South Africa due to host the 2011 Conference of the Parties to the United Nations Framework Convention on Climate Change, and with the host country often being well-placed to influence international negotiations, this paper provides an analysis of South Africa's position which ought to assist with understanding the role which the country might play.

The third and final paper in Part III, by course participant Natascha Trennepohl, canvasses Brazil's national policy on climate change; and then Brazil's involvement in the international carbon market. While South Africa has not been a major player in the carbon market, Brazil has – comparing the two papers in this Part should illuminate two different approaches which can be taken to national policy in the area of climate change.

Part IV concerns particular issue-areas relevant to climate change. In the first paper, Ed Couzens canvasses various problems faced by marine environments generally, many of which problems are either caused by or exacerbated by climate change. In the absence of a dedicated global convention dealing with marine protection, the paper considers how it might be possible to work toward protection of the oceans and coastal areas from the effects of climate change using existing provisions in various conventions.

In the second paper, Niklas Hagelberg considers the important contribution which forests make, and that which they may potentially make, to realizing the goals of sustainable development. The paper explains the REDD+ programme (which stands for Reducing Emissions from Deforestation and Forest Degradation and Enhancement of Forest Carbon Stocks), describes how this programme developed, and considers the role which the programme might play in the future as a catalyst for change. Suggestions are made as to how this role might be enhanced.

The third paper in Part IV, by Aline Kühl and Elizabeth Maruma Mrema examines how migratory species are particularly vulnerable to climate change, and how multilateral environmental instruments on climate change, on one hand, and on migratory species, on the other hand, could help the situation. The authors conclude that while more scientific research is needed on the complex issue, the parties to multilateral environmental agreements should make every effort to ensure that the right

governance structures are in place to allow migratory species to adapt to and survive in changing climatic conditions. Greater synergies among MEAs and between the biodiversity-related MEAs and UNFCCC are essential.

The fourth paper in Part IV, by Leila Suvantola, considers some of the different ways in which value can be placed on aspects of the natural environment – particularly through an understanding of the concept of 'ecosystem services'. The paper then explores ways in which the concept can be used to improve efforts to deal with the effects of climate change.

Part V of the *Review* reflects the interactive nature of the Course. During the Course negotiation simulation exercises were organized to introduce the participants to the real-life challenges facing negotiators of international environmental agreements. In the main simulation exercise, participants were given individual instructions and a hypothetical, sometimes country-specific, negotiating mandate and were guided by international environmental negotiators. Excerpts from, and explanations of, the exercise are included in Part V.

The 2009 simulation exercise was devised and run by Marko Berglund and Kati Kulovesi. The exercise was focused on some key procedural and substantive issues related to ongoing negotiations under the United Nations Framework Convention on Climate Change on enhancing international climate change cooperation. The scenario 'placed' participants at the United Nations Climate Change Conference in Cancún, Mexico and the 16th session of the Conference of the Parties to the UNFCCC (COP 16). In advance of the real COP 16, the simulation exercise gave Course participants a realistic flavour of how negotiations at COP 16 might have advanced.

While the majority of the papers in the present *Review* deal with specific environmental issues, or aspects of specific multilateral environmental agreements, the negotiation exercises provide, in a sense, the core of each Course. This is because each Course contains at least one, sometimes two, major practical negotiation exercise which the participants undertake; and it is both intended and suggested that the papers explaining the exercises provide insights into the international law-making process. The inclusion of the simulation exercises has been a feature of every *Review* published to date, and the editorial board, editors and course organizers believe that the collection of these exercises (which now spans seven years, and is moving into its eighth) has significant potential value as a teaching tool for the reader or student seeking to understand international environmental negotiations. It does need to be understood, of course, that not all of the material used in each negotiation exercise is distributed in the *Review*. This is indeed a downside, but the material is often so large in volume that it cannot be reproduced in the *Review*.

Generally, it is the hope of the editors that the papers in the present *Review* will not be considered in isolation. Rather, it is suggested that the reader should make use of all of the *Reviews* (spanning the years 2004 to 2009, with more to come), all of which are easily accessible on the internet through a website provided by the University of Eastern Finland,[22] to gain a broad understanding of international environmental law-making and diplomacy.

To give examples of this, in the 2009 *Review*, under the theme of 'Governance' there is a paper by Daniel Schramm and Carl Bruch which considers the specific environmental issue of climate change. Recognizing climate change as a 'crosscutting, multi-sector stressor that implicates a wide range of legal frameworks', the paper shows how difficult it is to create an effective governance regime to deal with so wide an issue; but goes on to explain, however, that such development is essential as it is becoming apparent that existing 'old order' governance structures are not equipped to deal with the wide nature of the climate change issue area. The 2007 *Review* was devoted to the theme of 'Chemicals' and many of the papers in that volume are relevant to climate change-related law-making, such as the paper by Tammy de Wright on the Montreal Protocol compliance mechanisms, using Russia's non-compliance as a case study.

These are merely two papers of many. Inclusive of the present volume, in the first seven volumes of the *Review* (spanning the years 2004 to 2010 of the Course from which the papers in each *Review* emanate) 99 authors have contributed to 117 papers. Work is already underway on the 2011 *Review*, to be published in 2012, which it is anticipated will add approximately 15 papers to this total – under the theme of 'synergies amongst the biodiversity-related conventions'.

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[22] See <http://www.uef.fi/unep/publications-and-materials>.

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Part I

Introducing International Environmental Law and Climate Change

Man-made Climate Change: The Scientific Basis and the Main Implications[1]

Mikko Alestalo[2]

1 The scientific basis of human-induced climate change

The natural existence of the so-called 'greenhouse gases'[3] in the atmosphere keeps the surface of the earth warmer by roughly 30°C than it would otherwise be. The biosphere on earth necessary for life has, over the course of geological time scales, adjusted to the prevailing specific conditions. Adding greenhouse gases into the atmosphere causes extra warming, which – if rapid and large – may be hazardous to the life and economy of nature and humankind.

Available scientific evidence shows that humankind has, by burning fossil fuels[4] and by changing land use,[5] caused a marked increase of greenhouse gas concentrations, the impact of which is very likely already seen in the atmosphere, the oceans and the cryosphere.[6] The level of carbon dioxide[7] – the most effective of the green house

[1] The main references used for this paper are the following: S. Solomon, D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds), *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2007), available at <http://www.ipcc.ch/ipccreports/ar4-wg1.htm>; and The Royal Society, Climate change: A Summary of the Science (The Royal Society, 2010), available at <http://royalsociety.org/WorkArea/DownloadAsset.aspx?id=4294972963> (both visited 24 November 2010).

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[3] Gases which absorb part of the terrestrial radiation so as to prevent it from escaping to the space, and return it back to the surface, thus having a warming effect on the surface – akin to the effect on growing plants kept in a glass greenhouse.

[4] For instance, coal, natural gas and oil for energy production.

[5] For instance, deforestation.

[6] The areas of earth (such as Antarctica and the northern polar regions) where, due to the cold temperatures, water is generally found as ice – 'cryo' meaning 'icy cold' (Collins English Dictionary (3rd ed., 1991) at 383).

[7] A colourless, odourless, incombustible gas formed during respiration (formula: CO2) (*Ibid*. at 242).

gases – concentration currently already exceeds the pre-industrial level by about 40 per cent. The present-day levels are actually higher than at least for several hundreds of thousands of years.

Similar development is true for other greenhouse gases such as methane[8] or nitrous oxide[9] which mainly originate from agriculture and industry. There also are other greenhouse gases: so called halocarbons (chlorofluorocarbons; hydrochlorofluorocarbons; hydrofluorocarbons;) and ozone – and even compounds, like perfluorocarbons and sulphur hexafluoride. The net warming effect of these other greenhouse gases is presently less, but comparable to that of the carbon dioxide alone. However, towards the end of the 21st century, the role of carbon dioxide will clearly dominate as its atmospheric concentrations obviously increase more rapidly than those of the other gases. Thus, it is important to concentrate most of the interest on this gas.

If the present rate of increase in greenhouse gas concentrations continues, the result (according to the several plausible scenarios[10]) will be an about 3°C global warming by 2100. Even a higher degree of warming cannot be ruled out, noting the 'business-as-usual' approach to global development of energy production based on fossil fuels and of land degradation, especially through deforestation in tropical forests. The elevated concentrations of carbon dioxide will remain in the atmosphere for thousands of years even if we were to stop the releases immediately. This is because the natural sinks of atmospheric carbon dioxide (the biosphere and ultimately the oceans) would remove the extra carbon dioxide only very slowly.

The net warming is a result of not only the elevated greenhouse gas concentrations but also of certain feedback[11] phenomena. Positive feedbacks dominate, meaning that they enhance the warming effect. A warmer atmosphere can contain more water vapour,[12] which also has a greenhouse gas-like effect (but which is not affected directly by humankind). In a warmer world, especially in the northern high latitudes, less terrain will be covered by ice and snow. Surfaces free of ice and snow increase the absorption of radiation from the sun due to the diminishing reflection of radiative energy back to space, and eventually cause further warming of the atmosphere and ocean.

In the land-ocean-atmosphere system, the oceans take most (over 80 per cent) of the extra heat, some goes to melting the glaciers and only a very small portion remains to warm the atmosphere. The oceans thus act as a buffer against the warming. How-

[8] A colourless, odourless, flammable gas, the simplest alkane and the main constituent of natural gas (formula: CH4) (*Ibid*. at 383).

[9] A colourless, nonflammable, slightly soluble gas with a sweet smell (formula: N2O) (*Ibid*. at 1058).

[10] See IPCC Special Report on Emission Scenarios (IPCC, 2000), available at <http://www.gcrio.org/OnLnDoc/pdf/sres_spm.pdf> (visited 22 February 2011).

[11] Phenomena or forces that increase the rate, or the extremes, of climate change are considered 'positive feedback phenomena', while those that slow the rate of climate change are known as 'negative feedback phenomena'.

[12] Water vapour is water in the atmosphere in gaseous invisible form as a result of evapotranspiration from water surfaces or from vegetation.

ever, due to the enormous heat capacity of the oceans compared to that of air, the increase in temperature units in the oceans is much less than in the atmosphere, i.e. tenths of a Celsius degree versus full degrees.

Besides altering the greenhouse gas concentrations, humankind has changed the atmosphere in a further way relevant for the climate change. While burning fossil and bio-fuels for energy production, artificial aerosol,[13] i.e. fine particles, are generated that spread into the atmosphere. A major constituent of this aerosol is sulphur dioxide (SO_2). The effect of the atmospheric aerosol is to reflect sun radiation back to space, thus leading to a cooling effect. The extra aerosol has a secondary cooling effect via increased cloudiness. This is due to the increased number of cloud droplets as the fine particles act as condensation nuclei for water vapor. As the net effect of cloudiness is a cooling one, due to the reflection of the sun radiation, this enhances the cooling effect of man-made aerosol.

Taken together, the overall effect of human-generated warming by greenhouse gases and man-made cooling by aerosol remains a warming one. Presently, the latter effect cancels out only roughly 40 per cent of the warming effect of the former. The residence time of the aerosol in the atmosphere is short, of the order of days to weeks, so that in the long-term its relative impact on the global mean temperature is to diminish, if the greenhouse gas concentrations continue their growth.[14] The uncertainties connected with the aerosol and cloud effects are, however, perhaps the largest in estimating the future climate, and require more research.

2 The potential impacts of climate change

Observed global warming from the pre-industrial era to the present day is about 0.8°C, which is evident via direct temperature measurements that are gradually available since roughly 1850. Part of this can be explained by natural processes (for instance, increased solar radiation), but closer to the present time human-generated warming clearly dominates. Simultaneously, the world's oceans have become warmer and at the same time more acid; mountain glaciers have retreated; and overall sea levels have risen. The minimum coverage of the Arctic sea ice in summertime has diminished faster than most climate models have been able to indicate, as evident by the satellite data since the 1970s.[15]

Sea levels are rising due, firstly, to the heat expansion of the ocean water as warmer ocean water takes up a larger volume. Secondly, sea levels are rising due to melt wa-

[13] Colloidal dispersion of solid or liquid particles within fog, gas or smoke (*Collins, supra* note 6, at 24).

[14] See IPCC Special Report on Emission Scenarios, *supra* note 10.

[15] I. Allison et al., The Copenhagen Diagnosis. Updating the World on the Latest Climate Science (UNSW Climate Research Centre, 2009), available at <http://www.ccrc.unsw.edu.au/Copenhagen/Copenhagen_Diagnosis_LOW.pdf> (visited 22 February 2011), Fig. 13.

ter from mountain glaciers. At the present time, the melt water from continental ice sheets in Greenland and Antarctica as a third relevant process is only starting to grow,[16] but that process is not known accurately. The melt water from floating sea ice cover will not change the sea level. The best estimate of the sea level rise by 2100, taking note of the presently known processes, is between 18 and 59 cm.[17] A higher rise cannot be ruled out if the continental ice sheets begin to melt faster after a threshold temperature increase. This is one of the most important scientific uncertainties remaining today.

Besides global warming, it is envisaged that the hydrological cycle will change. It is probable that heavy rainfall events will become even heavier leading to increased flooding. At the same time, dry spells would become longer and more intensive. Water and food security would be threatened in the areas affected by these phenomena. Sea level rise would adversely affect human ways of life, especially in the densely populated coastal areas in South Asia. The acidification of ocean surfaces might lead to changes in plankton growth and in the food chain there, including fish species. In Europe the summertime drying of the Mediterranean region would become stronger. In areas of high technology the excessive rain events might cause non-availability of electricity and communications as well as destruction of structures. It is possible that there will be further surprises concerning the sustainability of the worldwide ecosystems. All of these require more research, as do the interactions between them.

How do we know this, and what is the degree of uncertainty in the future projections? The concept of scientific research is to take observations from nature, and then to attempt to understand why the observations are as they are. In the case of climate the essential question to be asked is: why does the climate system work as we observe? Our understanding will be expressed as physical and chemical laws. The laws take the form of mathematical formulae or, more generally, (computer) models of the surrounding world. The model is probably a good one if it can reproduce the past observations. Such a model will also be a useful tool for predicting future changes, if we insert into them the envisaged changes in the main driving components of nature. In this way we can project likely climates in the future. The main physical driving component is the changing composition of atmosphere – the most important factor being the increase of greenhouse gas concentrations.

Clearly, in the case of the earth-atmosphere system, human observations cannot cover the whole globe and cannot be continuous in time. Our understanding of natural processes is not complete, either. The models are merely approximations of the true nature of the natural world. However, science is also able to express the uncertainty of its results. This is given as numerical confidence limits. Confidence is

[16] See *ibid.*, Fig. 8, 9 and 10.
[17] See Solomon et al., *Climate Change* 2007, *supra* note 1, Table SPM.3.

increased when independent research projects yield similar results. Regarding projections of the global mean temperature change for 2100 (relative to 1980–1999), the best estimate we have is between +1 and +6 degrees, +3 degrees Celcius being the most probable value (rounding off the decimals).[18] A substantial part of the uncertainty range comes, however, from unknown socio-economic factors like human population growth on the planet towards the end of the century and from the choice of the energy palette (i.e. fossil versus non-fossil).

3 The relationship between science and politics

The peer-review system of scientific publishing gives to the scientific society the backbone to integrate individuals' results with the existing, vast amount of information collected by others. For scientists as a whole, the peer-reviewed literature serves as the basic, qualified material from which to isolate the real truths of any scientific issue, including climate change. This is a continuous process as more observations become available, new and better theories are developed and research tools become better. This is also the world on which the Inter-governmental Panel on Climate Change[19] (IPCC) builds its findings.

It is important to understand that the way of producing an assessment report in the IPCC process follows scientific traditions of research and publication. Only peer-reviewed publications are considered except in few cases where such literature is not abundant enough. Writers are selected based on their professional skills. They come from all of the continents of the world and are close to one thousand in number. There are three subsequent reviews of the text in order to accommodate views of all reviewers into a balanced product. The short Summaries for Policymakers are the part of the assessments that are approved in final IPCC Plenary meetings with all governments present, agreeing about the content of the Summaries.

Political negotiations and decisions concerning regional adaption to or global mitigation of human-induced climate change require solid and unequivocal scientific information as background material. This is obvious as the decisions about adaptation and especially mitigation are extremely far-reaching, influencing global economy and relations between sovereign countries. The evidence concerning the negative impacts of the human-induced climate change must be so clear and concrete that there remains no reasonable doubt about the necessity of the counter actions. And yet, as

[18] *Ibid*.

[19] The Intergovernmental Panel on Climate Change (IPCC) is the leading international body for the assessment of climate change. It was established by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) to provide the world with a clear scientific view on the current state of knowledge in climate change and its potential environmental and socio-economic impacts. The UN General Assembly endorsed the action by WMO and UNEP in jointly establishing the IPCC ('Protection of global climate for present and future generations of mankind',UNGA Res. 43/53 (1988)'). IPCC initiated its work in 1988.

the science is expressing its best and honest understanding of future conditions, there are always certain scientific uncertainties in the analyses and calculations which just must be accepted.

Therefore, it is clearly important to have the scientific and political processes separated from each other. Accordingly, since the beginning of the 1990s, the IPCC process has periodically produced assessment reports that each time contains the best understanding of past, present and future climates as evident on the basis of the most recent and credible science. One may notice that in the media and blogosphere there is a lot of criticism against the credibility of the findings of the IPCC assessment reports. Sometimes this criticism may seem to be scientifically based. It is of utmost importance to understand that such criticism has no place in the science unless it has first been published in the peer-review literature. The peer-review serves as a best achievable guarantee that valid data and valid methods are used and finally the conclusions are based on real facts. Otherwise any criticism is taken as unproven individual opinions or views arising from various groups of interest.

Interestingly, an error in the last IPCC Assessment Report (2007) received wide publicity that was suggested to cast considerable doubt about the whole Report covering almost 3 000 pages. The given timetable of the melting of the Himalayan glacier was surely in error, but actually so much in error that the given value could not reasonably be taken seriously. It was probably a human mistake and actually pointed out that obeying the reviewing rules must be followed more carefully. Steps into such direction have already been taken by the governing body of IPCC.

The IPCC Summaries for Policymakers for each assessment are approved in the final IPCC plenary meetings with all governments of the world present, thus creating the required joint and undisputable scientific basis for further political actions. This scientific background information from the IPCC process about future climates is in the form of 'what if' scenarios. The science is able to estimate the future climates under different plausible development options concerning global energy consumption and under different assumptions concerning paths of global population increase. The essential point here is that the future climate is largely dependent on socio-economic choices of the countries. The IPCC outcome will offer sufficient background material for the policy-makers to choose on and decide between various policy options to handle the obvious risks connected with the business-as-usual way of changing the contents of the atmosphere. The general principle to act so as to cause no harm to nature was accepted already in 1992 in the UN Conference on Environment and Development, also known as the Rio Summit or Earth Summit.[20]

[20] See <http://www.un.org/geninfo/bp/enviro.html>.

4 Conclusion

To sum up, the great challenge for the governments, separately and jointly, is to make far-reaching decisions about how to satisfy the global energy needs without causing irreversible harm to the nature we live in. Use of fossil fuels is in the focus of these considerations, but energy saving, better technologies and renewable energy sources clearly are part of the solutions. The decision-making takes place in a situation where there remains scientific uncertainty concerning the outcome of the decisions. The logical motivation to proceed, however, comes from the precautionary principle which is also mentioned in the declaration of the Rio 1992 Summit.[21] Later, in the Copenhagen (2009) and Cancún (2010) Conferences of Parties this principle was translated into an explicit expression about the upper limit of allowable global mean temperature increase (2 degrees Celcius), with reference to the preindustrial conditions. The precautionary principle has also been translated into the language of economy via scientific analyses of future global economies while adapting to future conditions under a mitigation or non-mitigation policy.[22] According to that study, an early mitigation, even if costly, is clearly more economical than a reactive, purely adaptive option.

[21] UN Declaration on Environment and Development, Rio de Janeiro, 14 June 1992, UN Doc. A/CONF.151/5/Rev.1 (1992), 31 *International Legal Materials* (1992) 876.

[22] Perhaps the most influential so far being the so-called Stern Review: Nicholas Stern, *The Economics of Climate Change: The Stern Review* (Cambridge University Press, 2007).

The Development of International Environmental Law

Daniel Bodansky[1]

1 Introduction

International environmental law is a relatively new field, but its rules and standards are now voluminous. A current treatise on the principles of international environmental law runs to more than 1 000 pages,[2] detailing rules of virtually every description on virtually every area of the subject. Until recently, international environmental law was arguably considered a narrow specialty field within the general context of international law. Today, it has become a field in its own right, with sub-specialties on chemicals, climate change, freshwater resources, marine pollution, sustainable development, wildlife law, and so forth.

The sheer number of international environmental norms that have arisen is remarkable, given the inherent awkwardnesses of the international legal process. International law lacks a legislature to create law, a judiciary to interpret and apply law, and an executive to enforce law. Some of the fundamental questions concerning the international legal process that might be asked include: how have international environmental norms emerged?; what are the obstacles to cooperation which need to be overcome, and how has international environmental law addressed these?; to what extent is behaviour affected by international environmental norms, and why?; and what are the means by which international environmental norms are implemented and enforced?

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[2] Philippe Sands, *Principles of International Environmental Law* (2nd ed., Cambridge Univ. Press, 2003).

2 The development of international environmental law

2.1 The broad picture

International environmental law has grown erratically, in a pattern familiar to political analysts: a problem is discovered, often with alarm, as a result of a dramatic event such as an oil spill; public interest is aroused, leading to new initiatives; environmental legal responses spread to other countries through a process of mimicry; the difficulties and the true, often hidden, costs of addressing the problem gradually become apparent; the public becomes discouraged, bored, or diverted by the emergence of a new issue; and the issue becomes quiescent, continuing to be addressed in a routine, 'administrative' manner.[3]

While this model could be applied to particular environmental issues, it can also be applied to the entire history of international environmental law, in the emergence of which three such cycles or waves can be discerned: firstly, a 'conservationist' stage, focusing on the protection of wildlife, stretching from the late 1800s through the mid-1900s; secondly, a 'pollution-prevention' stage, spanning the so-called environmental revolution of the 1960s and early 1970s;[4] and, thirdly, a 'sustainable development' phase, beginning in the mid-1980s[5] and continuing[6] to the present day.[7]

International environmental law arguably originated in the conservation and nature protection movement of late nineteenth- and early twentieth-century Europe and North America. Although this conservation movement had a national rather than an international focus, the international dimension of conservation received some attention – in particular, this attention focusing on problems in respect of migratory species (mostly birds) and commercially-exploited species found in common areas such as the oceans (fish, fur seals, and cetaceans). In 1868, a German ornithological meeting proposed the development of an international treaty on bird protection; and this initiative culminated in the eventual adoption in 1902, by twelve European nations, of the Convention to Protect Birds Useful to Agriculture.[8]

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3 Anthony Downs, 'Up and Down with Ecology: The "Issue-Attention Cycle"', 28 *Public Interest* (1972) 38–50.

4 Marked by the Stockholm Conference, the establishment of the United Nations Environment Program (UNEP), and the negotiations of numerous multilateral agreements, particularly in the field of marine pollution. On the Stockholm Conference and the establishment of UNEP, see Donald Kaniaru, 'The Stockholm Conference and the birth of the United Nations Environment Programme' in Marko Berglund (ed), *International Environmental Law-making and Diplomacy Review 2005*, University of Joensuu-UNEP Course Series 2 (University of Joensuu, 2006) 3–22 at 3.

5 With the work of the Brundtland Commission (see later in this paper).

6 Through the 1992 Earth Summit (UN Conference on Environment and Development) and the 2002 Johannesburg Summit (World Summit on Sustainable Development).

7 For a consideration of major milestones in the history of international environmental law, see Ed Couzens, 'Individuals and Disasters: the Past and the Future of International Environmental Law' in Marko Berglund (ed), *International Environmental Law-making and Diplomacy Review 2005*, University of Joensuu-UNEP Course Series 2 (University of Joensuu, 2006) 71–96.

8 Convention to Protect Birds Useful to Agriculture, Paris, 19 March 1902, into force 6 December 1905,

This initial stage in the development of international environmental law was significant, but had a number of limitations. Firstly, its focus of interest was narrow in that, while some conservationists did advocate nature preservation as an 'end' in itself, early conservation efforts did not reflect a generalized interest in environmental protection or pollution. Instead, the conservation movement's dominant ethos was anthropocentric and utilitarian, emphasizing the rational use of natural resources by, and for, humans. For example, early efforts at bird conservation, including the 1902 Paris Convention, attempted to distinguish between those birds viewed as useful to agriculture, particularly in the control of insect pests, from those that were 'noxious'.[9]

Secondly, in conserving nature, the early conservation movement tended to focus on direct threats – in particular, the hunting of wildlife – rather than indirect threats such as habitat loss, introduction of non-native species, and pollution.

Thirdly, states adopted conventions in a piecemeal, ad hoc manner, and there was not much development of institutions. Even as late as 1940, for instance, the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere (Western Hemisphere Convention)[10] failed to provide for regular meetings of the parties or for any other institutional follow-up. As a result, it became a 'sleeping beauty'[11] – its excellent substantive provisions virtually devoid of influence.

2.2 Initial development

Despite the achievements of the conservation movement, the environment remained marginalized in international affairs as late as 1945, the year the United Nations was established. Significantly, the UN Charter[12] made no reference whatsoever to environmental protection or nature conservation, nor did states establish a UN specialized agency focused on the environment. International environmental issues did not come into their own until the late 1960s, as part of a more general upsurge of interest in the environment often referred to as the 'environmental revolution'.

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available at <http://www.ecolex.org/server2.php/libcat/docs/TRE/Multilateral/En/TRE000067.txt> (visited 15 August 2011). The 1902 Convention was followed by several bilateral treaties, including the 1916 Migratory Birds Convention between the United States and Great Britain (for Canada) (adopted at Washington D.C., 16 August 1916, amended in 1979 and 1995) and a similar agreement in 1936 between the United States and Mexico (Convention between the United States of America and the United Mexican States for the Protection of Migratory Birds and Game Mammals, adopted at Washington D.C., 10 September 1936, into force 11 October 1955).

9 Schedule I of the Convention is entitled '[u]seful birds'; Schedule II is entitled '[n]oxious birds'.

10 Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere, Washington D.C., 12 October 1940, into force 1 May 1942, available at <http://www.oas.org/juridico/english/treaties/c-8.html> (visited 15 August 2011).

11 Simon Lyster, *International Wildlife Law* (Grotius, 1985) at 124 (characterizing the Western Hemisphere Convention as a 'sleeping treaty'). The depiction of the Western Hemisphere Convention as a 'sleeping convention' has been retained in Michael Bowman, Peter Davies and Catherine Redgwell, *Lyster's International Wildlife Law* (2 ed., Cambridge University Press, 2010) at 242.

12 Charter of the United Nations, 26 June 1945, available at <http://www.un.org/en/documents/charter/index.shtml>.

The environmental movement of the 1960s differed from its predecessors in several ways. Firstly, in contrast to the conservation movement, environmentalism in the 1960s was a mass movement. Secondly, it focused on broader issues of economic growth, pollution, population and technology, rather than merely on the conservation of nature. Finally, it moved away from the earlier focus on economics and science – on the rational utilization of natural resources – and toward a more zealous, anti-establishment orientation, part of the new politics that marked the zeitgeist of the 1960s.

Arguably, the first multilateral pollution problem to receive international attention was that of oil pollution from tankers. In 1954, a conference organized by the International Maritime Organization[13] adopted the International Convention for the Prevention of Pollution of the Sea by Oil (OILPOL),[14] which established coastal zones within which tankers could not discharge oil except in very limited quantities. Following the *Torrey Canyon* oil spill off the English coast in 1967 – the first major accident involving the new generation of supertankers – maritime and coastal states quickly adopted two conventions to address accidental discharges of oil: one recognized the right of coastal states to intervene,[15] and the other established a liability regime.[16] A series of further tanker accidents helped spur the negotiation of the 1973 International Convention for the Prevention of Pollution from Ships (MARPOL),[17] which addresses not only oil pollution, but also other types of vessel-source pollution, including sewage and garbage. In addition, states adopted two conventions in 1972 limiting the dumping of wastes at sea, one regional (focusing on the North Sea)[18] and the other global.[19]

[13] See <http://www.imo.org>.

[14] International Convention for the Prevention of Pollution of the Sea by Oil, London, 12 May 1954, into force 26 July 1958, 327 *United Nations Treaty Series* 3, available at <http://www.ecolex.org/server2.php/libcat/docs/TRE/Multilateral/En/TRE000135.txt> (visited 15 August 2011).

[15] International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, Brussels, 29 November 1969, into force 6 May 1975, available at <http://www.ecolex.org/server2.php/libcat/docs/TRE/Multilateral/En/TRE000111.txt> (visited 15 August 2011).

[16] International Convention on Civil Liability for Oil Pollution Damage, Brussels, 29 November 1969, into force 19 June 1975, 973 *United Nations Treaty Series* 3, available at <http://www.ecolex.org/server2.php/libcat/docs/TRE/Multilateral/En/TRE000120.txt> (visited 15 August 2011); and International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 18 December 1971, into force 16 October 1978, superseded by Protocol to amend the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, London, 27 November 1992, into force 30 May 1996, available at <http://www.ecolex.org/server2.php/libcat/docs/TRE/Multilateral/En/TRE001176.txt> (visited 15 August 2011). See also the website of the International Oil Pollution Compensation Funds (IOPC Funds) at <http://www.iopcfund.org/>.

[17] International Convention for the Prevention of Pollution from Ships, 1973, first signed 2 November 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78), adopted 17 February 1978. The combined instrument entered into force on 2 October 1983, 12 *International Legal Materials* (1973) 1319, <http://www.imo.org>.

[18] Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft (Oslo Convention), Oslo, 15 February 1972, in force 7 April 1974, 11 *International Legal Materials* (1972) 262.

[19] Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, London, 13 November 1972, in force 30 August 1975, 11 *International Legal Materials* (1972) 1294, <http://www.londonconvention.org/>.

2.3 Developments in the 1970s

A watershed in the development of international environmental law was the 1972 UN Conference on the Human Environment, held in Stockholm and popularly known as the Stockholm Conference, which was proposed by Nordic countries concerned about transboundary air pollution, in particular the problem of acid rain.[20] The conference served as a major catalyst – perhaps *the* major catalyst – in the emergence of international environment law. Everything about the Stockholm Conference[21] was big: it was attended by 6 000 persons, 114 countries, 400 non-governmental groups, and 1 500 journalists; it generated 100 000 pages of preparatory documents and 40 tonnes of conference documents.[22] In addition to the official conference, activist groups organized separate events – an Earth Forum and an even more radical Peoples Forum – popularly dubbed 'Woodstockholm'.

One of the major outputs of the Conference was the Stockholm Declaration,[23] which sets out sixteen principles for the preservation and enhancement of the human environment. Most of these principles are seldom cited; the exception being Principle 21, which articulated the responsibility of states to ensure that activities under their jurisdiction and control do not adversely affect other states or areas of the global commons. Principle 21 is now widely regarded as having become part of international law, a view endorsed by the International Court of Justice.[24]

Another consequence of Stockholm was the UN General Assembly's decision in December 1972 to establish the United Nations Environment Program (UNEP),[25] located in Nairobi, Kenya.[26] Owing in part to opposition by the existing UN specialized agencies, the General Assembly did not give UNEP any management responsibilities. Instead, UNEP was intended to play a coordinating and catalytic role. Although it has never succeeded in fulfilling a coordinating function, due to its lack of leverage over other UN agencies, UNEP has played a significant role in helping to stimulate the development of international environmental law, particularly during the late 1970s and 1980s. Important UNEP initiatives have included its regional seas program,[27] which protects the Mediterranean and Caribbean seas among others, as

[20] According to the United States Environment Protection Agency, 'acid rain' is 'a broad term referring to a mixture of wet and dry deposition (deposited material) from the atmosphere containing higher than normal amounts of nitric and sulfuric acids', and which can affect both animals and plants when deposited. See <http://www.epa.gov/acidrain/what/> (visited 26 August 2011).

[21] UN Conference on Human Environment, Stockholm, 1972.

[22] On these and similar figures, see generally Tony Brenton, *The Greening of Machiavelli: Evolution of International Environmental Politics* (Earthscan, 1994) at 36, 42–43.

[23] Declaration of the United Nations Conference on the Human Environment, Stockholm, 16 June 1972, UN Doc. A/CONF.48/14/Rev.1 (1973), 11 *International Legal Materials* (1972) 1416.

[24] ICJ, 'Legality of the Threat or Use of Nuclear Weapons', advisory opinions of 8 July 1996, available at <http://www.icj-cij.org/docket/index.php?p1=3&p2=4&k=e1&p3=4&case=95> (visited 22 August 2011) paras 241–42.

[25] See <http:www.unep.org>.

[26] See Kaniaru, 'The Stockholm Conference', *supra* note 4.

[27] See <http://www.unep.org/regionalseas/>.

well as its sponsorship of treaty negotiations to protect the stratospheric ozone layer and to regulate international trade in hazardous wastes.

The Stockholm process also led, more indirectly, to the negotiation of several important treaties. Among these treaties were the London Dumping Convention (regulating the dumping of hazardous wastes at sea);[28] the World Heritage Convention;[29] and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).[30] None of these conventions was adopted at Stockholm, and all might have emerged even had Stockholm not occurred. But the intense interest in the environment generated by the run-up to Stockholm served as a catalyst in producing this unusual surge in treaty-making activity.

2.4 Developments in the 1980s

The period after Stockholm was generally marked by a downturn of interest in the environment, at least compared to what came before and after. Interest in environmental issues began to revive again only in the mid-1980s, as a result of the discovery of the Antarctic ozone hole in 1985[31] and the beginning of concern about global warming. The Vienna Convention for the Protection of the Ozone Layer[32] was agreed to in the same year. The year 1987, in particular, witnessed two seminal events: (1) the adoption of the Montreal Ozone Protocol on Substances that Deplete the Ozone Layer,[33] which has cut the use of ozone-depleting substances dramatically and is widely considered to be the most successful environmental agreement to date; and (2) the publication of *Our Common Future*[34] by the World Commission on Environment and Development (referred to as the Brundtland Commission), led by former Norwegian Prime Minister Gro Harlem Brundtland, which became a bestseller and popularized the concept of 'sustainable development'.

By 1988, environmental issues had become so prominent that *Time* magazine named the environment 'Newsmaker of the Year'.[35] The next several years saw a flurry of activity, including the adoption of the Basel Convention on the Transboundary

[28] See *supra* note 19.
[29] Convention Concerning the Protection of the World Cultural and Natural Heritage, Paris, 16 November 1972, in force 17 December 1975, 11 *International Legal Materials* (1972) 1358, <http://whc.unesco.org>.
[30] Convention on International Trade in Endangered Species of Wild Fauna and Flora, Washington DC, 3 March 1973, in force 1 July 1975, 993 *United Nations Treaty Series* 243, <http://www.cites.org>.
[31] By Joseph Farman, Brian Gardiner and Jonathan Shanklin of the British Antarctic Survey. See <http://www.theozonehole.com/>.
[32] Convention on the Protection of the Ozone Layer, Vienna, 22 March 1985, in force 22 September 1988, 26 *International Legal Materials* (1985) 1529.
[33] Montreal Protocol on Substances that Deplete the Ozone Layer, Montreal, 16 September 1987, in force 1 January 1989, 26 *International Legal Materials* (1987) 154, <http://www.unep.org/ozone/>.
[34] Gro Harlem Brundtland, *Our Common Future* (Oxford University Press, 1987).
[35] See, 'Planet of the Year – Endangered Earth', *Time* of 2 January 1989, available at <http://www.time.com/time/covers/0,16641,19890102,00.html> (visited 26 August 2011).

Movements of Hazardous Wastes in 1989;[36] the London Amendment to the Montreal Protocol in 1990;[37] and agreements between the United States and Canada and among European countries to address the problem of acid rain.[38] The process culminated in the 1992 UN Conference on Environment and Development (UNCED) in Rio de Janeiro (popularly known as the Earth Summit) – one of the largest assemblages of world leaders ever – and the negotiation of the climate change[39] – and biological diversity conventions.[40]

2.5 More recent developments

The more recent phase in international environmental law differs in important ways from the environmental movement of the 1970s. Firstly, it involves much more complex environmental problems such as dealing with the impacts of climate change and protecting biological diversity, whose solutions may require fundamental economic and social changes rather than relatively simple pollution-prevention fixes.

Secondly, international environmental issues have assumed a more pronounced North–South (Developed–Developing) dimension. The problems of the 1960s and 1970s, such as vessel-source pollution, ocean dumping, and acid rain, primarily involved industrialized countries. However, problems such as climate change and biological diversity protection cannot be solved by developed countries alone; they require action by developing countries as well. As such, developing countries have played a much more central role in establishing these treaty regimes.

Thirdly, the current generation of environmental problems, such as climate change and loss of biodiversity, involve a high degree of scientific uncertainty. With respect to some issues, such as the dangers posed by genetically modified organisms, it is not clear whether a threat exists at all. As a result, techniques to address uncertainty have gained increasing prominence; of particular importance is the so-called precautionary principle, which urges action against environmental threats even in the face of scientific uncertainties. The shift in emphasis toward precaution is reflected in the transformation of the international regime on ocean dumping in the 1990s from a negative-listing approach, which allowed wastes to be dumped unless a waste was

[36] Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, Basel, 22 March 1989, in force 5 May 1992, 28 *International Legal Materials* (1989) 657, <http://www.basel.int>.

[37] The amendment to the Montreal Protocol agreed by the Second Meeting of the Parties (London, 27–29 June 1990), into force 10 August 1990, available at <http://ozone.unep.org/Ratification_status/london_amendment.shtml> (visited 15 August 2011).

[38] A series of protocols adopted to the original 1979 Acid Rain Convention (Convention on Long-Range Transboundary Air Pollution, Geneva, November 13 1979, in force 16 March 1983, 18 *International Legal Materials* (1979) 1442, <http://www.unece.org/env/lrtap/>).

[39] United Nations Framework Convention on Climate Change, New York, 9 May 1992, in force 21 March 1994, 31 *International Legal Materials* (1992) 849, <http://unfccc.int>.

[40] Convention on Biological Diversity, Rio de Janeiro, 5 June 1992, in force 29 December 1993, 31 *International Legal Materials* (1992) 822, <http://www.biodiv.org>.

prohibited, to a positive-listing approach, which prohibits dumping unless a substance can be shown to be safe.[41]

The organizing principle of this third phase in the development of international environmental law has been sustainable development, which the Brundtland Commission report defined as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'.[42] It reflects two general themes: integration and long-term planning. Firstly, environmental issues should not be seen as stand-alone items – for example, merely adding a catalytic converter here or a scrubber there – but as important aspects of economic and social decision-making more generally. Secondly, sustainable development focuses attention on the issue of intergenerational equity. It requires thinking in a long-term manner about how to manage resources sustainably, so that the resources will be available to future generations.

If the Stockholm Conference was the focal point of the second phase of international environmental law, the Rio Summit filled that role for the third. Like Stockholm, Rio was huge – 13 000 participants from 176 states and 1 400 non-governmental groups, including 103 heads of state. Like Stockholm, its outputs included a declaration of environmental principles (the Rio Declaration) and a detailed action plan (Agenda 21[43]). And, like Stockholm, its most significant results were not the conference outputs themselves, but the two treaties negotiated in parallel: the UN Framework Convention on Climate Change and the Biological Diversity Convention.

3 Role-players in the international environmental process

3.1 The overall picture

The 2007 Conference of the Parties of the UN Framework Convention on Climate Change had more than 10 000 participants. The word 'participants' is used advisedly because, when the present author served on the United States negotiating team in the late 1990s, a joke was that, out of the many thousands of people attending climate change conferences, only about a hundred actually did anything; and by the phrase, 'did anything', was meant 'participated actively in the negotiations'. Many of the rest of the people at the meetings were, in our view, merely 'hangers-on'; what they did while there – if anything – was something of a mystery.

[41] See the 1972 London Convention, *supra* note 19; and the its 1996 Protocol (Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, London, 17 November 1996, in force 24 March 2006, 36 *International Legal Materials* (2006) 1) which is in the process of replacing, not amending, the parent Convention.

[42] Brundtland, *Our Common Future, supra* note 34, at 43.

[43] Agenda 21, UN Conference on Environment and Development, Rio de Janeiro, 13 June 1992, UN Doc. A/CONF.151/26/Rev.1 (1992), available at <http://www.un.org/esa/dsd/agenda21/>.

Our sense of self-importance, however, reflected a narrow view of the international legal process – that intergovernmental negotiations are at the center of the conference universe and that we, as government negotiators, were masters of that domain. Both assumptions are, of course, wrong. In fact, international conferences (much less the international environmental process more generally) are multi-ring circuses. They are trade shows, public relations and educational arenas, and quasi-academic conferences. Intergovernmental negotiations occupy only a single ring. Moreover, even within that ring, government negotiators do not operate freely, being subject to a tight set of constraints emanating from a wide array of actors.

3.2 States

As the term 'inter-national' suggests, international environmental law operates largely as a system of law between states. Although it aims ultimately to change the private behavior that is responsible for most environmental problems, its rules apply primarily to states, and few of these rules create rights or duties for companies, individuals or other non-state actors.

Understanding state behavior is, of course, complex, but a useful starting point is to think of states – like individuals – as being rational actors, seeking to advance their own (state) interests. Thus, in transboundary pollution cases, downstream states typically favor strong action because they are the ones suffering the ill effects, while upstream states have an interest in continuing to pollute because the environmental damage is an externality. Similarly, with respect to global pollution problems, states have an interest in undertaking collective action, yet each individual state has an interest in free-riding, so long as it can do so without incurring a penalty.

The assumption that states have identifiable, stable interests that they pursue rationally is incomplete in two ways, however. Firstly, states are motivated not only by self-interest but also by normative considerations about what might be the right or proper course; that is, they respond to what social scientists have termed a 'logic of appropriateness' as well as a 'logic of consequences'.[44] Secondly, states are complex entities with many constituent parts, often with very different interests and beliefs of their own. As a result, it cannot be assumed that national interests are a given. Instead, interests may often be contested and contingent, being the outcome of domestic political processes which involve complex interactions between different sub-state actors: rival agencies within executive branches; checks and balances between the executive, legislative and judicial branches; lobbying by business and environmental groups; and public opinion more generally. A state's position on an environmental issue such as climate change, the treatment of genetically-modified organisms, or whaling, emerges from the complex interaction of these sub-state actors

[44] James G. March and Johan P. Olsen, *Rediscovering Institutions: The Organizational Basis of Politics* (The Free Press, 1989).

– environmental groups raising concerns and creating a demand for public regulation, businesses lobbying officials in the different branches and levels of government, and government actors themselves interacting within strata of bureaucratic politics.

3.3 International institutions

In addition to states, international institutions play important roles within the international environmental process. Although international environmental law lacks an institution with general governance functions, like the World Trade Organization,[45] a multitude of institutions play significant roles, some global and others regional or bilateral; some focused on a particular issue area such as forestry or whaling and others with a broader mandate; some scientific in orientation and others focused on capacity-building or policy-development more generally.

In analyzing international institutions, they can be arrayed along a spectrum, based on their degree of autonomy from states. At one extreme, some international institutions serve merely as intergovernmental forums; while others operate as autonomous actors. International law uses the concept of 'legal personality' to denote the point along this spectrum at which an international institution is considered sufficiently autonomous to be said to have a separate legal existence and to be able to act in its own right for certain legal purposes – asserting claims, entering into treaties, and exercising other implied powers that are necessary for it to fulfill its functions.

The international institution with the broadest competence over environmental issues is the United Nations Environment Programme (UNEP). In contrast to UN specialized agencies such as the World Health Organization,[46] UNEP lacks a separate treaty basis and instead derives its authority from the UN General Assembly (which created it). UNEP is a comparatively small institution, with a small budget. It plays a largely informational and catalytic role, helping to spur the negotiation of treaties on biological diversity, hazardous wastes, and ozone depletion, and providing secretariat services.

Perhaps the most distinctive types of international environmental institutions are those established by individual multilateral environmental agreements. Virtually every treaty creates a conference of the parties (CoP) which meets on a regular basis and is open to all parties. The decision-making authority and procedures of CoPs will vary from treaty to treaty. Although none has general legislative authority, some have limited authority (usually by a two-thirds or three-quarters majority vote) to adopt new rules that bind all of the treaty parties except those that file a specific objection. In addition, multilateral environmental agreements also typically provide for a permanent secretariat – in some instances, an existing institution such as UNEP

[45] See <http://www.wto.org>.
[46] See <http://www.who.int>.

and in other instances a new one – and some establish specialized bodies to provide scientific advice or to consider issues relating to implementation and compliance.

3.4 Non-governmental organizations (NGOs)

Generally, non-governmental actors exercise influence in one of two ways: either by persuading government decision-makers; or by changing their calculus of costs and benefits. Sometimes, NGOs might exercise influence by providing information, policy analysis, and scientific and technical expertise. The Red List of Threatened Animals of the World Conservation Union (IUCN),[47] which is a sui generis organization composed of both government agencies and non-governmental groups, for example, is an important source of scientific information about which animal species are declining, threatened with extinction or vulnerable.

Environmental NGOs also seek to exert influence by claiming to represent the 'public' interest, rather than private interests. At times, these claims may be dubious; but, even so, significant segments of populations appear to accept the image of NGOs as disinterested defenders of the environment, thereby furnishing the NGOs with legitimacy. Organizations with large memberships also claim to represent their members, who may represent significant portions of populations. Finally, a few of the larger NGOs do have considerable financial resources at their disposal.

Most commonly, NGOs exercise their influence with respect to national governments. They lobby their government to support a policy internationally or to implement its international obligations domestically, or they work in alliance with NGOs in other countries to influence foreign states. NGOs seek to influence national governments not only at home, through the domestic political process, but also within international forums. Most major multilateral environmental negotiation sessions are now attended by numerous NGOs, which monitor their own governments' positions and statements to guard against potential backsliding; and also work closely with sympathetic delegations from other countries. In some issue areas where NGO influence is high, such as whaling, a state may invite a few of its NGOs to participate on its national delegation as observers.

Typically, NGOs take part in international institutions as observers rather than as full participants. In a few cases, however, NGOs have attained quasi-official status internationally. The aforementioned IUCN is the most prominent such example. It initiated the negotiations toward the CITES, prepared the first draft of the agreement, and continues to be a key source of information about which species should be protected. Further, it now serves as host of the Ramsar Wetlands Convention[48] secretariat.

[47] See <http://www.iucn.org> generally; and <http://www.iucnredlist.org/> specifically.

[48] Convention on Wetlands of International Importance especially as Waterfowl Habitat, Ramsar, 2 Febru-

Finally, NGOs may try to influence businesses through publicity and consumer pressure. In some cases, NGOs have relied on public confrontation. A prominent example was the Greenpeace campaign against the sinking of the Brent Spar oil platform by Shell.[49] Increasingly, however, NGOs have sought to work in cooperation with industry to develop voluntary codes of conduct. A leading sectoral example of this is the Forest Stewardship Council (FSC),[50] which NGOs initiated in response to the failure at the 1992 Rio Conference to adopt a binding forest agreement.

3.5 The business sector

Businesses can play two roles in the international environmental process. Firstly, the business sector can be the object of international regulation – not directly, since international law applies only to states, but indirectly as the ultimate regulatory target. Secondly, the business sector can be a subject, actively seeking to shape the development and implementation of international environmental law in either positive or negative ways.

Sometimes companies adopt environmental measures proactively, even before government regulations are adopted. For example, a number of major companies, including British Petroleum, General Electric, and DuPont, have adopted their own, voluntary greenhouse gas emissions targets. Some apparently do so because they believe that a green image will help them in the marketplace; the thinking being that consumers will reward them through their purchasing decisions. Others may believe that regulation is inevitable and that beginning to adjust now will lower their costs over the long run, or that their actions might help shape the governmental regulations which eventually ensue. Finally, some may reflect the environmental values of the company's leadership. The environmental initiatives of Wal-Mart, for example, seem to be attributable in part to a desire to counteract criticisms of the company's labour practices, thereby improving its image in the marketplace; and in part to the environmental values of the Walton family.

4 International standard-setting

4.1 The traditional sources of international law

The canonical statement of the formal sources of international law – Article 38 of the International Court of Justice Statute[51] – identifies three sources of interna-

ary 1971, in force 21 December 1975, 11 *International Legal Materials* (1972), 963, <http://www.ramsar.org>.

[49] See Peter J. Spiro, 'New Global Potentates: Nongovernmental Organizations and the "Unregulated" Marketplace',18 *Cardozo Law Review* (1996) 957–969 at 964.

[50] See <http://www.fsc.org>.

[51] Statute of the International Court of Justice, annex to the Charter of the UN, available at <http://www.icj-cij.org/documents/index.php?p1=4&p2=2&p3=0> (visited 16 August 2011).

tional law: treaties, custom, and general principles. These sources are treaties, which are explicit agreements in writing; custom, which is generated through the regular practice of states, engaged in out of a sense of legal obligation;[52] and general principles, which are norms that reflect fundamental propositions of law, shared by legal systems around the world.

The central difference between treaties on the one hand and custom and general principles on the other is that treaties are the product of a purposive process of negotiation, whereas customary norms and general principles emerge through more diffuse processes. All three are typically classified as 'hard law'; in contrast to a wide variety of norms which do not qualify as 'legal' in character, including resolutions of international organizations, conference declarations, and business codes of conduct. The UN General Assembly, for example, lacks legislative authority, and so its resolutions have the status of recommendations. For the same reason, neither the Stockholm Declaration nor the Rio Declaration on Environment and Development are in themselves legal in nature; both would have that status only if they were to be incorporated into a treaty, or were deemed to constitute norms of customary international law. Business codes of conduct are developed by non-state actors, without any formal lawmaking authority at all.

4.2 The traditional sources in more detail: treaties

From the inception of international environmental law, treaties and other forms of negotiated agreements have been the predominant means of achieving international cooperation. According to one recent compilation, states have negotiated more than 1 000 multilateral environmental agreements and 1 500 bilateral instruments on a wide variety of subjects: in no particular order, protection of the stratospheric ozone layer, prevention of dangerous anthropogenic climate change, mitigation of acid rain, control of hazardous waste exports, regulation of trade in wildlife, protection of wetlands, prevention of oil pollution, and many others.[53] Indeed, in the mid-1990s, environmental treaties were proliferating so rapidly that some worried about 'treaty congestion'.[54]

Negotiated agreements offer several advantages over more informal mechanisms of international cooperation, in that they enable states to address issues in a purposive, rational manner; they promote reciprocity by allowing states to delineate precisely what each party is expected to do; they provide greater certainty about the applicable norms than non-treaty sources of international law, because of having a canonical

[52] The rules of diplomatic immunity, for example, evolved over centuries through the repeated interaction of states.

[53] Ronald B. Mitchell, International Environmental Law Database Project, available at <http://iea.uoregon.edu/page.php?file=home.htm&query=static> (visited 16 August 2011).

[54] See, for instance, Edith Brown Weiss, 'International Environmental Law: Contemporary Issues and the Emergence of a New World Order', 81 *Georgetown Law Journal* (1995) 675–693 at 697–702.

form; and, finally, they allow states to tailor a regime's institutional arrangements and mechanisms to fit particular problems.

Traditionally, treaties were comparatively static arrangements that memorialized the rights and duties of the parties as agreed at a particular point in time. Today, environmental agreements are usually more dynamic arrangements, which establish ongoing regulatory processes. The result is that, in most environmental regimes, the treaty text itself represents simply the 'tip' of the normative 'iceberg'. The majority of the norms are adopted through more flexible techniques, which allow international environmental law to respond more quickly as new problems and new knowledge emerge.

One approach, which has been used extensively in international environmental law, to building treaties gradually is the 'framework convention – protocol approach'. Initially, states negotiate a broad framework convention, which serves to establish the basic architecture of the regime; including, for example, the regime's objective, principles, basic obligations, and institutions. Thereafter, protocols are negotiated which build upon the parent agreement through the elaboration of more specific (and costly) commitments.

The framework convention – protocol approach has several rationales. Firstly, it allows states to address problems in a step-by-step manner rather than all at once. Secondly, states tend to be more willing to join a framework convention because it does not contain stringent obligations; as a result of which they can begin to address a problem without waiting for a consensus to emerge on appropriate response measures. For example, when both the Convention on Long-range Transboundary Air Pollution (LRTAP)[55] and the Vienna Ozone Convention were adopted, many states remained unconvinced of the need for action. Nevertheless, even such sceptical states were willing to acquiesce in the adoption of these conventions since the conventions did not commit their parties to taking any specific actions.

In addition, although framework conventions are themselves weak, they are able to create 'positive feedback loops' which facilitate the deepening of the regime through the adoption of protocols which contain specific substantive commitments. Firstly, the framework convention can help reduce uncertainties and produce agreement about the relevant facts – about who is doing what to whom – by requiring states to submit national reports and by encouraging scientific research and assessments. The institutions established by the framework convention often play a catalytic role in this process by collecting data, providing technical assistance, and issuing reports.

Secondly, the framework convention (and, in particular, the regular meetings of the parties) can help to generate normative consensus by providing ongoing fora for

[55] See *supra* note 38.

discussion and negotiation, serving as focal points for international public opinion, and building relationships of trust amongst participants. Finally, when states do eventually decide to act, framework conventions increase their capacity to do so by ensuring that basic institutions and decision-making processes are in place. The theory is that once a framework convention is adopted, the international lawmaking process will begin to take on a momentum of its own. States that were initially reluctant to undertake substantive commitments, but which acquiesced in the seemingly innocuous process set in motion by the framework convention, are likely to feel increasing pressure not to fall out of step as that process gains momentum.

4.3 The traditional sources in more detail: custom and general principles

In contrast to treaties, the two main types of non-treaty norms – customary law and general principles – are not created through purposeful acts of law-making and do not possess canonical forms. Instead, they emerge through less well-defined, more informal processes – and thereby raise a number of theoretical puzzles. Such puzzles include questions such as: how do non-treaty norms emerge; to what extent, for example, do customary norms emerge as a result of calculations by states of their rational self-interest; to what extent are they imposed by powerful states; and to what extent do they reflect psychological needs for order and regularity? Further, do non-treaty norms have any effect on behavior, and, if so, how and why? Further, what does it mean to say that a norm is part of customary international law or is a general principle of law; and where does the 'binding' character of these norms come from? Finally, should non-treaty norms be followed; are they legitimate sources of obligation; and do they have any claim to obedience?

Although the concept of customary international law is often viewed as mystifying, the emergence and application of social norms through informal, decentralized processes is in fact a commonplace occurrence. Language provides a good illustration of this, since every time we speak we apply a complex set of customary rules of grammar and usage – rules that have not been legislated or enforced by any centralized body but, instead, have emerged and evolved through the regular practice of language-users and are enforced through a diffuse set of social sanctions.

According to the orthodox account of customary international law, the customary law-making process involves two elements: firstly, consistent state practice; and, secondly, a sense of legal obligation (or opinio juris). When many states can be observed to have behaved in a consistent manner for a significant period of time, and when this consistent, long-standing practice manifests a belief about what the law requires, then customary international law can be said to have been created.

4.4 Soft law

Conference resolutions, business codes of conduct, and the like are not legal norms. Instead, they are usually classified as 'soft law'. Like hard law, they are normative: they are intended to guide or influence behavior by providing reasons for actions to be taken. The fact that the UN General Assembly, for example, adopted a resolution calling for a moratorium on high seas driftnet fishing[56] can be seen as a reason to stop using driftnets. The resolution provides a standard of evaluation. Compliance serves as a justification for one's own actions, and violation is a ground on which to criticize others. Moreover, like hard law, these non-legal instruments are social creations; being the products of identifiable processes of norm-making. From this perspective, soft law does not simply represent the absence of law; rather, it represents a sort of 'legal purgatory'. Unlike hard law, however, soft law does not create legally-binding obligations.

5 Implementation, compliance and effectiveness

Translating policy into action is notoriously difficult. Many policies are characterized, as Richard Elmore once quipped, by 'grand pretensions, faulty execution and puny results'.[57] Because international environmental law typically aims to control not merely state conduct but also private conduct, its implementation poses particular challenges.

States serve as the primary transmission belt for putting international environmental rules into effect, with international environmental agreements generally imposing obligations on states and relying on states to implement their commitments. For this reason, the success of treaties such as the Montreal Protocol, the Kyoto Protocol,[58] and CITES depends on the degree to which they are 'domesticated'. Some treaties spell out the duty to implement explicitly; but, even in the absence of any explicit provision, the rule of pacta sunt servanda[59] – the foundation of international treaty law – requires states to do whatever is necessary to implement their treaty obligations.

Implementation is not simply a technical, top-down process, involving directives from the government. Rather, in practice, it is a political process in which industry groups and environmental organizations all participate to varying degrees. Industry can contribute positively by providing expertise in designing technically feasible and

[56] 'Large-scale pelagic drift-net fishing and its impact on the living marine resources of the world's oceans and seas', UNGA Res. 45/215 (1991).

[57] Richard F. Elmore, 'Organizational Models of Social Program Implementation', 26 *Public Policy* (1978) 185–228 at 186.

[58] Kyoto Protocol to the United Nations Framework Convention on Climate Change, Kyoto, 11 December 1997, in force 16 February 2005, 37 *International Legal Materials* (1998) 22.

[59] This Latin maxim, observed also in many national legal systems, means that 'contracts are served' or 'promises must be kept'.

cost-effective approaches; but it may also seek to weaken implementation measures in order to reduce its own adjustment costs. Public participation is also an increasingly integral part of the national implementation process.

Treaties vary considerably in how much freedom they give states in the choice of implementation methods. In most cases, international law gives states significant discretion as to the choice of implementation methods. A typical formulation found in many treaties simply requires states to take 'appropriate' measures; which allows each state to take into account its own legal system, regulatory culture, and other national circumstances in determining what measures may be 'appropriate'. At the far extreme, treaties establishing an obligation to achieve some overall result, such as the national emissions targets in the Kyoto Protocol, give states almost complete flexibility in determining how they will reach the required outcome – whether by means of education, emission limits, product standards, subsidies, taxes, voluntary agreements with industry, and so forth. At the other end of the spectrum, some agreements set forth quite specific obligations of conduct that leave little discretion. For example, MARPOL[60] requires that flag states prescribe precise rules for the construction and design of oil tankers, and to prohibit and sanction violations of these standards by vessels operating under their authority.

A threshold issue in treaty implementation which often arises is that of whether implementation requires national legislation. For a variety of reasons, sometimes the answer will be 'no'. A treaty may focus on governmental actions such as reporting, which can be performed by the executive branch on its own authority, without any need for legislative approval. Alternatively, under a country's constitution, treaties may have the force of domestic law directly, making additional legislative implementation unnecessary; or existing legislation might provide the necessary authority for implementation of a treaty's obligations. Even when implementing legislation is required, however, the adoption of legislation is usually only the first step in the implementation process. Most treaties require also various types of administrative implementation; such as further rule-making to give greater specificity to general legislative mandates, monitoring and assessment, preparation of reports, issuance of permits, and the investigation and prosecution of alleged violations.

In contrast to legislative and administrative implementation, judicial implementation of international environmental law remains comparatively rare. A notable exception was a Philippines case which applied the principle of intergenerational equity[61] to allow a group of children to challenge timber licences issued to log in old growth forests.[62]

[60] See *supra* note 17.

[61] The principle that the rights and interests of future generations should be given consideration alongside those of present generations.

[62] Minors Oposa v. Secretary of Environment and Natural Resources, Supreme Court Reports Annotated (G.R.) No. 101083, (S.C. July 30, 1993), reprinted in 33 *International Legal Materials* (1994) 174.

Even in the absence of international enforcement, many (if not most) states do implement their international environmental obligations almost as a matter of course. Many causal factors help to account for this practice of self-implementation: bureaucratic routines, calculations of self-interest, a sense of normative commitment, or severe pressure (or even litigation) by environmental groups.

6 Conclusion

It might be asked, in conclusion, whether international environmental law has been successful; and whether it is on the right track. Certainly, in many respects international environmental law falls short of these two goals. But although it has failed so far to solve many pressing problems, such as climate change, it has also had some notable successes. In achieving these successes, it has displayed impressive ingenuity, developing a wide range of mechanisms to set standards and promote implementation.

It remains to be seen whether the world will be able to move beyond the third stage of its development, as discussed above,[63] and become a coordinated whole instead of being characterized by piecemeal development.

Ultimately, international environmental law ought not to be seen as a panacea, but rather as a process to encourage and enable international cooperation. It represents a part – and only a part – of the solution to the environmental problems facing the world.

[63] See *supra* Part 2.1.

PART II

THE INTERNATIONAL CLIMATE CHANGE REGIME

Independent Reporting: The Role of the *Earth Negotiations Bulletin* in Climate Change Negotiations

Kati Kulovesi[1]

1 Introduction

The ongoing international negotiations under the United Nations Framework Convention on Climate Change (UNFCCC)[2] and its Kyoto Protocol[3] are tackling one of the humankind's greatest contemporary challenges. The ultimate objective of these two multilateral environmental agreements (MEAs) is to prevent dangerous anthropogenic climate change[4] against the backdrop of continuously increasing global greenhouse gas (GHG) emissions, already observable impacts of climate change, and alarming projections on the extent of the damage that will follow if the negotiations fail and global GHG emissions are not reduced.

Not surprisingly, the UNFCCC process has attracted widespread public interest. The *Earth Negotiations Bulletin* (ENB) responds to the need for transparency and reliable information through neutral and authoritative daily reports on various MEA negotiations, including the UNFCCC. After each negotiating session, the ENB produces a comprehensive summary and analysis of the outcomes, thus helping nego-

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[2] United Nations Framework Convention on Climate Change, New York, 9 May 1992, in force 21 March 1994, 31 *International Legal Materials* (1992) 849, <http://unfccc.int>.

[3] Kyoto Protocol to the United Nations Framework Convention on Climate Change, Kyoto, 11 December 1997, in force 16 February 2005, 37 *International Legal Materials* (1998) 22.

[4] According to Article 2, the ultimate objective of the UNFCCC is to 'prevent dangerous anthropogenic interference with the climate system'.

tiators and observers keep track of progress. The IISD estimates that the ENB is used by approximately 125 000 policymakers and other stakeholders.[5]

This paper considers the important role of independent reporting, and in particular the role of the ENB at the UN climate change negotiations and other MEA processes. It first discusses the role of transparency and access to information in MEA negotiations in general. The paper then describes the ENB's history, objectives and how it is produced. It concludes with thoughts on the ENB's role in promoting transparency of the UNFCCC and other MEA negotiations.

2 Public participation in MEA negotiations

Transparency, possibilities for public participation and access to information play an important role in global environmental governance. One of the essential arguments is that public participation leads to better environmental decision-making.[6] While democracy remains a contested notion in the international context,[7] public participation in environmental decision-making can also be defended by the democratic argument that people have the right to be consulted over issues that affect their lives.[8] The three pillars of public participation are reflected in Principle 10 of the Rio Declaration on Environment and Development (Rio Declaration),[9] which emphasizes the importance of access to information, participation in environmental decision-making and access to justice in environmental matters. Accordingly:

> [e]nvironmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided.[10]

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5 IISD, 'Supporting Transparency and Accountability', available at <http://www.iisd.ca/enbvol/enb-funding.htm> (visited 17 March 2011).

6 Jeremy Wates and Seita Romppanen, 'The Aarhus Convention: A Legally Binding Framework for Promoting Procedural Environmental Rights' in Tuula Honkonen and Ed Couzens (eds), *International Environmental Law-making and Diplomacy Review* 2009, University of Joensuu – UNEP Course Series 9 (University of Joensuu, 2010) 101–123 at 103.

7 For discussion on the changing role of legitimacy and democracy in international law, see Kati Kulovesi, *The WTO Dispute Settlement System: Challenges of Environment and Legitimacy* (Kluwer Law International, forthcoming 2011), Chapter 1; Gerry Simpson, *Great Powers and Outlaw States: Unequal Sovereigns in the International Legal Order* (Cambridge University Press, 2004); David Held, *Models of Democracy* (2nd ed., Polity Press, 2003).

8 Wates and Romppanen, 'The Aarhus Convention', *supra* note 6, at 103.

9 UN Declaration on Environment and Development, Rio de Janeiro, 14 June 1992, UN Doc. A/CONF.151/5/Rev.1 (1992), 31 *International Legal Materials* (1992) 876.

10 *Ibid.*

The principle has been further operationalized through the 1998 Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention),[11] developed within the United Nations Economic Commission for Europe and currently ratified by 44 Parties.[12]

The emphasis of Principle 10 of the Rio Declaration is on the national level where states are required to introduce transparent and participatory policies and provide access to justice.[13] As Hey indicates, transparency, participation and access to justice remain controversial with respect to global institutions.[14] Article 3(7) of the Aarhus Convention requires, however, that its Parties promote the Convention's principles 'in international environmental decision-making processes and within the framework of international organizations in matters related to the environment'.[15] Guidelines have been developed on the application of the three pillars of the Aarhus Convention in international fora.[16] These Almaty Guidelines recognize that providing international access opportunities in environmental matters, and establishing and strengthening procedures that enable the taking of these opportunities, generally improves the quality of decision-making and the implementation of decisions.[17] According to Morgera, the (then draft) guidelines 'contain several innovative concepts as to public participation in international fora'; and 'have the potential, even as a non-binding instrument' to promote a systematic approach on the matter'.[18]

In practice, non-state actors frequently take part in international environmental governance. Since its creation in 1972, the United Nations Environment Programme (UNEP) has welcomed non-governmental organizations (NGOs) to participate in its various activities.[19] For international environmental governance and international law in general, the 1992 UN Conference on Environment and Development (UNCED) in Rio de Janeiro 'marked a watershed' concerning public participation as hundreds of NGOs followed the preparatory committees and contributed to the development of Agenda 21,[20] the Rio Declaration on Environment and Develop-

[11] Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, Aarhus, 25 June 1998, in force 30 October 2001, 38 *International Legal Materials* (1999) 517, <http://www.unece.org/env/pp/>.

[12] 'Status of ratification', available at <http://www.unece.org/env/pp/ratification.htm> (visited 9 April 2011).

[13] Ellen Hey, 'Global Environmental Law', 19 *Finnish Yearbook of International Law* (2008) 5–28 at 23.

[14] *Ibid*.

[15] On the relevance of the provision, see Wates and Romppanen, 'The Aarhus Convention', *supra* note 6, at 118–119.

[16] Decision II/4, 'Almaty Guidelines on Promoting the Application of Principles of the Aarhus Convention in International Forums', UN Doc. ECE/MP.PP/2005/2/Add.2 (2005); and Decision III/4, 'Promoting the Application of the Principles of the Convention in International Forums', UN Doc. ECE/MP.PP/2008/2/Add.6 (2008). See also Elisa Morgera, 'An Update on the Aarhus Convention and Its Continued Global Relevance', 14 *Review of European Community and International Environmental Law* (2005) 138–147.

[17] Almaty Guidelines, para. 12.

[18] Morgera, 'An Update on the Aarhus', *supra* note 16, at 146.

[19] Olivier Deleuze, 'The Role of Major Groups and Stakeholders in Environmental Negotiations and Governance', *International Environmental Law-making and Diplomacy Review* (2009) 127–135 at 128.

[20] Agenda 21, UN Conference on Environment and Development, Rio de Janeiro, 13 June 1992, UN Doc. A/CONF.151/26/Rev.1 (1992).

ment as well as the UNFCCC and the Convention on Biological Diversity.[2122] Some 10 000 NGOs were also reported to have attended the Rio Conference and since Rio, 'NGO involvement in environmental policy making has mushroomed at all levels'.[23] The three Rio Conventions and many other MEAs involve NGOs and other non-state actors in their negotiating processes and even implementation.[24] The UNFCCC, for instance, has created procedures to allow NGOs and other non-state actors to observe the negotiations.[25] The UNFCCC Secretariat has also prepared informal guidelines on NGO participation.[26]

However, even with the possibility of attending negotiating sessions, it may be difficult for NGOs and other observers to follow everything important that is going on. The annual sessions of the Conference of the Parties (COP) to the UNFCCC and Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (CMP) involve a large number of agenda items and informal negotiating groups. The most recent UN Climate Change Conference in Cancún included the sixteenth session of the COP, the sixth session of the CMP 6, the 33rd sessions of the Subsidiary Bodies, fifteenth session of the *Ad Hoc* Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG-KP 15) and the thirteenth session of the *Ad Hoc* Working Group on Long-term Cooperative Action under the UNFCCC (AWG-LCA 13). Each of the six bodies established a number of informal negotiating groups to work through their busy agendas. Following the daily developments is therefore a difficult task and highlights the role of daily updates by the ENB in promoting transparency.

Indeed, it is not only observers who may find it difficult to keep track of developments in MEA negotiations in general and in the UNFCCC negotiations in particular. Also smaller delegations and developing countries experience various challenges. As Chasek indicates, the proliferation of sustainable development and environmental negotiations since the UNCED 'has stretched the capacities and budgets of many countries around the world'.[27] The fact remains that '[n]ot every

[21] Convention on Biological Diversity, Rio de Janeiro, 5 June 1992, in force 29 December 1993, 31 *International Legal Materials* (1992) 822, <http://www.biodiv.org>.

[22] Farhana Yamin, 'NGOs and International Environmental Law: A Critical Evaluation of Their Roles and Responsibilities', 10 *Review of European Community and International Environmental Law* (2001) 149–162 at 151.

[23] *Ibid*.

[24] For instance, private actors play an important role in the implementation of the Kyoto Protocol. See Kati Kulovesi, 'The Private Sector and Implementation of the Kyoto Protocol: Experiences, Challenges and Prospects', 16 *Review of European Community and International Environmental Law* (2007) 145–157.

[25] UNFCCC Art. 7(6); Rules 7 and 30 of the UNFCCC Draft Rules of Procedure for the Conference of the Parties and its Subsidiary Bodies, UN Doc. FCCC/CP/1996/2 (1996); and Decision 18/CP.4 'Attendance of intergovernmental and non-governmental organizations at contact groups' , UN Doc. FCCC/CP/1998/16/Add.1 (1999).

[26] Guidelines for the participation of representatives of non-governmental organizations at meetings of the bodies of the United Nations Framework Convention on Climate Change (2003), available at <http://unfccc.int/resource/ngo/coc_guide.pdf> (visited 17 March 2011).

[27] Pamela Chasek, 'NGOs and State Capacity in International Environmental Negotiations: The Experience

country can afford to send a large delegation to a negotiating session'[28] and the situation is particularly problematic for developing countries.[29] This generates a number of problems – Chasek highlights, inter alia, problems related to continuity in terms of following the process and difficulties experienced by small delegations when developing their negotiating positions.[30] A number of capacity-building initiatives have been developed – and are needed – to address these problems. Also the ENB can play a role in leveling the playing-field by providing information on the intricacies of multilateral negotiation.[31]

Events at the 2009 UN Climate Change Conference in Copenhagen serve to underline the importance of transparency in the UN climate change negotiations. The Conference was, in many ways, a historic event and subject to unprecedented public attention. More than 110 heads of State and government attended the joint High-level segment of the COP and CMP at the end of the Conference.[32] Furthermore, nearly 40 000 observers applied for accreditation, far exceeding the capacity of the conference venue in the Bella Centre. Access to the venue was further restricted during the High-level segment.[33] This gave rise to numerous complaints concerning transparency from organizations that normally participate in the UNFCCC negotiations as observers.[34] During the final plenary session, the 'undemocratic nature' of the negotiation process and the small friends-of-the-chair group that produced the Copenhagen Accord[35] were heavily criticized by countries including Venezuela, Bolivia, Cuba, Nicaragua and Tuvalu.[36] Ultimately, no agreement was reached to adopt the Copenhagen Accord but Parties agreed merely to 'take note' of the text.[37]

The problems in Copenhagen were more complex than questions concerning access to information and public participation. While these were major concerns for observers unable to access the Bella Center, the debates surrounding the Copenhagen Accord also touch upon questions concerning the inclusiveness of the negotiating process for UNFCCC Parties and the principle of sovereign equality. In this respect, the ENB's role can be seen as being limited to recording and reporting the events as they

of the Earth Negotiations Bulletin', 10 *Review of European Community and International Environmental Law* (2001) 168–176 at 168.

28 *Ibid*. at 169.

29 *Ibid*. at 170.

30 *Ibid*. at 170–171.

31 *Ibid*. at 170–172.

32 For a detailed description of the events in Copenhagen and the discussions on transparency, see Marko Berglund and Kati Kulovesi, 'Climate Change Negotiations Simulation', in this *Review*. See also 'Summary and Analysis of the UN Climate Change Conference in Copenhagen: 7–19 December 2009', 12(459) *The Earth Negotiations Bulletin*, available at <http://www.iisd.ca/vol12/enb12459e.html> (visited 17 March 2011).

33 *Ibid*.

34 *Ibid*.

35 Decision 2/CP.15 'Copenhagen Accord', in Report of the Conference of the Parties on its 15th sess., UN Doc. FCCC/CP/2009/11/Add.1 (2010), Addendum.

36 *Ibid*.

37 *Ibid*.

transpired – the fundamental questions concerning inclusiveness and power in interstate cooperation are more complex than the scope of this paper. The focus is, instead, on the role of the ENB in promoting transparency and access to information in the UNFCCC process in particular.

3 Brief history of the Earth Negotiations Bulletin

The ENB has provided independent reporting from multilateral environmental negotiations since the 1992 UNCED in Rio. The ENB began when three individuals from the non-governmental organization community – Johannah Bernstein, Pamela Chasek and Langston James ('Kimo') Goree VI – started to produce daily reports during the five weeks of the Fourth Preparatory Committee meeting for the UNCED in March 1992.[38] They then raised funds to publish the daily 'Earth Summit Bulletin' from the UNCED.[39]

After the Rio Conference, the International Institute for Sustainable Development (IISD) approached the Earth Summit Bulletin team, asking them to continue reporting from the Rio follow-up negotiations.[40] The IISD is a Canada-based policy research institute with its head office in Winnipeg and branches in Ottawa, Ontario, New York and Geneva. The publication was subsequently renamed the 'Earth Negotiations Bulletin' and the IISD Reporting Services has continued to publish it for nearly 20 years. Two of the founders remain actively involved, with Kimo Goree being the Director of the IISD RS and Pamela Chasek the Editor of the ENB.

Both the ENB and the number of environmental negotiation processes it covers have grown over the years. In the past two decades, the ENB has reported from more than 3 000 meetings and it regularly covers international negotiations involving biodiversity, chemicals, climate change, desertification, forests, oceans, and a number of other environmental issue-areas. The ENB receives funding from a number of governments and some international organizations.[41]

4 ENB production

The ENB is typically a two-page, double-sided publication that is distributed each day to participants at MEA negotiations. However, given the complexity of the ongoing UNFCCC negotiations, the ENB daily report at climate change-related meetings

[38] Description of the history of the IISD RS on their web site, available at <http://www.iisd.ca/about/about.htm> (visited 7 January 2011). See also Chasek, 'NGOs and State Capacity', *supra* note 27.

[39] *Ibid*.

[40] *Ibid*.

[41] At the end of 2010, the ENB's sustaining donors were Canada, Denmark, the European Commission, Germany, Italy and the US. General support for the ENB was also provided by Australia, Finland, Japan, New Zealand, Norway, Sweden, Switzerland, and the UNEP.

is usually three to four pages long. The bulletins are sent automatically to the email of those people who have subscribed; and they are also available online, together with a dedicated meeting website containing photos and other daily updates.[42] After each meeting, the ENB team produces a summary and analysis of the negotiations and main outcomes. The summary report is distributed electronically two to three days after the meeting. ENB reports are usually translated into French and Spanish, and sometimes also into Japanese. It is the present writer's understanding that the reports are widely used by delegates when preparing their own reports back at home.[43]

The ENB is normally written by a team of consultants selected for each meeting from a roster of experts. The ENB team consists of approximately 60 experts from more than 30 countries.[44] 'ENBers' are typically lawyers, Ph.D. candidates, academics and other professionals with expertise on international environmental and sustainable development issues, combined with a keen interest in MEA negotiations and travel.

ENB writers' diverse geographical and professional backgrounds play an important role in ensuring that the teams understand both the political sensitivities and technical complexities of each negotiating process. The ENB climate team, for instance, has this year included members from Argentina, Finland, Germany, Kenya, New Zealand, Nigeria, Russia and the US. Several of them are lawyers, but the team also has adaptation/development policy, biodiversity and forestry experts. From time to time, the ENB recruits new consultants to the roster through an open process that tends to be highly competitive. New writers receive training before they start writing for the ENB.

Strict style guidelines and rigorous editing are keys to ensuring that ENB reports are as objective and accurate as possible. The key is that the ENB focuses on painting a balanced picture of the parties' positions and interventions, but refrains from making value judgments. In other words, it describes what happened in negotiation processes without evaluating parties' positions or taking a stand on what the outcome should be. Another one of the ENB's key objectives is to provide comprehensive reporting from all key meetings held during the day. At big meetings, such as the annual UN climate change conference, this ought to assist observers and small delegations in particular to maintain an overall picture of progress in various negotiating groups.

[42] The ENB can be found online at <http://www.iisd.ca>.

[43] See similarly, Chasek, 'NGOs and State Capacity', *supra* note 27, at 172 and 174. Chasek outlines results of the ENB reader survey carried out at 11 UN Meetings in 1998, showing, inter alia, that 37 per cent of respondents usually or always use the ENB as assistance in writing reports.

[44] For information on the ENB team, see <http://www.iisd.ca/about/team/> (visited 17 March 2011).

5 Conclusions: the ENB's role in international negotiations

The availability of accurate information is important for MEA negotiations as, inter alia, it enables interested individuals and organizations critically to assess progress and outcomes. This is exactly where the ENB has come to play an important role over the years – it appears to be widely read and appreciated by academics and professionals working on international environmental issues.[45] In many processes, delegates have in fact come to rely on information contained in the ENB and they sometimes refer to ENB reports in their interventions and own reporting.[46] The ENB is also often cited in academic journals and other publications and the IISD estimates that the ENB is used by approximately 125 000 policy-makers and other stakeholders.[47]

The focus on transparency, and on the dissemination of objective and accurate information is, in the present writer's view, what sets the ENB apart from other publications typically distributed at the UN climate negotiations. For example, *Eco*,[48] published by the Climate Action Network, and the *TWN Bulletin*,[49] published by the Third World Network, differ from the ENB in that they seek to influence the outcome of the negotiations, criticize countries' positions and promote certain political views. Both of these publications obviously have their own important and complementary roles to play in promoting transparency. At key meetings, such as the UN Climate Change Conference in Copenhagen in 2009, the mass media has also played a significant role.

Placing the ENB's role in a broader perspective, the need for initiatives promoting transparency of international negotiations is best understood in light of the important challenges confronting international law and governance in a globalizing world.[50] Changes since the end of the Cold War are putting into question the traditional, state-centered focus of international law.[51] International environmental law in particular has been in the frontline, engaging non-state actors, such as non-gov-

[45] See Chasek, 'NGOs and State Capacity', *supra* note 27, at 172–174, outlining results of the ENB reader survey carried out at 11 UN meetings in 1998. The results showed that: 18 per cent of all respondents (and 25 per cent of developing and transition countries) usually or always use the ENB as assistance in writing statements; 37 per cent of all respondents (and 39 per cent of developing and transition countries) usually or always use the ENB as assistance in writing reports; 53 per cent of all respondents usually or always use the ENB to follow negotiations they are unable to attend; and 44 per cent of all respondents usually or always use the ENB to follow negotiations in a parallel working group at a meeting they are attending.

[46] *Ibid*.

[47] IISD, 'Supporting Transparency and Accountability', available at <http://www.iisd.ca/enbvol/enb-funding.htm> (visited 17 March 2001).

[48] See <http://www.climatenetwork.org/eco-newsletters>.

[49] For more information, see <http://www.twnside.org.sg/>.

[50] For a comprehensive overview of the changing nature of international law and the increasing importance of concepts such as legitimacy, transparency and public participation, see Chapter I of Kulovesi, *The WTO Dispute Settlement System, supra* note 7. For a similar argument on the changing nature of international law, see also Philippe Sands, *Lawless World: America and the Making and Breaking of Global Rules* (Allen Lane/Penguin Group, 2005) 7–15.

[51] *Ibid*.

ernmental organizations, private companies and other organizations. Indeed, as international law has expanded and deepened its reach, international negotiations have come to have direct and important implications for the lives and livelihoods of millions of individuals all over the world.[52] This is particularly true for the UNFCCC process, given that the Convention has 194 parties and addresses a global problem with fundamental ecological, economic and social consequences. As international law concentrates on collaboration between states, it lacks sophisticated mechanisms to promote access to information, public participation and transparency – the essential values underpinning democratic societies and necessary ingredients for producing legitimate outcomes.[53] The ENB can be seen as an innovative response to some of the ensuing challenges. More fundamental changes to international environmental governance may well be necessary in the future, but few would contest the argument that the ENB has played a significant role in promoting transparency in multilateral environmental negotiations during the past two decades.

[52] *Ibid*.

[53] For analysis, see Veijo Heiskanen, 'Introduction,' in Jean-Marc Coicaud and Veijo Heiskanen (eds), *The Legitimacy of International Organizations*, (United Nations University Press, 2001) 1–44 at 2.

Perspectives within the Climate Change Regime

Tuomas Kuokkanen[1]

1 Introduction

International law includes a number of pair concepts. Some of these are binary oppositions,[2] like binding and non-binding law, while others can be mutually supportive, like jurisdiction and merits. In an environmental context, there are many such polar, parallel or synergic approaches. Take, for example, the tension between the exploitation of natural resources and the protection of the environment. Moreover, states might have different interests depending on whether they are downstream or upstream countries; coastal or maritime countries; producing countries or user countries and so on.

Within the climate change regime, there are various juxtapositions and tensions. This paper will examine such pair concepts, using the term 'perspective' in order to capture a wide spectrum of different instances. By dismantling the climate change regime into basic elements and approaches it ought to become easier to understand how the regime works.

2 Perspectives in the climate change regime

2.1 Climate change

Earlier environmental agreements and declarations in the 1960s and 1970s made a distinction between *man* and *nature*. This distinction was highlighted by introducing

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[2] In his book, Martti Koskeniemi examines such polar oppositions strands. See Martti Koskenniemi, *From Apology to Utopia. The Structure of International Legal Argument. Reissue with New Epilogue* (Cambridge University Press, 2005).

the concepts of *biosphere* and *technosphere*. While the biosphere refers to natural world, the technosphere refers to the world of tools and artifacts. Later on, this distinction turned out to be too rigid and elementary as it gave an impression that human activities are separate from the surrounding natural environment.[3] In the 1980s and 1990s, the attention was extended from environmental protection to management of ecological processes. Man was thereby integrated back to nature so to speak. Yet, the distinction between man and nature still implicitly remained.

The climate system is seen in a dynamic manner as 'the totality of atmosphere, hydrosphere, biosphere and geosphere and their interaction'.[4] As climate change involves natural phenomena, the challenge for the international community is to manage the human impact in order to combat climate change and the adverse effects thereof. Adverse effects of climate change are considered as changes in the physical environment or biota which are attributed directly or indirectly to human activities and which have significant deleterious effects on the composition, resilience or productivity of natural and managed ecosystems or on the operation of socio-economic systems or on human health and welfare.[5] Thus, this dualistic approach can be seen as a two-way street: nature (climate) is to be protected from man and man is to be protected from nature (adverse effects).

2.2 Sustainable development

The doctrine of sustainable development began to reconcile the dichotomy between *environment* and *development* by recognizing that the two are inseparable.[6] The new paradigm was to optimize short-term economic interests and long-term environmental concerns. This did not, though, lead to a harmony of interests. Rather, the reconciliation brought the two elements under the framework.

The climate regime is based on sustainable development thinking. According to Art. 3(4) of the Climate Change Convention, the parties 'have a right to, and should, promote sustainable development'. Several other sustainable development principles, such as the principle of common but differentiated responsibilities are reflected in the Convention.

The Climate Change Convention is not purely environmental but encompasses economic and development considerations. Take, for example, Article 2 which deals

[3] For discussion, see Tuomas Kuokkanen, *International Law and the Environment: Variations on a Theme* (Kluwer Law International, 2002) at 241.

[4] United Nations Framework Convention on Climate Change, New York, 9 May 1992, in force 21 March 1994, 31 *International Legal Materials* (1992) 849, <http://unfccc.int> , later on 'Climate Change Convention' or 'Convention', Art. 1(3).

[5] See Art. 1(1) and 1(2) of the Climate Change Convention.

[6] See Gro Harlem Brundtland, *Our Common Future* (Oxford University Press, 1987) 20: '[T]he "environment" is where we all live; and "development is what we all do in attempting to improve our lot within that abode. The two are inseparable"'.

with the objective of the Convention. The Article first takes an environmental approach by stating that the ultimate objective of the Convention is to achieve 'stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous antropogenic interference with the climate change'. This approach is balanced by economic development approach by specifying that '[s]uch a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner'.

The integration of environmental and economic considerations is one of the main themes of the doctrine of sustainable development. From the environmental point of view, the purpose of the integration has been to shift the focus from environmental effects to various economic sectors, such as energy, industry, transport and agriculture. For the environmental field, these sectors have represented real problems to which environmental considerations should be integrated. At the same time, the economic sector has begun to consider the environmental sector from a business point of view. Indeed, the business sector saw the protection of the environment as potentially profitable. Thereby, a parallel process of economization of the environmental sector has begun to develop.

This dual integration is reflected in the Kyoto Protocol.[7] For example, Art. 2 of the Protocol lists various economic sectors, such as energy, agriculture and forestry, where Annex I parties shall implement and further elaborate policies and measures. In addition, the Protocol introduces three market-based mechanisms: joint implementation according to Art. 6, clean development mechanism under Art. 12 and emission trading under Art. 17. Joint implementation means a project-based emission reduction mechanism between developed countries while clean development mechanism is a project base mechanism between a developed and a developing Party. Finally, emission trading deals with trading of emission units, so-called assigned amount units, between developed countries. The purpose of these so-called Kyoto mechanisms is to enhance cost-effective emission reduction.

Thus, interestingly enough, while environmental considerations were integrated into the economic sphere, business considerations where integrated into the environmental one.[8]

2.3 Actors

There are several actors under the climate regimes. Parties can be divided into different groups on the basis of their substantive obligations, geographical distribution or substantive interests. In addition to parties, several observer organizations participate

[7] Kyoto Protocol to the United Nations Framework Convention on Climate Change, Kyoto, 11 December 1997, in force 16 February 2005, 37 *International Legal Materials* (1998) 22.

[8] For discussion, see Kuokkanen, *supra* note 3, at 287–338.

in climate change meetings. Individuals may have different roles: they can be government or non-government representatives or serve in their individual capacities as experts.

Parties are divided in the Framework Convention and in the Kyoto Protocol into *Annex I Parties* and *non-Annex I Parties*. The original idea was that Annex I Parties are industrial Parties while non-Annex I Parties are developing country Parties. This division is based on the principle of common but differentiated responsibility[9] and to the idea that industrial countries should take the first step. For this reason, Annex I Parties have more stringent mitigation obligations.

Even though this distinction is important it does not tell the whole story of actors in the climate regime. For example, in the Annex I group there are Parties undergoing the process of transition to a market economy[10] which have a certain amount of flexibility under the Convention and the Kyoto Protocol. Moreover, the current country groups are not necessarily carved into stone. For example, in the negotiations concerning the future regime one question has been what the status of major emitters will be.

Different groups are used also for other purposes. For example, the bureau members are elected using the traditional United Nations regional groups: African states, Asian states, Eastern European states, Latin American and the Caribbean states and the Western European and Other states. In the substantive negotiations, there are different groups based on substantive interests. The main groups are Group of 77 and China comprising over 130 developing countries, the Alliance of Small Island States (AOSIS) including approximately 43 low-lying and small island countries, the Least Developed Countries (LEG), European Union and its 27 member states, the Umbrella Group comprising non-EU industrialized countries[11] and the Environmental Integrity Group including Mexico, the Republic Korea and Switzerland.

In addition to Parties, observers play an important role in the climate regime. According to Art. 7(6) of the Climate Change Convention and Art. 13(8) of the Kyoto Protocol, the United Nations, its specialized agencies and the International Atomic Energy Agency, as well as any state member thereof or observers thereto not Party to the Convention or Protocol, may be represented as observers at sessions. Any body or agency, whether national or international, governmental or non-governmental, which is qualified in matters covered by the Convention, and which has informed the Secretariat of its wish to be represented as an observer, may be so admitted unless

[9] See, for instance, Tuula Kolari, 'The Principle of Common but Differentiated Responsibility in Multilateral Environmental Agreements' in Ed Couzens and Tuula Kolari (eds), *International Environmental Lawmaking and Diplomacy Review* 2006, University of Joensuu – UNEP Course Series 4 (University of Joensuu, 2007) 21–54.

[10] These so called economies in transition (EITs) include Russia and the Eastern European countries.

[11] Australia, Canada, Iceland, Japan, New Zealand, Norway, the Russian Federation, Ukraine and the United States.

at least one third of the Parties present object. In 2010, altogether 1 495 intergovernmental and non-governmental organizations had an observer status.[12]

The increasing role of observer organizations underlines the role of civil society and private sector. This shift has been characterized as a participatory revolution in international environmental law.[13] It should be noted that the climate change regime is not traditional diplomacy between state representatives, but also dialogue and work with a broad range of stakeholders.[14] For example, the operation of the clean development mechanism and technology transfer is very much based on the involvement of the private sector.

Turning to individual negotiators, there appears to be both *generalists* and *specialists.* Generalists usually cover a number of international treaties or multilateral environmental agreements. Therefore, they have a broader perspective on the negotiated items. Specialists have a particular competence on certain issues, like reporting issues or forest matters. As issues are interlinked and contextual, it is sometimes difficult to draw a line between general and particular. Indeed, many negotiators tend to be rather policy-makers than pure generalists or specialists.

2.4 Approaches

The climate change regime includes a number of different approaches. While many of them are interlinked and synergic, some of them seem to be antagonistic. By way of example, I discuss some of these approaches.

The climate change regime is based on the *framework* and *specific* approach. The purpose is that the Convention gives a framework under which more specific action can be taken. The Kyoto Protocol represents the first legal instrument relating to the Convention. As a short-term objective, the purpose of the Kyoto Protocol is to reduce overall emissions of greenhouse gases by the industrial country Parties by at least 5 per cent below 1990 levels in the commitment period 2008 to 2012.[15] The negotiations on the post-2012 instrument are still pending.

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[12] See 'Arrangements for intergovernmental meetings, Note by the Executive Secretary', UN Doc. FCCC/SBI/2011/6 (2011).

[13] See Kal Raustiala, 'The Participatory Revolution in International Environmental Law', 21 *Harvard Environmental Law Review* (1997) 537–586.

[14] See 'Report of the Conference of the Parties on its sixteenth session, held in Cancún from 29 November to 10 December 2010. Addendum. Part two: Action taken by the Conference of the Parties at its sixteenth session', UN Doc. FCCC/CP/2010/7/Add.1 (2011) para. 7:

> Recognizing the need to engage a broad range of stakeholders at the global, regional, national and local levels, be they government, including subnational and local government, private business or civil society, including youth and persons with disability and that gender equality and the effective participation of women and indigenous peoples are important for effective action on all aspects of climate change.

[15] Art. 3(1) of the Kyoto Protocol.

While the climate change regime is predominantly focusing on future trends, the past conduct by Parties is noted as well. The ultimate objective of the Convention, according to its Art. 2, is to achieve 'stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system'. The debate on the historical emissions relates to the principle of common but differentiated responsibility and to historical responsibility according to which developed countries should bear a special responsibility as the largest share of historical emissions has originated in these countries.[16] Thus, the climate regime tends to be both *forward-looking* and *backward-looking*.

The Kyoto Protocol reflects a *top-down* approach as the reduction and control commitments are divided among Annex I Parties with a view to achieve the above mentioned 5 per cent reduction. The 2009 Copenhagen Accord[17] and subsequently the Cancún Agreements reflect rather a *bottom-up* approach in sense that reduction and control measures are based on pledges by the Parties. As the Cancún agreements establish a review mechanism,[18] this new approach has been called as a 'pledge and review' method. The climate change negotiations can be seen as an attempt to resolve the dilemma between the top-down and bottom-up architecture.[19]

Mitigation of greenhouse gases is the primary aim of the climate change regime, with the objective of combating the harmful effects on climate of the present system. However, Parties have recognized that full prevention of harmful climate change impacts is not possible, and that therefore *adaptation* to climate change is needed as well. These two avenues – mitigation and adaptation – are not in opposition to each other, but rather reflect the two sides of the climate change work. For example, in the financing and technology work, mitigation and adaptation are very much interlinked.

With regard to the mitigation measures under the Kyoto Protocol, one question during the negotiations of the Kyoto Protocol and the Marrakesh Accords[20] relating

[16] See 'The Cancún Agreements: Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention', Decision 1/CP 16, in UN Doc. FCCC/CP/2010/7/Add.1 (2011) para. 34. ('Acknowledging that the largest share of historical global emissions of greenhouse gases originated in developed countries and that, owing to this historical responsibility, developed country Parties must take the lead in combating climate change and the adverse effects thereof.')

[17] 'Copenhagen Accord', Decision 2/CP.15, in Report of the Conference of the Parties on its 15th sess., UN Doc. FCCC/CP/2009/11/Add.1 (2010), Addendum.

[18] See decision 1/CP 16, paras 138–140. The first review should start in 2013 and should be concluded by 2015.

[19] See Daniel Bodansky, 'A Tale of Two Architectures: The Once and Future U.N. Climate Change Regime', a working paper (2011), available at <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1773865> (visited 5 July 2011).

[20] The Marrakesh Accords is a set of draft decisions that were adopted in the 7th Conference of the Parties, held in 2001 in Marrakesh. Formally, these decisions were adopted by the First Meeting of the Kyoto Protocol held in 2005 in Montreal. See 'Report of the Conference of the Parties on its seventh session, held at Marrakesh from 29 October to 10 November 2001. Addendum. Part two: Action taken by the Conference of the Parties, Volume I', UN Doc. FCCC/CP/2001/13/Add.1 (2001).

thereto was whether emissions reductions which a Party makes outside of its territory could be counted in its reductions or not. The Kyoto Protocol allows for both options. While the Parties are expected to take *domestically* policies and measures to achieve their quantified emission limitation and reduction targets, the Protocol also allows that developed Parties make additional emissions reductions *abroad* by using the flexible mechanisms.

International instruments are usually divided into *legally binding* or *non-legally binding*[21] categories. For example, international treaties are legally binding whereas recommendations by international organizations are non-legally binding. The picture, however, is not black and white. Some instruments might, namely, contain legal value even though they are formally non-legally binding. Such instruments have been labeled as *soft law* while international treaties remain *hard law*.

From the legal point of view, legally binding obligations are preferable as they give more certainty and can be regarded legitimate. Sometimes there is a flip side to this perception. Even though treaties are formally legally binding, they might contain provisions which are more aspirational. Moreover, sometimes adaptation and entry into force of legally binding instrument might take a long time.

In the climate change regime, the Framework Convention and the Kyoto Protocol represent legally binding instruments. In addition, there are a large number of decisions by the Conference of the Parties of the Framework Convention and by the Meeting of the Parties of the Kyoto Protocol. While they are not formally legally binding, they still have important value. For example, the Marrakesh Accords contain principles, rules, modalities and procedures for the implementation of the Kyoto Protocol.

The objective of the procedures and mechanisms relating to compliance under the Kyoto Protocol is to *facilitate* and *enforce* compliance with the commitments under the Protocol.[22] The Compliance Committee is structured on the basis of this distinction into two branches: the facilitative branch and enforcement branch. Both branches have their own specific responsibilities for addressing questions of implementation. While the enforcement branch is responsible for addressing potential cases of non-compliance by developed countries with their emission targets, methodological and reporting requirements and the eligibility requirements for participation in the Kyoto mechanisms, the facilitative branch is responsible for addressing

[21] For discussion, see, for example, Daniel Bodansky, *The Art and Craft of International Environmental Law* (Harvard University Press, 2010) at 96–107.

[22] See 'Procedures and Mechanisms Relating to Compliance under the Kyoto Protocol', Decision 27/CMP.1, in Report of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol on its first session, held at Montreal from 28 November to 10 December 2005. Addendum. Part Two: Action taken by the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol at its first session, UN Doc. FCCC/KP/CMP/2005/8/Add.3 (2005).

questions of implementation that do not fall under the mandate of the enforcement branch.[23]

2.8 Process and management

The distinction between *process* and *substance* plays an important role in the conducting of business in the meetings of multilateral environmental agreements. The rules of procedure might sound technical and appear more like secondary issues. In practice, however, they may have a profound importance.[24] For example, it is common in a climate change meeting that there are long debates on the agenda issues, on transparency issues or on the meaning of consensus. These debates are not purely procedural but usually have an implicit link to substance.

Currently, there are two negotiating tracks in the climate regime: the Ad hoc Working Group on Further Commitments by Annex I Parties under the Kyoto Protocol (AWG-KP) and the Ad Hoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA). The AWG-KP was established pursuant to Art. 3(9) of the Kyoto Protocol, at the first meeting of the Parties to the Protocol held in Montreal in 2005. Two years later, parties established in the Bali meeting the AWG-LCA to focus on the long-term cooperative action.[25] The two negotiating groups have so far worked parallel with each other. Their mandate was extended in the Cancún meeting until to the Durban meeting to be held in late 2011. The crucial issue for the climate change regime is how to manage the relationship between these two negotiating tracks: whether to merge them or continue to work parallel.

The climate change regime can be understood either *narrowly* in the sense that it means only the UNFCCC regime, or it can be understood *broadly* to encompass also other regimes having a climate connection. For example, the Montreal Ozone Protocol[26] deals with hydrochlorofluorocarbons (HCFCs) which are greenhouse gases. Other conventions and organizations, such as the Convention on Biodiversity[27] and the International Maritime Organization[28] have a climate link. While the UNFCCC

[23] See Sebastian Oberthür and René Lefeber, 'Holding Countries to Account: The Kyoto Protocol's Compliance System Revisited after Five Years of Experience', 1 *Climate Law* (2010) 133–158.

[24] See Cam Carruthers (ed.), *Multilateral Environmental Agreement Negotiator's Handbook*, University of Joensuu – UNEP Course Series 5 (2nd ed., University of Joensuu, 2007) at 3-1:

> [A] negotiator should be familiar with the particular rules of MEA, he or she is working on, since there are invariably rules specific to each MEA, and in any case, knowing the rules of procedure may be critical to dealing with unexpected procedural moves by other Parties or a Chair, and which could have a dramatic effect on the outcome of negotiations.

[25] The Bali Action Plan.

[26] Montreal Protocol on Substances that Deplete the Ozone Layer, Montreal, 16 September 1987, in force 1 January 1989, 26 *International Legal Materials* (1987) 154, <http://www.unep.org/ozone/>.

[27] Convention on Biological Diversity, Rio de Janeiro, 5 June 1992, in force 29 December 1993, 31 *International Legal Materials* (1992) 822, <http://www.biodiv.org>.

[28] See <http://www.imo.org>.

regime seeks to manage climate change issues in a comprehensive way, this has turned out to be challenging as climate change is such an overarching and broad issue. Many of these outside activities are undertaken in coordination or cooperation with the UNFCCC. In some instances, however, it has been difficult to agree on a synergic or coherent approach. This has resulted in fragmented, or even contrasting, approaches between the UNFCC and other regimes. For example, a pending issue is whether to deal with hydrofluorocarbons (HFCs) under the Montreal Protocol or under the Kyoto Protocol.

With regard to the outcome, it is common that after a climate change meeting there is a debate as to whether the meeting was a *success* or a *failure*. Opinions differ depending on the perspective one takes. In terms of environmental effectiveness, many meetings have achieved only small progress. Such meetings have, therefore, been criticized for representing more symbolic than real progress. Despite these modest steps, most meetings have been regarded important in terms of regime building, which will later on produce tangible environmental results.

4 Conclusions

This paper has sought to discuss the existence of different perspectives within the climate change regime. Even though many of the concepts under the climate regime seem to be opposite, on a closer look they appear to be rather interlinked and complementary. It appears that the regime includes both contrasting and mutually supportive concepts. The purpose of this paper has been to identify these pair concepts in order to better understand how the climate change regime operates.

With regard to the issue of whether these different perspectives can be identified in other fields of international law or international environmental law, one may note both similarities and differences. For example, questions relating to the framework/specific approach, the top down/bottom up dilemma or the legally or non-legally binding issues are common to other regimes as well. The climate change regime encompasses, however, many unique aspects such as annex I countries and non-annex I countries. Yet, it is difficult to give any general answer, as different concepts operate in a context.

The climate change regime can be seen as an attempt to manage various tensions, for example, between mitigation and adaptation, developed and developing countries or facilitation and enforcement. The question of how such tensions are settled is to be decided contextually in particular instances.

The Global Carbon Market – a Disappearing Vision?

Harri Laurikka[1] *and Anna-Pia Schreyögg*[2]

1 Introduction

Pricing of the negative externalities of pollution has been identified as a key means for promoting environmental policy since Pigou,[3] Coase,[4] Dales[5] and Crocker[6] developed the concept of emissions trading. Emissions trading can be described as a policy instrument for managing emissions through *emission targets* and an *opportunity to trade emission units*, which encourages operational excellence and provides an incentive for the deployment of relevant technologies. Baumol and Oates[7] showed that, under the assumption of perfect knowledge, pricing of pollution can be implemented with two alternative means: either an emissions trading system, or an environmental tax set by the government.

In the context of climate change mitigation, many countries, organizations and individual analysts have been supporting and actively promoting emissions trading systems (i.e. 'a carbon market') as a key means to price carbon emissions and to foster combating climate change in a cost-effective manner. From the earliest international legal efforts in this area, the UN Framework Convention on Climate Change

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3 Arthur C. Pigou, The Economics of Welfare (Macmillan, 1920). A pigovian tax is a tax placed on a negative externality to correct for a market failure.
4 Ronald Coase, 'The Problem of Social Cost', 3 *Journal of Law and Economics* (1960) 1–44.
5 John H. Dales, *Pollution, Property and Prices* (University of Toronto Press, 1968).
6 Thomas D. Crocker, 'The Structuring of Atmospheric Pollution Control Systems', in Harold Wolozin (ed.), *The Economics of Air Pollution* (WW Norton, 1968) 61–68.
7 William J. Baumol and Wallace E. Oates, 'The Use of Standards and Prices for Environmental Protection', 73 *Swedish Journal of Economics* (1971) 42–54.

(UNFCCC)[8] included such references[9] and a pilot phase, 'activities implemented jointly' (AIJ), was initiated in which the use of carbon markets was road-tested. These AIJ activities were undertaken on a voluntary basis in order to generate climate change mitigation benefits that would not otherwise occur. However, the AIJ did not lead to any carbon credits which consequently lead to a lack of incentives to develop the system.[10] Nevertheless, they lead to first experiences as to how market-based mechanisms in developing countries could work. Soon after that, carbon markets were established – in Articles 3, 6, 12 and 17 of the Kyoto Protocol (KP).[11] Since then, they have been pushed most vocally in the UNFCCC negotiations by the European Union (EU), which also decided to establish its own emission trading scheme the – the EU Emissions Trading Scheme (EU ETS)[12] – in 2003. The EU ETS is a domestic policy instrument to reach the emission reduction target the EU has taken on under the KP. The European Commission published relatively early on, in November 2006, a communication titled 'Building a global carbon market',[13] which was followed by the following statement of the Environment Council in December 2006:

> *[the Council of the EU]* EMPHASISES its commitment to developing a strong global carbon market by linking the EU ETS with other emission trading schemes at national or regional level; …[14]

This began a series of references in the subsequent Council Conclusions,[15] in which the EU developed further its vision of how the global carbon market might look.

Developments since then have been tough for this vision. First, the 15th Conference of the Parties of the UNFCCC (COP-15) in December 2009 resulted only in the Copenhagen Accord,[16] which made a vague reference only to the possibility of 'use

[8] United Nations Framework Convention on Climate Change, New York, 9 May 1992, in force 21 March 1994, 31 *International Legal Materials* (1992) 849, <http://unfccc.int>.

[9] Article 3(3) of the UNFCCC states '…Efforts to address climate change may be carried out cooperatively by interested parties' and Article 4(2)(a): 'These [Annex-I] Parties may implement such policies and measures jointly with other Parties and may assist other Parties in contributing to the achievement of the objective of the Convention and, in particular, that of this subparagraph'.

[10] Axel Michaelowa, 'AIJ Cannot Function without Incentives', in Pierce Riemer; Andrea Smith and Kelly Thambimuthu (eds): *Greenhouse Gas Mitigation. Technologies for Activities Implemented Jointly* (2nd ed., Pergamon, 1998) 403–408.

[11] Kyoto Protocol to the United Nations Framework Convention on Climate Change, Kyoto, 11 December 1997, in force 16 February 2005, 37 *International Legal Materials* (1998) 22. Article 3 enables countries to use units acquired through emissions trading for compliance. Article 6 establishes joint implementation mechanism. Article 12 establishes the clean development mechanism. Article 17 establishes international emissions trading.

[12] More information below in this paper or in European Commission Climate Action, 'Emissions Trading System (EU ETS), available at <http://ec.europa.eu/clima/policies/ets/index_en.htm> (visited 30 May 2011).

[13] European Commission, Building a Global Carbon Market – Report Pursuant to Article 30 of Directive 2003/87/EC, Doc. COM(2006) 676 final (2006).

[14] Environment Council Conclusions 16941/06, 19 December, 2006.

[15] Council conclusions are used to determine EU's positions at ministerial level and state them publicly.

[16] Decision 2/CP.15 'Copenhagen Accord', in Report of the Conference of the Parties on its 15th sess., UN Doc. FCCC/CP/2009/11/Add.1 (2010), Addendum.

of markets' without clearly specifying the role, if any, of carbon markets and their related instruments. Second, the US Senate decided not to have a vote on any of the many different versions on the table for a federal cap-and-trade system in July 2010.[17] Third, US Congress elections in November 2010, in which the ruling Democratic Party lost much of the control it had enjoyed, created an even less emissions-trading-friendly atmosphere in the US, and President Obama announced a 'change in the course' of dealing with climate change.[18] Fourth, both Japan and South Korea decided to postpone their respective plans for domestic emissions trading schemes in December 2010.[19] Finally, the UN negotiations on carbon markets struggled in making progress also in 2010 in Cancún.

Throughout their existence, carbon markets have faced harsh and fundamental criticism. Carbon markets have been denounced as being ineffective in helping to reduce greenhouse gas (GHG) emissions. Furthermore, there have been accusations that carbon prices have been too low and unstable; and that they have 'locked in' the carbon economy.[20] Some even say that emissions trading is fundamentally immoral due to the fact that environmental pollution is compensated monetarily.[21] Finally, the recent crimes in Europe, such as phishing, hacking into computer systems and crimes with value-added tax, as well as a scandal related to a reuse of surrendered units, have been considered fundamental problems of the trading systems in general.[22]

A question may, therefore, have arisen for many as to whether 2010 marked the year of downturn for carbon markets[23] in the climate change agenda. This paper considers recent developments and their implications for the vision of a global carbon market. As a first step, the development of the carbon market until 2010 will be reviewed. The current outlook for the carbon market will then be considered, particularly regarding regional emission trading systems. Third, respective decisions taken in Cancún in December 2010 will be discussed. Finally, in conclusion, some findings will be drawn.

[17] See e.g. Reuters, 'Climate Bill in Doubt as Democrats Delay Action' available at <http://www.reuters.com/article/2010/07/22/us-climate-usa-idUSTRE66L4L520100722> (visited 4 April 2011).

[18] See, e.g., Bloomberg Business Week, 'Obama Moves away From 'Cap and Trade,' Seeks New Tools', available at <http://www.businessweek.com/news/2010-11-04/obama-moves-away-from-cap-and-trade-seeks-new-tools.html> (visited 28 January 2011).

[19] See Section 3 of this paper.

[20] See, for instance, Tamra Gilbertson and Oscar Reyes, *Carbon Trading – How It Works and Why It Fails* (Dag Hammarskjöld Foundation, 2009).

[21] See, for instance, Michael J. Sandel, 'It's Immoral to Buy the Right to Pollute', *New York Times,* 17 December, 1997; or more recently Pablo Solon, 'Why Bolivia Stood Alone in Opposing the Cancún Climate Agreement', *Guardian*, 21 December, 2010.

[22] Tamra Gilbertson, 'Fraud and Scams in the EU Emissions Trading System' *Carbon Trade Watch*, 6 April, 2011, available at <http://www.carbontradewatch.org/articles/fraud-and-scams-in-the-eu-emissions-trading-system.html> (visited 31 May 2011).

[23] See, for instance, 'Hopes for $2 Trillion Global Carbon Market Fade', *Reuters*, 3 March 2010, available at <http://www.reuters.com/article/idUSTRE6223KZ20100303> (visited 28 January 2011).

2 Overview of the existing carbon market in 2010

The carbon markets today consist of three separate market categories: compliance-based allowance markets, compliance-based offset markets, and voluntary markets.

In the first category, companies or governments can purchase emission allowances from other companies or governments in order to comply with their GHG emissions commitments. These commitments are either agreed in an international agreement between sovereign countries, as was the case, for instance, under the Kyoto Protocol; and/or they are imposed through national legislation on companies, as was the case with the EU ETS, for instance. Emission allowances are issued ex-ante and entitle their holders to increase GHG emissions by one tonne of carbon dioxide equivalent. Examples are international emissions trading[24] established in the Kyoto Protocol with Assigned Amount Units ('AAU trading' in Figure 1 below); and the European Union Emissions Trading Scheme (EU ETS), i.e. typical cap-and-trade systems. The Regional Greenhouse Gas Initiative (RGGI)[25] in the United States and the New Zealand Emissions Trading System (NZ ETS)[26] also belong to this category, but with a difference in that they include 'price caps'. A price cap means that if the price in the system increases, more allowances can be issued.

In the second category, companies or governments can purchase emission reduction credits stemming from projects or programmes cutting GHG emissions to comply with their emission reduction obligations. These credits are issued ex-post, i.e. when the emission reduction has been verified, and similarly to the allowances mentioned above can be used to offset one tonne of carbon dioxide equivalent in own activities. Prominent examples are the clean development mechanism (CDM)[27] and joint implementation (JI)[28] of the Kyoto Protocol, in which UN rules are followed and the projects are registered by the UN. Another example is the New South Wales (NSW) Greenhouse Gas Reduction Scheme.[29] Credit markets can be further categorized into primary and secondary markets. The former covers transactions between the original owner of the carbon asset and a buyer, and the latter transactions with the same assets, for instance, in the exchanges.

In the third category, companies, governments and/or individuals offset their emissions voluntarily; or voluntarily participate in a (legally binding or non-binding)

[24] Art. 17 of the Kyoto Protocol.
[25] A scheme where ten US States have capped and will reduce CO2 emissions from the power sector 10 percent by 2018. For more information, see <http://www.rggi.org/home>.
[26] For more information, see <http://www.climatechange.govt.nz/emissions-trading-scheme>.
[27] Art. 12 of the Kyoto Protocol.
[28] Art. 6 of the Kyoto Protocol.
[29] The scheme reduces greenhouse gas emissions associated with the production and use of electricity. It achieves this by using project-based activities to offset the production of greenhouse gas emissions. For more information, see <http://www.greenhousegas.nsw.gov.au/>.

scheme. Both allowances and offsets can be traded in these markets.[30] The main difference is that the credits do not have to comply (although they oftentimes do anyhow) with the rules established by the UNFCCC or national governments.

Carbon markets generally have grown rapidly since the coming into existence of the Kyoto Protocol in 1997. In particular, the beginning[31] of the EU ETS in 2005 has been an important landmark in the development of GHG emissions trading also as national policies. The market in 2009 was over 12 times in volume and over 13 times in monetary terms as large as in 2005 (Figure 1). The carbon markets have been dominated by compliance-based markets, and, in particular, by the EU ETS which, in addition to the direct trading volume, has provided the most demand for CDM (see also Figure 2 further below) and JI credits. The year 2010 was in many ways challenging for the carbon market as a whole: the trading volume was some 13 per cent lower than in 2009, whereas the traded value grew by 1.4 per cent. Volumes dropped in particular in North America.[32]

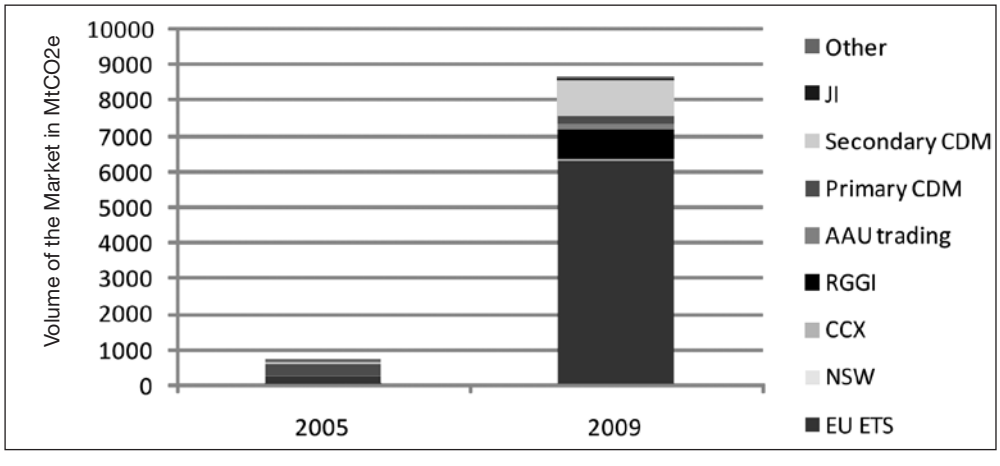

Figure 1. Growth and composition of the global carbon market 2005–2009 in MtCO2e.[33]

[30] For instance, the Chicago Climate Exchange (CCX) (See <http://www.chicagoclimatex.com/>) is a trading platform for allowances and credits, whereas the Voluntary Carbon Standard (VCS) Program, (see <http://www.v-c-s.org/index.html>) for instance, provides a global standard and programme for the approval of credible voluntary offsets.

[31] EU ETS was established in 2003, when the EU Emissions Trading Directive (2003/87/EC) was approved in the European Council. The first trading period was 2005–2007.

[32] Based on data by Point Carbon; see <http://www.pointcarbon.com>.

[33] Based on World Bank, *State and Trends of the Carbon Market 2007* (World Bank, 2007), available at <http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:21319781~pagePK:64257043~piPK:437376~theSitePK:4607,00.html> and World Bank, State and Trends of the Carbon Market 2010 (World Bank, 2010), available at <http://siteresources.worldbank.org/INTCARBONFINANCE/Resources/State_and_Trends_of_the_Carbon_Market_2010_low_res.pdf> (both visited 28 January 2011).

Carbon markets, as of today, are far from establishing a uniform price level that would optimally inform investments across the systems. This is to a significant extent because not all units are allowed in all systems: AAUs, for instance, cannot be used for compliance within the EU ETS but for compliance with national emission reduction targets under the KP. AAU prices are negotiated individually and are not yet being traded on the market. The average prices in the carbon markets during 2006 to 2010 have ranged from a few euros per tCO2e to almost €22/tCOe in the EU ETS (Figure 2). It can be seen that the EU allowances have been most highly priced assets in the market and that the secondary market prices of CDM credits have to a significant extent followed the EU allowance prices (correlation> 0.9). Prices in primary-CDM markets and, in particular, in JI have been less affected by EU allowance prices.

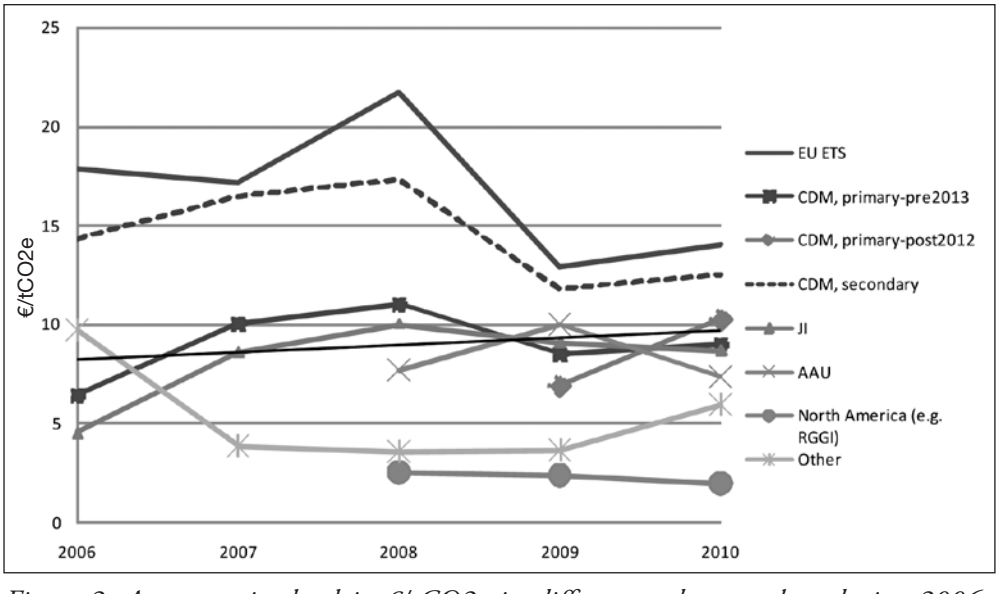

Figure 2. Average price level in €/tCO2e in different carbon markets during 2006–2010.[34]

An important notion regarding the current market is that the dominating compliance-based markets are only partly relying on UNFCCC decisions. The EU ETS – until now clearly the most influential carbon market globally – was, for instance, established as a policy instrument to meet the domestic emission reduction target of the EU agreed under the Kyoto Protocol. Since 2008, it has also been serving as a tool to reach a unilateral domestic emission reduction target that the EU has set unilaterally for 2020. RGGI and other state-level initiatives in North America have likewise been established in the absence of an internationally binding commitment.

[34] Based on data in Point Carbon 2011; see <http://www.pointcarbon.com>.

3 Further development of regional carbon markets

The EU will continue to develop its ETS in the future. It has been enshrined in national legislation and continues to be the most important single EU-wide policy to cut emissions. The market was valued at some €72 billion in 2010.[35] Emissions from air transport will be part of the scheme in 2012 and intensive preparations for their inclusion are ongoing at the time of writing. The EU ETS will be further expanded to the petrochemicals, ammonia and aluminium industries and to additional gases, such as nitrous oxide, in 2013. A series of important changes to the way the EU ETS works will take effect in order to strengthen the system, such as the increased use of auctioning and benchmarking in allocating emission allowances.[36] The EU ETS is linked to the emissions trading systems of Liechtenstein and Norway. Negotiations with Switzerland are ongoing for its possible inclusion from 2013 onwards.

Even if the outlook for any future US federal legislation currently seems problematic, emissions trading can make further progress at the state level in North America. The RGGI has been in operation since 2008, but suffered from reduced prices and volumes in 2010. In December 2010, California decided to cut its GHG emissions to 1990 levels by 2020 and to establish a cap-and-trade system.[37] California is likely – once the trading system is in operation – to become the second-largest carbon market in the world, following the EU ETS. According to an estimate by Point Carbon, the market will grow from $1.7 billion in 2012 to nearby $10 billion in 2016.[38]

The future Californian Scheme is planned to be part of the Western Climate Initiative (WCI)[39] which has ten other US and Canadian states as members. The key component of the WCI is a flexible, market-based, (inter)regional cap-and-trade program. The WCI's current target is to reduce regional GHG emissions to 15 per cent below 2005 levels by 2020 (most other schemes use 1990 as a base year). The publication *Design for the WCI Regional Program*[40] was released in July 2010 to provide a roadmap to inform the WCI Partner jurisdictions as they implement the cap-and-trade programme in their jurisdictions. Those expected to implement the program when it begins in January 2012 comprise approximately two-thirds of total emissions in the WCI jurisdictions. When fully implemented in 2015, the pro-

[35] *Ibid*.

[36] For more information on EU ETS, see European Commission, 'Climate Action', available at <http://ec.europa.eu/clima/policies/ets/index_en.htm> (visited 28 January 2011).

[37] Reuters, 'California Gives Green Light to Carbon Trade' (17 December 2010), available at <http://www.reuters.com/article/idUSTRE6BG0J320101217> (visited 28 January 2011).

[38] Data in Point Carbon 2011; see <http://www.pointcarbon.com>.

[39] See <http://www.westernclimateinitiative.org/index.php>.

[40] Available at <http://westernclimateinitiative.org/the-wci-cap-and-trade-program/program-design> (visited 29 January 2011).

gramme will cover nearly 90 per cent of the GHG emissions in WCI states and provinces.

In its recent five-year plan,[41] China aims at cutting carbon intensity 17 per cent under 2010 levels by 2015. As part of that, six regional emissions trading schemes (Beijing, Chongqing, Guangdong, Hubei, Shanghai, and Tianjin) will be established by 2013 and a national scheme is targeted by 2015.[42] It is uncertain at this stage to what extent these expectations will materialize, whether the schemes are based on cap-and-trade, and whether the systems allow linking to the international carbon market and, consequently, accept offset credits. The current targets are aimed at fulfilling China's pledge to cut carbon intensity by 40–45 per cent from 2005 levels until 2020.[43]

Japan passed a 'Basic Act on Global Warming'[44] in the lower house of its Parliament in May 2010. However, in late December 2010, the government shelved the introduction of a domestic emission trading system; apparently because of opposition from the industrial sector. The plans to implement a trading scheme were not scrapped altogether, but may turn out to be significantly different from a traditional cap-and-trade scheme.[45] The earthquake and the tsunami in March 2011 and the consequent nuclear crises may, however, significantly affect Japan's climate policy in the near future and thereby implementation of any domestic scheme.

At the same time (well before the crisis, however), Japan has begun to develop a bilateral offset scheme – to replace the CDM as Japan has decided not to join a possible second commitment period of the Kyoto Protocol – with interested developing country partners. Japan has also proposed the possibility to use such national offset mechanisms in the context of the UNFCCC.[46] To date, a total of 30 projects have already been chosen from developing countries in Asia and Latin America and close to 200 projects could be developed altogether. During 2010–2011 Japan plans to spend some 6 billion yen to promote these projects.[47] Whether these credits may be used later in a domestic cap-and-trade system is uncertain, but Japan intends to use the credits to fulfill its emission reduction pledge under the UNFCCC.

41 See <http://www.gov.cn>.

42 PointCarbon, 'China to Launch Emissions Markets in 6 regions by 2013' (11 April 2011), available through <http://www.pointcarbon.com>.

43 PointCarbon, 'China to Carve out Climate Policy Plan' (12 January 2011), available at <http://www.pointcarbon.com/news/1.1497242> (visited 28 January 2011).

44 For an overview, see, for example, <http://www.env.go.jp/en/earth/cc/bagwc/overview_bill.pdf> (visited 29 January 2011).

45 Reuters, 'Japan Shelves Carbon Emissions Trading Scheme' (28 December 2010), available at <http://www.reuters.com/article/idUSTRE6BR06120101228> (visited 28 January 2011).

46 Submission by Japan on new market-based mechanisms to enhance the cost-effectiveness of, and to promote, mitigation actions, 25 February 2011, available through <http://www.unfccc.int>.

47 PointCarbon, 'Japan seeks more bilateral offset mechanism projects' (06 April 2011), available through <http://www.pointcarbon.com>.

In South Korea, a Framework Act on Low Carbon Green Growth[48] entered into force in April 2010. The Framework Act enables the government to operate an emissions trading scheme. In September 2010, a list of some 470 companies and 1 570 installations that should participate in the scheme was set out, together with proposed targets for 2013 and beyond.[49] The intention was to issue more than 90 per cent of allowances through free allocation. In December 2010, a vote in the Assembly was postponed until 2011. Similarly to the position in Japan, the industrial sector opposed the scheme[50] and put pressure on politicians in this regard. However, in March 2011 Korea unveiled detailed rules for a 'Target Management Scheme' (TMS) for 1 564 sites releasing some 442 $MtCO_2e$ a year – which would cover about 60 per cent of Korea's GHG emissions. The TMS is designed to be a preliminary-phase emissions trading scheme, before the introduction of a more permanent scheme on 1 January 2015.[51] Korean officials assure that the ETS will start between 2013 and 2015 despite opposition from industry.[52]

Australia has for a lengthy period discussed the introduction of a domestic emissions trading scheme. Legislation for the 'Carbon Pollution Reduction Scheme' (CPRS) failed to pass the senate three times and was postponed in May 2010. Federal elections in August 2010, however, changed the picture and the current government returned to the issue in February 2011 by proposing a carbon tax from June 2012 followed by a cap-and-trade scheme in 3–5 years' time.[53]

4 UNFCCC negotiations on carbon markets and the decisions in Cancún

The Clean Development Mechanism (CDM)[54] is one of the most important tools and achievements of the Kyoto Protocol. To date more than 3 000 projects are registred and many more are underway.[55] A market mechanism with a value of several billion euros emerged from the tough negotiations in Marrakesh in 2001. These

[48] Available, for instance, at <http://www.moleg.go.kr/english/korLawEng;jsessionid=2XVAoj0GR5al5jBzbf231tBLR5sfblXWqUKrdjsnkPDpRoPPZWg4k7g10127dywk?pstSeq=52136> (visited 29 January 2011).

[49] PointCarbon, 'South Korea to forge carbon targets' (28 September 2010), available through <http://www.pointcarbon.com>.

[50] Bloomberg, 'South Korea Carbon Trading Bill Faces Opposition from Business Groups' (11 January 2011), available at <http://www.bloomberg.com/news/2011-01-11/south-korea-carbon-trading-bill-faces-opposition-from-business-groups.html> (visited 28 January 2011).

[51] PointCarbon, 'Korea unveils carbon scheme rules' (21 March 2011), available through <http://www.pointcarbon.com>.

[52] Reuters, 'South Korea to start emission trading in 2013–2015' (7 February 2011), available at <http://www.reuters.com/article/2011/02/07/us-carbon-korea-idUSTRE7161II20110207> (visited 1 June 2011).

[53] ABC News, 'Gillard unveils carbon price details' (24 February 2011), available at <http://www.abc.net.au/news/stories/2011/02/24/3147523.htm> (visited 21 April 2011).

[54] Established in Art. 12 of the Kyoto Protocol.

[55] See UNFCCC, 'CDM in Numbers', available at <http://cdm.unfccc.int/Statistics/index.html> (visited 1 June 2011).

figures illustrate that the CDM has been a success in developing a new and global market for GHG emission reduction projects in developing countries. These projects generate, once registered by the UNFCCC, carbon credits that can be used for compliance purposes in domestic emission trading schemes (such as the EU ETS) and/or to meet national mitigation commitments under the Kyoto Protocol. Since the purchase of carbon credits from CDM projects is typically less costly than emission reductions in developed countries (see, for instance, Figure 2), it is highly attractive to use these credits to meet parts of the emission reduction commitment. CDM credits can also be used to offset emissions on a voluntary basis, for example, to flights of individuals.

The CDM has, arguably, created benefits for developing countries through its contribution to sustainable development and the transfer of technologies. On the other hand, the CDM has faced much criticism[56] for manifold reasons, inter alia, for its lack of environmental integrity and transparency, its undue governance structures, its lack of regional distribution and its cumbersome procedures. However, in the past years, the quality of CDM procedures has been improved step-by-step through several COP/MOP decisions.[57]

The CDM functions as a pure offsetting mechanism which means that one reduced tonne of carbon dioxide allows the emission of one additional tonne carbon dioxide in developed countries. The CDM alone would, therefore, never be enough to solve the climate problem and it cannot be the only instrument used to involve developing countries into emission reduction efforts within the UNFCCC context.

Therefore, the EU and others have proposed since COP-13 at Bali to create one or more new market mechanisms within a post-2012 framework. These new mechanisms would operate on a larger scale (for instance, on a sectoral or sub-sectoral scale) and would entail an own emission reduction contribution by developing countries. Only an ambitious part of the mitigation effort in the sector would be rewarded with carbon credits.

This new approach would be intended to scale up mitigation efforts in both developed and developing countries and reduce transactions costs (compared to the CDM). Furthermore, it would incentivize the introduction of domestic cap-and-trade schemes in developing countries. As in the CDM, this mechanism would function on a voluntary basis and would, at least partly, generate carbon credits for sale on the carbon market. This mechanism – in comparison to the existing CDM – would also recognize mitigation actions that developing countries increasingly

[56] See, for instance, CDM Watch, 'Shortcomings of CDM', available at <http://www.cdm-watch.org/?page_id=24> (visited 1 June 2011).

[57] See, for instance, Decision 3/CMP.6 'Further guidance relating to the clean development mechanism', in Report of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol on its sixth session, Appendum, Part Two, UN Doc. FCCC/KP/CMP/2010/12/Add.2 (2011).

plan, and also implement, on their own. The CDM has also been limited to a project- or programme-level, whereas the new mechanisms would function on a broader scale (for instance, on a sectoral scale) to stimulate emission reductions on a larger scale. Therefore, they would ideally pave the way to low carbon economies.

However, neither in Copenhagen nor in Cancún did parties manage to agree on the creation of new market mechanisms. Opposition came from different sides and with different arguments. The parties were able to agree on the following:

> *[The Conference of the Parties] Decides* to consider the establishment, at its seventeenth session, of one or more market-based mechanisms to enhance the cost-effectiveness of, and to promote, mitigation actions, taking into account the following […][58]

The process is being continued but with a view to forwarding draft decisions to COP-17. Therefore, parties were requested to submit their views on the matter. Further sessions to discuss modalities and procedures of the new mechanisms are being awaited in 2011.

In Cancún, parties were able to agree on several improvements to the CDM, the most important being the introduction of the use of standardized baselines. This allows now to use standardized baselines instead of setting a CDM baseline for each project which is costly and cumbersome. The use of standardized baselines could, therefore, also help in improving the regional distribution of the CDM since it makes the burdensome process of testing the additionality of a project much easier.

Besides that, there is a firm safeguard in the KP decision (as part of the Cancún agreements) that the existing mechanisms of the Kyoto Protocol should continue:

> Emissions trading and the project-based mechanisms under the Kyoto Protocol shall continue to be available to Annex I Parties as means to meet their quantified emission limitation and reduction objectives in accordance with relevant decisions of the CMP as may be further improved […][59]

This was a long awaited signal to the carbon market, but not entirely sufficient since no binding emission reductions commitments – which are crucial to create demand – were agreed upon or announced.

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[58] 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 Report of the Conference of the Parties on its sixteenth session, Appendum, Part Two, UN Doc. FCCC/CP/2010/7/Add.1 (2011) para. 80.

[59] Decision 1/CMP.6, 'Outcome of the work of the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol at its fifteenth session', in Report of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol on its sixth session, Appendum, Part Two, UN Doc. FCCC/KP/CMP/2010/12/Add.2 (2011) para. 6(b).

All in all, carbon markets (CDM and JI) were quite prominent on the agenda in Cancún with two Conferences of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (CMP) processes; three Subsidiary Body for Scientific and Technological Advice (SBSTA) processes; one Subsidiary Body for Implementation (SBI) process; and several sessions in both the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG-KP) and the Ad Hoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA).

However, due to the fact that a gap between the commitment periods is becoming very likely, there is currently a discussion underway if the market mechanism of the KP can continue in the absence of a second commitment period.

5 Discussion

The development of carbon markets is obviously inevitably linked to the extent of international efforts to mitigate climate change – if there are no mitigation commitments, in particular by developed countries, there are evidently no significant carbon markets. However, if one trusts the collective will of nations which was demonstrated in Cancún in December 2010 to cut GHG emissions from their current trends, there are several reasons why the carbon market could be expected to grow further in the near future.

First, it remains of paramount importance that global climate policy remains cost-effective. A recent report from UNEP shows that the current pledges given by countries for the UNFCCC are clearly inadequate to keep the global average temperature below 2 degrees Celsius above preindustrial levels, which is the common endorsed goal of the global community in Cancún.[60] Since there is an evident potential for mitigation investment in developing countries, in particular, due to the lower level of development and higher growth rate of their economies and since there is simply no room for wasting money in the fight against climate change, the original ideas of Pigou, Coase, Dales and others remain as valid as ever. Additionally, the long-term financing arrangements agreed in Cancún to facilitate those investments would greatly benefit from pricing carbon. This was also a clear message from the UN Secretary General's High Level Advisory Group on Climate Financing (AGF), which stated that:

> [i]nstruments based on carbon pricing are particularly attractive because they both raise revenue and provide incentives for mitigation actions […]. The Advisory Group emphasized the importance of a carbon price in the range of US$20-

[60] UNEP, *The Emissions Gap Report – Are the Copenhagen Accord Pledges Sufficient to Limit Global Warming to 2°C or 1.5°C?* (UNEP, 2010), available at <http://www.unep.org/publications/ebooks/emissionsgapreport.> (visited 29 January 2011).

> US$25 per ton of CO2 equivalent in 2020 as a key element of reaching the US$100 billion per year.[61]

Interestingly, the price level identified in the report is not significantly higher than the price in the EU ETS during 2009–2010. In addition, the report specifically states that '[t]he Advisory Group therefore recommends that the carbon markets be further strengthened and developed, while ensuring environmental integrity'.[62]

Second, attempts to introduce a global or an international tax on carbon – the policy alternative of an emission trading scheme – did not particularly fly yet. Switzerland has presented a proposal in the UNFCCC calling for a financing scheme for climate adaptation based upon a global carbon tax of $2 per ton of carbon dioxide emitted. Countries emitting less than 1.5 tons of carbon dioxide per capita would be exempt from the tax.[63] The AGF 'did not take a firm view on the choice of instruments to achieve carbon pricing' (taxes vs. carbon markets), but it noted that carbon related instruments coordinated internationally 'may present difficulties, however, in terms of political acceptability and incidence on developing countries'.[64]

Third, the EU and many other countries and regions will continue to develop their regional systems or may establish new systems, as has been shown above. New systems will not necessarily rely on UN endorsed rules, especially in regard to the sophisticated CDM, and they may be very different from what we have seen until now. The market risks are becoming increasingly fragmented, and it may become an overwhelming task in the medium term to attempt to link these heterogenic trading schemes with the ultimate goal of developing a more integrated global carbon market. Nevertheless, it seems increasingly clear that any ambitious climate agreement under the umbrella of the UNFCCC would need the global carbon market as a tool to carry out its task – not vice versa. The carbon market will likely suffer from the failure of the negotiations, but will anyhow survive.

Finally, the market can and will be improved; most flaws identified in its operation until now are likely to be corrected. The COP decisions taken in Cancún to improve the CDM and JI contained a number of useful parts, such as the increased use of standardized baselines in the CDM. Similarly, the climate and energy package adopted in the EU in 2008 will provide many useful revisions to the EU ETS. The recent crimes in the EU ETS have aroused intensive attention and initiated improvement of the security of the registries. Likewise, the scandalous loophole with the recycled

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[61] AGF, Report of the Secretary-General's High-level Advisory Group on Climate Change Financing, 5 November 2010, available at <http://www.un.org/wcm/content/site/climatechange/pages/financeadvisorygroup> (visited 29 January 2011) at 5.

[62] See *ibid*. at 6 and 13.

[63] Funding Scheme for Bali Action Plan – A Swiss Proposal for Global Solidarity in Financing Adaptation, Submission to the AWG-LCA, 21 August 2008, available at <http://unfccc.int/resource/docs/2008/awglca3/eng/misc02a01.pdf> (visited 21 April 2011).

[64] AGF, Report of the Secretary-General's, *supra* note 61, at 12–13.

CERs has been closed by modification of the legislation. Carbon markets have been – and continue to be – on a steep learning curve.

6 Conclusion

In this paper, we have shown that carbon markets are a success story and becoming more and more prominent as policy instruments worldwide. However, carbon markets and emissions trading are only useful in an environment where marginal abatement costs of emission reductions differ. This will definitely be the case globally for the foreseeable future. The use of the carbon market in this environment hence inevitably addresses two basic questions: where should mitigation and investments take place and what the resulting total cost of mitigation action is. The more restricted developed countries are in spending their financial contribution to mitigation, the smaller share of this contribution will likely flow to developing countries and the larger share will flow to developed countries. This will increase the average cost of mitigation actions globally in the medium term. Prohibiting purchasing of emission units from developing countries would probably not increase the budgets in developed countries for mitigation action. As a result, more greenhouse gas emissions would likely be released to the atmosphere during the same timeframe.

All the Kyoto mechanisms were based on a principle that the goal was to offset emissions. For the 2°C target, this is not sufficient – we would need *net* reductions in emissions whenever possible. The development of future emissions trading systems must take this into account seriously. In fact, paras 80d and 80e of Decision 1/CP.6 in Cancún were already an important move to this direction.

A vision of the global carbon market has not disappeared and does not seem to be disappearing. There are many reasons why the current market can be expected to grow. The magnitude of this growth is obviously affected by the climate negotiations under the UNFCCC – but not only by that.

The Experience of the First Five Years of the Kyoto Protocol's Compliance System

Sebastian Oberthür and René Lefeber[1]

1 Introduction

The success or failure of multilateral environmental agreements depends in large part on the degree to which state parties comply with the commitments they make. It has been suggested that this is particularly the case in respect of the Kyoto Protocol[2] to the UNFCCC,[3] where states face 'substantial economic and political pressures to delay or compromise on commitments'; and where the 'implementation mechanisms are complex, involving joint implementation, emissions trading between developed states, and a clean development mechanism' aiming at reductions in emissions in developing states.[4]

The compliance system of the Kyoto Protocol is based on four levels of rules which have developed through several steps. Initially, an enabling clause (Art. 18) in the Protocol mandated the Conference of the Parties serving as the meeting of the Parties

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[2] Kyoto Protocol to the United Nations Framework Convention on Climate Change, Kyoto, 11 December 1997, in force 16 February 2005, 37 *International Legal Materials* (1998) 22.

[3] United Nations Framework Convention on Climate Change, New York, 9 May 1992, in force 21 March 1994, 31 *International Legal Materials* (1992) 849, <http://unfccc.int>.

[4] Patricia Birnie, Alan Boyle and Catherine Redgwell, *International Law and the Environment* (3rd ed., Oxford University Press, 2009) 249.

to the Kyoto Protocol (CMP) to approve appropriate and effective procedures and mechanisms to determine and address instances of non-compliance. On this basis, CMP-1 approved and adopted the procedures and mechanisms relating to compliance under the Protocol ('Compliance Procedures').[5] Further rules of procedure ('Rules of Procedure') were then developed by the Compliance Committee established by the Compliance Procedures, and adopted by the CMP.[6] In addition, the Committee has complemented and given effect to the Rules of Procedure by developing working arrangements.[7]

This paper argues that the Protocol's compliance system provides an important precedent in international climate policy and in global environmental governance more broadly. The compliance system is not merely an adjunct, but forms an integral part of the Protocol's governance system and provides for an administrative review, by an independent international body, of state action to implement the Protocol. The system is arguably unique – even unprecedented – for multilateral environmental agreements (MEAs), especially because of its dual objective of enforcing compliance as well as facilitating and promoting compliance.[8] Beyond its role in ensuring compliance with the Protocol's emission targets, the compliance system is an essential component in securing the accurate 'measurement, reporting, and verification' of greenhouse gas emissions under the Protocol and also the effective functioning of the Protocol's carbon-market mechanisms. With five years of practical operation behind it (2006–2010), the compliance system has further matured and, it can be argued, has proved that an independent international review of state action can be efficacious in promoting compliance with an MEA – despite some weaknesses in the system having become evident during this period.

In negotiations on the future of the Protocol beyond its first commitment period (2008–2012) and on the future international cooperation on climate change more broadly, the rules and practice of the compliance system will continue to be relevant. Any future climate agreement implemented either to complement or to replace the Protocol will face challenges in securing compliance, preventing free-riding, and providing protection for the competitive positions of states participating in such an

[5] See Annex to Decision 27/CMP.1 'Procedures and Mechanisms Relating to Compliance under the Kyoto Protocol', UN Doc. FCCC/KP/CMP/2005/8/Add.3 (2006) (hereinafter 'Compliance Procedures'), at 92.

[6] See Annexes to Decisions 4/CMP.2 and 4/CMP.4 'Compliance Committee', UN Docs FCCC/KP/CMP/2006/Add.1 (2007), at 17, and FCCC/KP/CMP/2008/11/Add.1 (2009), at 14. Hereinafter, this paper refers to these 'Rules of Procedure' in their consolidated version available at <http://unfccc.int/kyoto_protocol/compliance/items/3026.php> (visited 20 December 2010).

[7] See Report on the Meeting, Plenary of the Compliance Committee, Third meeting, Doc. CC/3/2006/7 (2006), at para. 5; see also Annual report of the Compliance Committee to the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol, UN Doc. FCCC/KP/CMP/2006/6 (2006), at para. 11 (hereinafter 'First Annual Report of the Compliance Committee'); all reports and other documents of the plenary of the Compliance Committee are available at <http://unfccc.int/kyoto_protocol/compliance/plenary/items/3788.php> (visited 20 December 2010).

[8] See, for example, Jutta Brunnée, 'The Kyoto Protocol: A Testing Ground for Compliance Theories?', 63 *Zeitschrift für ausländisches öffentliches Recht und Völkerrecht* (2003) 255–280.

agreement. Although it might be that not all states support the continuation of an effective compliance system which utilizes an independent international body for review of state actions, the operational compliance system of the Protocol will provide an important benchmark for the discussions on how best to address these challenges.

The argument in this paper develops by focusing on the main elements of the compliance system and its functioning.[9] Accordingly, Part 2 of the paper addresses the rules and practice regarding the institutional setup of the Compliance Committee. This is followed, in Part 3, by an analysis of the general procedures of the Committee, as well as the specific procedures applicable to its enforcement branch; and, in Part 4, the 'consequences' to be applied in resolving problems of compliance. Part 5 discusses important interactions with other components of the Protocol; before an overall assessment is provided, in Part 6, of the compliance system during the first five years of operation.

2 The institutional setup of the Compliance Committee

The Committee which is at the centre of the compliance system operates through four functional formations.[10] It has twenty full members, as well as an alternate for each member. It operates primarily through its two branches, these being the enforcement branch (EB) and the facilitative branch (FB), with ten members, and their alternates, serving in each. These branches address 'questions of implementation' (i.e. compliance problems). In addition, the chairpersons and the vice-chairpersons of the branches together form a four-member bureau; and all members (and alternate members) together form the Committee's plenary.

The bureau provides important overall guidance. Pursuant to the Compliance Procedures, it is responsible for allocating questions of implementation to the appropriate branch, and for designating, as it considers necessary, members of one branch to

[9] A number of authors have analyzed the Compliance Procedures themselves, but analyses of the subsequent development and operation of the compliance system are rare. For some of the relevant literature, see Xueman Wang and Glenn Wiser, 'The Implementation and Compliance Regimes under the Climate Change Convention and Its Kyoto Protocol', 11 *Review of European Community and International Environmental Law* (2002) 181–198; Olav Schram Stokke, Jon Hovi and Geir Ulfstein (eds), *Implementing the Climate Regime – International Compliance* (Earthscan, 2005); Christoph Holtwisch, *Das Nichteinhaltunsverfahren des Kyoto-Protokolls, Entstehung – Gestalt – Wirkung* (Duncker & Humblot, 2006); Sebastian Oberthür and Simon Marr, 'Das System der Erfüllungskontrolle des Kyoto-Protokolls: Ein Schritt zur wirksamen Durchsetzung im Umweltvölkerrecht', 13 *Zeitschrift für Umweltrecht* (2002) 81–89; René Lefeber, 'From The Hague to Bonn to Marrakesh and Beyond: A Negotiating History of the Compliance Regime under the Kyoto Protocol', 14 *Hague Yearbook of International Law* (2001) 25–54; René Lefeber, 'The Practice of the Compliance Committee under the Kyoto Protocol to the United Nations Framework Convention on Climate Change (2006-2007)', in Tullio Treves et al. (eds), *Non-Compliance Procedures and Mechanisms and the Effectiveness of International Environmental Agreements* (Cambridge University Press, 2009) 303–317.

[10] Compliance Procedures, section II.

contribute to the work of the other branch on a non-voting basis.[11] Pursuant to the Rules of Procedure, the bureau furthermore determines the agendas for plenary meetings in cooperation with the UNFCCC Secretariat (which also serves the Committee). Beyond what is provided for in the written rules, the bureau has proved crucial by determining the timing and organization of plenary meetings and guiding the preparation of associated documents.[12]

Although not explicitly provided for within the Compliance Procedures, the chairperson and the vice-chairperson of each branch form a de facto bureau for their branch. The Rules of Procedure provide that the Secretariat is to draft the provisional agenda for each branch meeting 'in agreement with the chairperson and vice-chairperson of the relevant branch'.[13] In practice, however, the chairperson and vice-chairperson play more extensive roles in the organization and preparation of meetings. In order to facilitate decision-making of the branches, they have assumed responsibility for the production of draft decision texts. Exercising an (unwritten) set of responsibilities, the chairperson and vice-chairperson guide the elaboration of decisions and reports.

Both branches are composed according to the same formula. That is, each branch has a member from each of the five UN regional groups, one nominated by a small-island developing country, two nominated by developed countries (that is, parties listed in Annex I of the UNFCCC), and two nominated by developing countries (non-Annex I parties).[14] In effect, 60 per cent of the members of the Committee and of each of its branches are nominated by developing countries.[15]

The EB has exclusively defined functions. The EB is responsible for addressing cases of potential non-compliance by developed countries with, firstly, their emission targets (i.e. their emission-limitation or reduction commitments[16]); secondly, the key methodological and reporting requirements;[17] and, thirdly, the eligibility requirements for participation[18] in the carbon-market mechanisms.[19] In such cases, the branch is required to determine whether the party in question is in non-compli-

[11] Compliance Procedures, sections VII.1 and II.7 respectively. The bureau has, during the first four years of the operation of the Committee, not made use of the latter provision.

[12] See also Lefeber, 'The Practice of the Compliance Committee', *supra* note 9, at 304.

[13] Rules of Procedure, rule 7.2.

[14] Compliance Procedures, sections IV.1 and V.1. The terms 'developed country' and 'Annex I party' as well as 'developing country' and 'non-Annex I party' are used interchangeably throughout this paper, irrespective of the different connotations that either pair of terms may have in current political debates.

[15] On the term of service of members and alternates (four years), see Compliance Procedures, sections IV.2 and V.2; see also Decision 4/CMP.4, *supra* note 6.

[16] Under Art. 3(1) of the Protocol.

[17] Under Arts 5(1)/5(2) and 7(1)/7(4) of the Protocol.

[18] Under Arts 6 (Joint Implementation), 12 (Clean Development Mechanism), and 17 (international emissions trading) of the Protocol.

[19] The mandate of the EB with respect to the carbon-market mechanisms does not involve any formal relationship with the Executive Board of the Clean Development Mechanism or the Joint Implementation Supervisory Committee; see also *infra*, Part 5.

ance; and, if the finding is of non-compliance, it must apply 'consequences' (see also the discussion under Part 4 below). The EB is mandated also to decide on the application of adjustments to inventories (for instance, where emission estimates are found to be lacking or incorrect[20]) and corrections to the database for the accounting of assigned amounts (for instance, where transfers of emission units are found to be recorded inappropriately) in situations where a related disagreement[21] between an expert review team (ERT) and a party could not be resolved during the review of national greenhouse gas emission inventories.[22]

By the end of 2010, the EB had considered questions of implementation with respect to four parties: Greece, Canada, Croatia and Bulgaria. The questions of implementation involved the compliance of these states with the methodological and reporting requirements; and with related eligibility requirements. The proceedings in these cases have created the main body of experience in the operation of the compliance system; and they will therefore be referred to throughout this paper.

The FB is essentially responsible for addressing any question of implementation that does not fall within the authority of the EB.[23] This responsibility specifically includes an 'early warning' function with respect to questions of implementation regarding, firstly, emission targets prior to the end of the relevant commitment period; and, secondly, methodological and reporting requirements prior to the first commitment period.[24] Rather than determining non-compliance in respect of any question of implementation addressed by it, the FB is to advise, facilitate and promote compliance by applying various consequences which could be described as 'soft'.[25] So far, the FB has not had occasion to apply any. A submission made in 2006 by South Africa, on behalf of the Group of 77 and China, did not proceed to the merits (see further below in the present Part), and a request for clarification of the action the Committee could, more generally, take in relation to its facilitative function has so far not been addressed by the CMP.[26] However, the FB decided in 2010 to develop its own practice and to take proactive action with respect to parties that did not submit their national communications on time.[27] The FB initiated correspondence with Monaco on the delay in the submission of that country's fifth national com-

[20] See Decision 20/CMP.1 'Good Practice Guidance and Adjustments under Article 5, paragraph 2, of the Kyoto Protocol', UN Doc. FCCC/KP/CMP/2005/8/Add.3 (2006) at 21.

[21] That is a disagreement over the application of adjustments to inventories or correctionsto the database for the accounting of assigned amounts.

[22] Compliance Procedures, section V.4-6; on the relationship with the ERT process, see also *infra*, Part 5.

[23] The EB may also refer a question of implementation to the FB, but has not yet used this possibility; see Compliance Procedures, section IX.12; see also Rules of Procedure, rule 23.

[24] Questions of implementation regarding emission targets after the end of the commitment period and regarding methodological and reporting requirements from the beginning of the commitment period fall under the authority of the EB.

[25] Compliance Procedures, section IV.4-7. For the discussion of the consequences, see *infra*, Part 4.

[26] See Annual Report of the Compliance Committee to the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol, UN Doc. FCCC/KP/CMP/2009/17 (2009) (hereinafter 'Fourth Annual Report of the Compliance Committee'), at para. 4(b).

[27] See Annual Report of the Compliance Committee to the Conference of the Parties serving as the meeting

munication; and enquired as to whether it could provide any advice and facilitation in order to help the country meet its reporting obligations.[28]

The plenary of the Compliance Committee mainly has a coordinating and administrative function, in providing a link to the CMP, and is not involved in deciding questions of implementation. The plenary reports annually to the CMP; applies any general policy guidance given by the CMP; makes proposals to the CMP on administrative or budgetary matters; develops further draft rules of procedure for adoption by the CMP; and also performs any other functions which the CMP may assign to it.[29] To date, the CMP has not given any policy guidance or assigned any other functions to the Committee; although it has on two occasions adopted further rules of procedure, decided on the length and number of terms which alternate members may serve, and noted administrative and budgetary matter proposals.[30] The plenary has served as a forum to discuss general matters and share information among members and alternate members. The plenary has discussed procedural issues, such as alternates' participatory rights, members' privileges and immunities, conflicts of interest, and the treatment of observers; and also substantive issues, such as delayed submission of parties' reports, the functioning of the ERT process, and consistency in the review of parties' reports by ERTs. The plenary has, furthermore, established a practice of exchanging information on the two branches' respective activities in order to promote consistency in the application of the Compliance Procedures.[31]

The Committee's decision-making rules aim to achieve a balance between, on the one hand, enabling the Committee to take decisions in cases where consensus cannot be reached; and, on the other, providing reassurance to developed countries, in particular, that the members nominated by them cannot be outvoted for political reasons. The Committee, in all four of its functional formations, must attempt to take decisions by consensus; but it may, as a last resort, adopt a decision with a 75 per cent majority. Decisions also require a quorum of at least 75 per cent of the members. There is a further requirement for decisions of the EB stipulating that there be a simple majority amongst the members nominated by developed countries and a simple majority amongst the members nominated by developing countries.[32] The risk of a stalemate is therefore particularly pronounced in the EB, as the opposition

of the Parties to the Kyoto Protocol, UN Doc. FCCC/KP/CMP/2010/6 (2010) (hereinafter 'Fifth Annual Report of the Compliance Committee'), at paras 45–46.

28 See letters from the FB Chairperson to Monaco from 28 July 2010 and 16 November 2010 as well as Monaco's replies from 16 September 2010 and 2 December 2010, annexed to 'Provisions related to facilitation: Advice and facilitation', Doc. CC/FB/10/2011/2 (2011). Monaco eventually submitted its fifth national communication on 25 March 2011; see Status of submission and review of reports under the Kyoto Protocol, Doc. CC/9/2011/3/Rev.1 (2011).

29 Compliance Procedures, section III.

30 See Decision 4/CMP.2, *supra* note 6; Decision 5/CMP.3 'Compliance under the Kyoto Protocol', UN Doc. FCCC/KP/CMP/2007/9/Add.1 (2008), at 21; Decision 4/CMP.4, *supra* note 6; and Decision 6/CMP.5 'Compliance Committee', UN Doc. FCCC/KP/CMP/2009/21/Add.1 (2010), at 20.

31 See agendas and reports of the meetings of the plenary, available at <http://unfccc.int/kyoto_protocol/compliance/plenary/items/3788.php> (visited 5 January 2011).

32 Compliance Procedures, section II.8–9.

of merely two members nominated by developed countries would be sufficient to block a decision.

That there are limitations on the Committee's voting rules, and that there is a danger of its proceedings being politicized, are apparent from the failure of the FB to reach agreement on how to address a question of implementation submitted on 26 May 2006 by South Africa in its capacity as Chair of the Group of 77 and China. This related to the alleged failure of fifteen developed countries to submit reports demonstrating progress in achieving their commitments.[33] The FB failed to reach a decision during the preliminary examination on whether or not to proceed with the question in respect of 13 of the 15 countries in question. Members disagreed on the implications of the fact that the submission, firstly, was not by a party on its own behalf through a representative duly authorized for this purpose; secondly, did not clearly and individually name the parties with respect to which it purported to raise a question of implementation; and, thirdly, was not supported by concrete corroborating information and did not substantiate how the question related to any of the specific commitments of the relevant parties under the Protocol.[34]

The failure of the FB to reach agreement regarding the South African submission had an important educative effect for the Committee and contributed to preventing repetition of such a stalemate. An in-depth discussion of the FB's failure resulted in enhanced member awareness that stalemates in decision-making constitute a serious threat to the Committee's credibility. The discussion led also to provisions being included in the Rules of Procedure concerning minimum procedural standards for submission of questions of implementation.[35] There has been no subsequent stalemate in decision-making in the Committee, with the overwhelming majority of decisions being adopted by consensus.

In order to minimize potential political interference, the functioning of the Committee rests upon the independence and neutrality of its members. According to the Compliance Procedures, members 'shall serve in their individual capacities',[36] and the Rules of Procedure further specify that members shall 'act in an independent and impartial manner and avoid real or apparent conflicts of interest'.[37] Committee members may continue as delegation members to meetings under the Convention

[33] The submission of such reports is required by Art. 3(2) of the Protocol.

[34] The FB was able to decide by majority not to proceed with respect to two developed countries which had in the meantime submitted their reports (Latvia and Slovenia); see Report of the Compliance Committee on the Deliberations in the Facilitative Branch Relating to the Submission Entitled 'Compliance with Article 3.1 of the Kyoto Protocol, reproduced in Annex IV of the First Annual Report of the Compliance Committee, *supra* note 7; see also Lefeber, 'The Practice of the Compliance Committee', *supra* note 9, at 314-15; all documents of the FB are available at <http://unfccc.int/kyoto_protocol/compliance/facilitative_branch/items/3786.php>. For an explication of the 'preliminary examination' of questions of implementation, see *infra*, Part 3.1.

[35] See *infra*, Part 3.1.

[36] Compliance Procedures, section II.6.

[37] Rules of Procedure, rule 4.1.

or the Protocol, but the Committee has recognized that in certain circumstances such a situation could lead to due process concerns and, therefore, that due diligence should always be exercised.[38]

With a view to ensuring such independence and neutrality, the plenary of the Committee has repeatedly, although unsuccessfully to date, requested that the CMP provide funding for the regular participation of all members.[39] At present, only members and alternates from developing countries, and from some low-income countries with economies in transition, are eligible to have their travel and subsistence expenses reimbursed by the Secretariat. The members and alternates from most developed countries rely for such reimbursement on the party which nominated them; and some governments have questioned whether they should provide such reimbursement if they cannot instruct the member or alternate nominated by them to serve the interests of that state.[40]

The Rules of Procedure have further reinforced the importance of the independence and neutrality of members by requiring that each take a written oath of service before assuming their duties; and by establishing a complaint procedure for alleged conflicts of interest or incompatibility with the requirements of independence and neutrality. The oath requires members to declare any relevant interest in any matter under discussion before the Committee and to refrain from participating in the work of the Committee in relation to any such matter. The complaint procedure may result in the plenary suspending, or recommending that the CMP revoke the membership of a member who has been found to have materially violated the requirements of independence and neutrality.[41]

The role of alternate members has been further clarified in the Rules of Procedure so as to enable them to play a fully supportive role in the effective functioning of the Committee. Rules on independence and neutrality apply to alternates as they apply to members; and all alternate members are entitled to participate in the proceedings of the plenary and the branch to which they belong on an equal footing with members, except that they may not cast a vote if the associated member votes.[42] This entitlement – and encouragement – aims to ensure that alternates are kept fully in-

[38] See Fifth Annual Report of the Compliance Committee, *supra* note 27, at para. 50.

[39] See 'Annual Report of the Compliance Committee to the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol', UN Doc. FCCC/KP/CMP/2007/6 (2007), (hereinafter 'Second Annual Report of the Compliance Committee'), at para. 5; 'Annual Report of the Compliance Committee to the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol', UN Doc. FCCC/KP/CMP/2008/5 (2008) (hereinafter 'Third Annual Report of the Compliance Committee'), at para. 4(f); Fourth Annual Report of the Compliance Committee, *supra* note 26, at para 4(c).

[40] Personal experience of the authors.

[41] Rules of Procedure, rule 4. A complaint was, for the first time, lodged on 28 December 2009 by Croatia in its comments on the final decision of the EB; in September 2010, the Committee agreed to refrain from considering the complaint on the merits pending its consideration by the CMP in the context of Croatia's appeal against the final decision (see further below). See Fifth Annual Report of the Compliance Committee, *supra* note 27, at paras 53–63 and Annex II.

[42] Rules of Procedure, rule 3.

formed and are able to replace a member effectively whenever this may be required. The active participation of alternate members has arguably had, generally, a positive impact on the consideration of questions of implementation and on the other business of the plenary and the branches.[43]

With the aim of shielding the quasi-judicial decision-making by the Committee from political interference, the Compliance Procedures further accord far-reaching powers to the Committee, thus limiting the residual powers of the CMP. As indicated earlier, the CMP, which has delegated final decision-making authority on questions of implementation to the branches, is limited to considering the Committee's reports, adopting further rules of procedure, providing general policy guidance, adopting decisions on administrative and budgetary matters, and deciding appeals.[44] Besides the narrowly defined exception of appeals (further discussed below under Part 4), the CMP is not required to confirm the decisions of the branches on questions of implementation, and cannot overrule such decisions, the latter being in contrast with the compliance systems of several other MEAs.[45] Arguably, this reflected a strong desire by the parties who negotiated the system to minimize political interference, perhaps reflecting in turn the importance of the issue of climate change.

3 Procedures of the Committee and its branches for the consideration of questions of implementation

3.1 Triggering, allocation, and preliminary examination

The Committee must observe detailed procedural prescriptions, including strict timelines for the EB, when it considers questions of implementation. It appears that, in a trade-off for gaining a high degree of independence for the Committee, negotiators were eager to ensure a high level of automaticity and due process for a party with respect to which a question of implementation is raised, especially as regards the proceedings of the EB. The Committee has successfully applied these procedures.[46]

[43] All reports and decisions, including details on attendance and participation in decision-making, are available at the Secretariat's website.

[44] Compliance Procedures, sections XII and III.2(d).

[45] See, for example, Treves et al. (eds), *Non-Compliance Procedures, supra* note 9; Ulrich Beyerlin, Peter-Tobias Stoll and Rüdiger Wolfrum (eds), *Ensuring Compliance with Multilateral Environmental Agreements* (Brill Academic Publishers, 2006); United Nations Environment Programme, *Compliance Mechanisms under Selected Multilateral Environmental Agreements* (UNEP, 2007), available at <http://www.unep.org/pdf/delc/Compliance_Mechanism_final.pdf> (visited 5 January 2011).

[46] While the Compliance Procedures themselves do not determine further specific procedures for the FB, rule 24 of the Rules of Procedure contains limited further provisions, which are not considered in this paper.

The way in which a compliance procedure is triggered is fundamental to any compliance system.[47] Compliance problems must be introduced in the compliance system if they are to be addressed. Without appropriate triggering provisions, the effectiveness of a compliance system will be diminished. In this respect, the experience of compliance mechanisms under other MEAs and international institutions suggests that it is rare for states to trigger judicial or quasi-judicial proceedings against other states; rather, it is actors other than states that trigger the compliance procedures.[48]

The compliance procedure of the Kyoto Protocol may be triggered in three ways. Firstly, the Committee may receive a question of implementation from an ERT; secondly, from a party with respect to itself (a 'self-trigger'); and, thirdly, from a party with respect to another party.[49] Furthermore, the Committee has defined minimum procedural standards for submissions of questions of implementation by parties, including that these must be signed by a duly authorized representative of the submitting state; and that they may not be submitted by one state on behalf of a group of states.[50] These standards apply also to other official submissions and comments made during proceedings, and may also be considered a matter of procedural fairness and due process for the party concerned (see also Part 3.2 below). They were included in the Rules of Procedure after the above-mentioned failure of the FB to reach agreement regarding the submission of South Africa on behalf of the G77 and China, a case in which lack of clarity on the applicable standards contributed to a stalemate in the FB (see *supra* under Part 2).

The practice of the Kyoto Protocol compliance system conforms to broader experience with comparable mechanisms under other MEAs and international institutions, in that Kyoto's non-state ERT trigger has proved crucial. Due to their fundamental importance, the triggering provisions were one of the controversial issues during the negotiations on the Kyoto Compliance Procedures.[51] While certain proposals for triggering action, such as by the Secretariat or non-governmental organizations, did not find sufficient support, it was agreed, after extensive discussion, that the Committee 'shall receive, through the secretariat, questions of implementation indicated in reports of expert review teams'.[52] This quasi-automatic channel has become the most important trigger: all questions of implementation on which the Committee has so far proceeded to the merits were received from ERTs. That is, by the end of

[47] See, for example, Francesca Romanin Jacur, 'Triggering Non-Compliance Procedures', in Treves et al. (eds), *Non-Compliance Procedures, supra* note 9, 373–388.

[48] See, for example, Markus Ehrmann, 'Procedures of Compliance Control in International Environmental Treaties', 13 *Colorado Journal of International Environmental Law and Policy* (2002) 377–443, at 382; and Robert O. Keohane, Andrew Moravcsik, and Anne-Marie Slaughter, 'Legalized Dispute Resolution: Interstate and Transnational', 54 *International Organization* (2000) 457–488.

[49] Compliance Procedures, section VI.1; on triggering of non-compliance procedures of MEAs, see Romanin Jacur, 'Triggering Non-Compliance', *supra* note 47.

[50] Rules of Procedure, rules 2 and 18; see also rules 14–17.

[51] Wang and Weiser, *supra* note 9, at 193-4.

[52] Compliance Procedures, section VI.1.

2010, no other trigger had been used, with the exception of the above-mentioned South African submission which was not addressed on the merits.

There are two steps required before the Committee may proceed to consider the merits of any question of implementation received. Firstly, the bifurcation of the Committee requires that a question of implementation be allocated according to each branch's mandate; such allocation must be effectuated, by the Committee's bureau, within seven days.[53] Secondly, the responsible branch must, within three weeks, conduct a 'preliminary examination' in order to ensure that the question is supported by sufficient information; is not minimal or ill-founded; and, finally, is based upon the Protocol's requirements. These criteria were designed to provide further insurance against potential misuse of the Compliance Procedures. Where the question of implementation has been triggered by another party, the preliminary examination should include a check of the standards established in the Rules of Procedure, including the requirement that there be a signature of a duly authorized person. No preliminary examination is required where a party has itself triggered the question. The actual proceedings in a case may only start once the preliminary examination has led to a decision to proceed with a question of implementation.[54]

3.2 General procedures

The general procedural provisions to be followed by both branches deal, in particular, with matters of due process, sources of information, expert advice, public participation, and transparency.

Several provisions are aimed at ensuring due process for the party concerned.[55] The party concerned is entitled to be represented during the consideration of any question of implementation; although it may not be present during the elaboration (that is, the process of discussion and drafting) and the adoption of a decision, at which points only the members of the Committee and the Secretariat staff may be present.[56] The party concerned is entitled to all of the information considered by the branch and may submit written comments on both such information and any decision of the branch. Any comment on a final decision submitted, which submission must be within forty-five days of the adoption of the final decision, is to be annexed to the annual report of the Committee to the CMP.[57] Further provisions related to due

[53] Compliance Procedures, section VII.1; Rules of Procedure, rule 19. The Secretariat is to ensure proper notification of the members and alternates of the branches.

[54] Compliance Procedures, section VII.

[55] Section VIII, paras. 2, 6–9; Rules of Procedure, rules 9, 13 and 22.2.

[56] Section VIII.2 and Rules of Procedure, rule 9.2.

[57] By the end of 2010, all of Canada, Croatia, and Bulgaria had used this right. Canada challenged an aspect of the EB's decision not to proceed further. Since the case was closed and there was no legal basis for reopening the proceedings, Canada followed the suggestion that its submission be treated as a comment on the decision not to proceed further. Third Annual Report of the Compliance Committee, *supra* note 39, at para. 30 and Annex V; for the comments by Croatia and Bulgaria, see Fifth Annual Report of the

process concern the handling of information provided by the party concerned; and the use of other languages than English.[58]

In respect of information sources, the branches are to ground their deliberations on information provided by reports from ERTs, by the party concerned, by the party that submitted the question of implementation (if this is what happened), by the Conference of the Parties to the UNFCCC, by the CMP, by the subsidiary bodies, and by the other branch of the Compliance Committee.[59] Relevant factual and technical information may also be submitted by competent intergovernmental and non-governmental organizations;[60] however, by the end of 2010, no such organizations had taken this opportunity.

Expert advice may also be sought by the branches.[61] If this option is chosen, the branch must define the questions on which the expert opinion is to be obtained, identify the relevant experts, and establish the procedures to be followed.[62] Since many of the issues to be addressed by the branches are of a technical nature, such expert advice has proved to be crucial in the operation of the Committee.[63]

As for transparency, all branch decisions are made public. The same is true for all information which the relevant branch considers, although the branch may decide, either at its own initiative or at the request of the party concerned, to make certain information available only after the conclusion of the proceedings. All decisions, including both preliminary and final decisions, are required to contain a list of specific elements including conclusions and reasons for the decision.[64] Each member and alternate member has a sworn duty under the Rules of Procedure not to disclose confidential information.[65] Although 'confidential information' is not comprehensively defined, it presumably includes information disclosed in confidence in closed meetings of the Committee; information subject to other confidentiality protections that is received upon request of the Committee; and information on discussions of

Compliance Committee, *supra* note 27, at para. 30 and Annex II, and para. 38 and Annex III, respectively.

58 Compliance Procedures, section VIII.6 and 9, and Rules of Procedure, rule 13.

59 Compliance Procedures, section VIII.3.

60 Compliance Procedures, section VIII.4. They should do so in writing after the preliminary examination: Rules of Procedure, rule 20.

61 Compliance Procedures, section VIII.5.

62 Rules of Procedure, rules 20 and 21.

63 The EB has obtained expert advice in all four of the cases it had addressed by the end of 2010, and the advice given played a significant role in the EB's consideration of the questions of implementation with respect to Greece, Canada, and Bulgaria. See Final Decision (Party concerned: Greece), Enforcement Branch of the Compliance Committee, Doc. CC-2007-1-8/Greece/EB (2008); Decision not to Proceed Further (Party concerned: Canada), Enforcement Branch of the Compliance Committee, Doc. CC-2008-1-6/Canada/EB (2008); Final Decision (Party concerned: Croatia), Enforcement Branch of the Compliance Committee, Doc. CC-2009-1-8/Croatia/EB (2009); Final Decision (Party concerned: Bulgaria), Enforcement Branch of the Compliance Committee, Doc. CC-2010-1-8/Bulgaria/EB (2010).

64 Compliance Procedures, section VIII.6–7; Rules of Procedure, rules 12 and 22.

65 Rules of Procedure, rule 4.2.

a decision in closed meetings (however, voting records will be publicly disclosed in the decision itself).

To enhance public participation, meetings of the plenary and the branches (but not of the bureau) are open to the public, unless decided otherwise for 'overriding' reasons – but only members and Secretariat officials may be present during the elaboration and adoption of a decision. Since 2007, the Committee has admitted registered observers – any person may register as an observer[66] – to attend the open parts of its meetings, has recorded its proceedings, and has made these available through internet access. The word 'overriding' has not been defined; as for practice, a vote on a proposed decision to hold a plenary meeting in private, where the issue to be addressed was the alleged conflict of interest of an alternate member, did not achieve a quorum and was therefore not adopted.[67]

The use of electronic means of decision-making inevitably results in a somewhat restricted observation of the process by both the party concerned and the general public. Electronic means are used for the transmission, distribution, and storage of documentation, as well as for the elaboration and adoption of decisions.[68] Only after much internal debate did the Committee agree to allow the use of electronic means for elaborating and taking decisions to facilitate its work between meetings – this being seen as necessary in order to comply with the tight timelines for the allocation of a question of implementation,[69] the preliminary examination, and the special procedures for the EB addressed below.

Despite there being only limited scope for discussion using this method, electronic means of decision-making had, by 2010, become the usual method used for taking decisions on allocation, preliminary examination, and expert advice. This has served to reinforce the important role of the chairperson and vice-chairperson of each branch in guiding the drafting of proposed decisions to be adopted by electronic means. However, decisions on the substance of questions of implementation have usually been drafted and discussed in face-to-face meetings and not by electronic means. In some cases, decisions elaborated in a meeting have been subsequently adopted through electronic means where there was no quorum for the adoption of the decision at the meeting itself. Such a decision was made in the case of the preliminary examination of the submission by South Africa, discussed above, as well as in the case of the final decision on Croatia.[70]

[66] Rules of Procedure, rule 9; working arrangements in: 'Second Annual Report of the Compliance Committee', *supra* note 39, at paras 15–17; on the review and the continued application of these arrangements, see Fifth Annual Report of the Compliance Committee, *supra* note 27, at para. 16.

[67] See 'Report on the Meeting', Plenary of the Compliance Committee, Seventh meeting, Doc. CC/7/2010/5 (2010), at para. 3; see *supra* Part 2.

[68] Rules of Procedure, rule 11.

[69] See also rule 19.1 of the Rules of Procedure.

[70] 'First Annual Report of the Compliance Committee', *supra* note 7, at paras 19–25; 'Report on the Meeting', Enforcement Branch of the Compliance Committee, Eighth meeting, Doc. CC/EB/8/2009/2 (2009), at para. 6.

3.3 Enforcement Branch procedures

The procedure of the EB follows a two-stage process. First, the party concerned has the opportunity to put forward its case in writing and, on request, through a hearing; on this basis, the EB either makes a preliminary non-compliance finding or takes a decision not to proceed further with the question of implementation. If a preliminary finding of non-compliance is made, the party concerned can request a review of the preliminary finding by providing further written arguments, which are to be considered by the EB before it adopts a final decision.[71] The possibility to seek review of the preliminary finding provides an additional procedural safeguard, under the EB's procedures, to the party concerned.[72]

Two main types of EB procedures exist, distinguishable by the strictness of the applicable timelines. The overall time limits of the regular EB procedures total a maximum of approximately 36 weeks. For questions of implementation related to eligibility for participation in the carbon-market mechanisms, expedited timeframes apply (adding up to about 17 weeks at the most).[73] Whereas the EB may extend any of its normal timelines 'when the circumstances of an individual case so warrant',[74] an extension is not possible in respect of the expedited procedures.[75]

The EB procedures contain three additional 'expedited procedures' which are not as clearly defined. Firstly, a party which has been rendered ineligible by a decision of the EB from participating in the carbon-market mechanisms may request that its eligibility be reinstated by the EB, through an ERT or directly.[76] If the EB receives an ERT report indicating that the party meets all eligibility requirements, it must reinstate the party's eligibility, unless the branch considers that there is still a question of implementation. The relevant ERT report may arise from a regular review or, by

[71] Compliance Procedures, section IX.

[72] Although not explicitly foreseen in the Compliance Procedures, the EB did also, in the cases of Greece, Croatia, and Bulgaria, establish a practice of allowing, at the meeting of the branch convened to elaborate and adopt the final decision, the party concerned to present its further written submission, and to respond to any related questions of the branch. Report on the Meeting, Enforcement Branch of the Compliance Committee, Fourth meeting, Doc. CC/EB/4/2008/2 (2008), at para. 5; Report of the Eighth meeting, *supra* note 70, at para. 5; Report on the Meeting, Enforcement Branch of the Compliance Committee, Tenth meeting, Doc. CC/EB/10/2010/2 (2010), at para. 7. However, the EB decided that it could not take into consideration any issues raised during the presentation of the further written submission which were not raised in that submission. *Ibid.* at para. 9.

[73] Compliance Procedures, sections X and X.1; rule 10 of the Rules of Procedure grants additional time for communication with the party concerned.

[74] Compliance Procedures, section IX.11.

[75] In the cases of Greece, Croatia, and Bulgaria, which utilized the full expedited procedures, the final decisions were adopted within, respectively, 16, 14 and 17 weeks. The procedural steps and relevant dates are given in the respective final decisions, which are available at the Secretariat's website. The timelines applicable to the various steps of the EB's regular and expedited procedures are depicted in Figure 1, at the end of the present paper.

[76] Compliance Procedures, section X.2.

request from the party concerned, from an expedited review for the reinstatement of eligibility.[77] The party may also directly request the EB to reinstate its eligibility.[78]

Secondly, a party that has been disentitled to transfer emission units following a decision of the EB that it is in non-compliance with its emission target may request that the EB to reinstate its eligibility.[79] Reinstatement of eligibility may be requested on the basis of the party's compliance action plan (see Part 4 below) and additional information submitted to demonstrate that the party will, for the commitment period subsequent to the one for which it was found to be in non-compliance, meet its emission target. If the party demonstrates that it has, in the subsequent commitment period, met its emission target then the EB is to reinstate its eligibility. This procedure has not yet been applied as the EB will only receive any questions of implementation regarding non-compliance with emission targets from ERTs in the second half of 2015, at the earliest.[80] The full application, relevance, and effectiveness of this procedure will depend on whether further commitment periods will follow the first.

Finally, the EB has been mandated to make a decision, within twelve weeks, on any disagreement between the ERT and the party concerned about whether to apply adjustments to greenhouse gas emission inventories or corrections to the database for the accounting of assigned amounts.[81] In contrast to the other parts of the mandate of the EB, its primary task in respect of such disagreements is not determining that the party concerned is not in compliance, but resolving the disagreement by determining the correct amount. By mid-2011, no such question of implementation had arisen, as the ERTs and the parties had been able to resolve such disagreements between themselves.[82] It is reasonable, however, to assume that the very existence of a formal, high-level, compliance system contributes to the parties' resolve to settle their differences with the ERTs.[83]

[77] See Annex to Decision 22/CMP.1 'Guidelines for Review under Article 8 of the Kyoto Protocol', UN Doc. FCCC/KP/CMP/2005/8/Add.3 (2006), at 51, especially Part VIII.

[78] By mid-2011, this reinstatement procedure had been invoked twice by Greece and Bulgaria, applying for such reinstatement on the basis of ERT reports resulting from regular reviews. Greece's eligibility was reinstated in November 2008 and Bulgaria's in February 2011. See Decision under Paragraph 2 of Section X (Party concerned: Greece), Enforcement Branch of the Compliance Committee, Doc. CC-2007-1-13/Greece/EB (2008); and Decision under Paragraph 2 of Section X (Party concerned: Bulgaria), Enforcement Branch of the Compliance Committee, Doc. CC-2010-1-17/Bulgaria/EB (2011).

[79] Compliance Procedures, section X.3–4.

[80] See *infra*, Part 4.

[81] Compliance Procedures, section X.5.

[82] For example, the Netherlands eventually accepted a significant adjustment of its estimate of net CO2 emissions from deforestation for the base year during the review of its initial report. See Report of the Review of the Initial Report of the Netherlands, UN Doc. FCCC/IRR/2007/NLD (2007) and Doc. CC/ERT/IRR/2007/12 (2007), especially at para. 189.

[83] See also *infra*, Part 5.

4 'Consequences' for the resolution of compliance problems

The FB and the EB have different sets of 'consequences' – sticks as well as carrots – available for resolving compliance problems. These consequences have been designed to utilize both the incentives and the disincentives that are built into the Protocol and its implementing decisions. The FB has more discretion in applying consequences that are 'softer' in nature than the EB has in applying consequences that are 'stronger' in nature.

According to its mandate, the FB can only apply 'facilitative' consequences,[84] which are permutations on the provision of advice and facilitation of assistance, with the strongest of these measures seeming to be the formulation of recommendations. No cases have been considered by the FB on substance, and so no practice has yet emerged.

The EB has, in contrast, little discretion in the application of the consequences at its disposal. According to its mandate, it must apply the consequences linked to three possible kinds of non-compliance.[85] Firstly, where the non-compliance relates to methodological and reporting requirements, the EB must declare the party concerned to be in non-compliance and request that it submit a 'plan' to return to compliance. Secondly, where the non-compliance concerns the eligibility requirements, the EB must suspend a party's eligibility or, in the case of initial eligibility, decide that a party is, 'in accordance with relevant provisions under those articles', not eligible. Thirdly, in case of non-compliance with the party's emission target, the EB must declare the party's non-compliance, deduct 1.3 times the excess tonnes from the party's assigned amount for the second commitment period,[86] request the submission of a 'compliance action plan', and suspend the party's eligibility to sell emission units.[87]

The Compliance Procedures make similar provision for the 'plan' to remedy non-compliance with methodological and reporting requirements and for the 'compliance action plan' to remedy non-compliance with an emission target. The EB is tasked with reviewing and assessing the plans as well as their implementation. The plans must contain an analysis of the causes of non-compliance; a description of the measures taken to restore compliance; and a timetable[88] for the implementation of these

[84] Compliance Procedures, section XIV.
[85] Compliance Procedures, section XV.
[86] The rate for subsequent commitment periods remains to be determined; see Compliance Procedures, section XV.8.
[87] These consequences have largely been copied over to the EU legislation that implements the overall EU target of reducing greenhouse gas emissions by 20 per cent by 2020 as regards emissions not covered by the EU Emissions Trading Scheme: Nuno Lacasta et al., 'From Sharing the Burden to Sharing the Effort: Decision 406/2009/EC on Member State Emission Targets for non-ETS Sectors', in Sebastian Oberthür and Marc Pallemaerts (eds), *The New Climate Policies of the European Union: Internal Legislation and Climate Diplomacy* (VUB Press, 2010) 93–116.
[88] Which must not exceed one year, for plans to comply with methodological and reporting requirements; or three years, for plans to comply with an emission target.

measures.[89] The Rules of Procedure specify that each of these 'elements' should be addressed in a separate section and that the party concerned must respond to any specific issues raised in the part of the final decision of the EB applying the consequences.[90]

Only the consequences for non-compliance with the methodological, reporting, and eligibility requirements are of relevance until the EB receives a question of implementation related to emission targets. As all of the questions of implementation addressed by the EB by the end of 2010 concerned eligibility requirements (and by implication methodological and reporting requirements), the EB applied the consequences for both forms of non-compliance in the cases where it adopted a final decision of non-compliance (namely Greece, Croatia and Bulgaria).

As explained, no questions of implementation from ERTs regarding emission targets will reach the EB before the second half of 2015. Questions of implementation regarding emission targets become the EB's responsibility only after the end of the relevant commitment period.[91] The inventories of the last year of the first commitment period (2012) are due to be submitted by 15 April 2014, and ERTs will then have up to one year to review these.[92] Following this, parties may transfer and acquire emission units during an additional period of 100 days in order to ensure compliance.[93]

The deduction rate of 1.3 times the party's excess emissions, which is to be deducted from the party's assigned amount for the second commitment period where the party is in non-compliance with its emission target for the first period, may be perceived as a 'penalty' (in effect, if not in name). It is the argument of the present writers that it should not. Characterizing it as a 'penalty', or as 'penalizing' the party concerned, would be out of tune with the tenor of the negotiations process and the economics of climate change.[94] The concept of imposing a 'penalty' for non-compliance was a contentious issue in the negotiations on the Compliance Procedures; and it was eventually agreed that the 'consequences' (to be applied by the EB in case

[89] See Compliance Procedures, section XV.2–3 and 6–7 (also detailing the applicable timeframes).

[90] Rules of Procedure, rule 25bis (also providing further guidance regarding the EB's review and assessment of a plan). This provision was introduced after the submission of a 'plan' submitted by Greece that was not suitable for review and assessment, and was therefore considered inadequate by the EB. See Decision on the Review and Assessment of the Plan Submitted under Paragraph 2 of Section XV (Party concerned: Greece), *supra* note 78.

[91] Falling within the mandate of the FB until then; see *supra*, Part 2.

[92] See Decision 15/CMP.1 'Guidelines for the Preparation of the Information Required under Article 7 of the Kyoto Protocol', UN Doc. FCCC/KP/CMP/2005/8/Add.2 (2006), at 54; Decision 22/CMP.1, *supra* note 77.

[93] Compliance Procedures, section XIII; the paper returns to this rather late entry of questions of implementation regarding emission targets in *infra*, Part 5.

[94] For two examples of this more-than-widespread characterization, see Brunnée, 'The Kyoto Protocol', *supra* note 8, at 274; Anita Halvorssen and Jon Hovi, 'The Nature, Origin and Impact of Legally Binding Consequences: The Case of the Climate Regime', 6 *International Environmental Agreements* (2005) 157–171 (even claiming that suspension of eligibility is punitive).

of non-compliance, and the deduction rate in particular) would 'aim at the restoration of compliance to ensure environmental integrity' and would 'provide for an incentive to comply'.[95] Proposals for consequences that had a penalizing 'image' (such as payments into a 'compliance fund') and which would have been difficult to enforce were rejected.[96] However, in order to prevent a party from benefiting from non-compliance, the deduction rate needed to be a reflection of the opportunity costs of compliance: if a party could expect to gain significantly higher returns from leaving funds in a bank account or investing them elsewhere than in compliance measures, then the compliance system would arguably fail to provide an important incentive for compliance, and climate mitigation measures might be postponed. The agreed deduction rate, at the conclusion of the negotiations, was comparable to the compound interest rate in the InterBank market for a period of five years.[97] Yet, as a result of falling interest rates since the adoption of the Compliance Procedures, the deduction rate currently surpasses the opportunity costs of compliance.

The Compliance Procedures do contain provision for appeal, although this is limited. A party may, within forty-five days of notification of the final decision, appeal to the CMP against a final decision of the EB relating to that party's emission target.[98] An appeal must relate to the appealing party's emission target; and, as it must concern an alleged violation of due process, mere disagreement by the party concerned with the substance of the decision of the EB is insufficient ground for an appeal. Moreover, the bar for a successful appeal to the CMP has been set quite high: a CMP decision overriding the EB decision requires a 75 per cent majority of the parties present and voting. A feature which avoids the creation of a 'perverse incentive' to appeal against EB decisions is that the lodging of an appeal does not suspend the decision. As is normal with a successful appeal on a procedural ground, if the CMP considers that the party concerned has indeed been denied due process it does not have the authority to decide the question of implementation; rather, the question must be referred back to the EB.[99]

A question of interpretation with respect to the admission of appeals concerns the requirement for the appeal to 'relate to' the appealing party's emission target. There can be no doubt that an appeal against a final decision establishing a party's non-

[95] Compliance Procedures, section V.6; see also Jacob Werksman, 'The Negotiation of a Kyoto Compliance System', in Stokke et al. (eds), *Implementing the Climate Regime, supra* note 9, 17–37.

[96] Wang and Weiser, 'The Implementation and Compliance Regimes', *supra* note 9, at 195–197.

[97] The 12-month average of the 12-month LIBOR rate (London InterBank Offered Rate) for the period July 2000 to June 2001 was 5.142 per cent (which was well below the average of the rate in the preceding decade). On the basis of this average rate, the compound interest rate for a period of five years would be 28.5 per cent. This rate approaches the thirty per cent deduction rate that was proposed by the President of the COP in his Core Elements Paper on 21 July 2001, and agreed to by the COP on 23 July 2001 (see Review of the implementation of commitments and of other provisions of the convention, UN Doc. FCCC/CP/2001/L.6 (2001)). Historical LIBOR rate information is available at <http://www.wsjprime-rate.us/libor/libor_rates_history.htm> (visited 10 January 2011).

[98] Compliance Procedures, section XI.

[99] Compliance Procedures, section XI.3 and XI.4.

compliance with its emission target after the end of a commitment period would so 'relate to'; but it is debatable whether a final decision which affects the establishment of the assigned amount of a party (for example, in the case of Croatia) or the eligibility of a party (for example, in the case of Greece) may also be considered as appealable as 'relating to' a party's emission target.[100]

Another question is whether the consequences of the Compliance Procedures are binding on parties to the Protocol. Article 18 of the Protocol provides that procedures and mechanisms to address cases of non-compliance 'entailing binding consequences' must be adopted by means of an amendment to the Protocol. During the negotiations of the Compliance Procedures, it was suggested that in order to provide for binding consequences from the beginning of the first commitment period they should be made part of the Protocol prior to its entry into force. This suggestion was, however, not adopted.[101] The Compliance Procedures were instead adopted and approved by the CMP in the form of a decision that is not legally binding.[102] It might therefore be argued that a concerned party is not bound by the application of consequences, such as the suspension of eligibility by the EB.[103]

There can be little doubt, however, that the application of consequences by the EB is effective even without a formally binding status for the consequences.[104] The suspension of eligibility[105] means that the party concerned is no longer able to clear

[100] This question of interpretation formed part of the consideration of Croatia's appeal against the final decision of the EB concerning the calculation of its assigned amount which the CMP initiated (but did not conclude) in December 2010. See Appeal by Croatia against a Final Decision of the Enforcement Branch of the Compliance Committee, UN Doc. FCCC/KP/CMP/2010/2 (2010), and Appeal by Croatia against a Final Decision of the Enforcement Branch of the Compliance Committee in Relation to the Implementation of Decision 7/CP.12, Draft conclusions proposed by the President, UN Doc. FCCC/KP/CMP/2010/L.7 (2010).

[101] The suggestion was, in fact, forcefully rejected by Australia, Canada, Japan and Russia, in particular. See, for instance Lefeber, 'The Practice of the Compliance Committee', *supra* note 9.

[102] A proposal by Saudi Arabia to incorporate the Compliance Procedures into the Protocol through an amendment has since then remained on the agenda of the CMP. On the negotiating history, see Werksman, 'The Negotiation', *supra* note 95, at 31–32; Wang and Weiser, 'The Implementation and Compliance Regimes', *supra* note 9, at 197–198.

[103] For some contributions to the debate on this aspect, see Brunnée, 'The Kyoto Protocol', *supra* note 7, at 277–278; Geir Ulfstein and Jacob Werksman, 'The Kyoto Compliance System: Towards Hard Enforcement', in Stokke et al. (eds), *Implementing the Climate Regime, supra* note 9, 39–62 at 57–58; Halvorssen and Hovi, 'The Nature, Origin and Impact', *supra* note 94. The Canadian government argued before a Canadian court in 2008, for instance, in a case brought by the NGO Friends of the Earth, that the consequences are 'not binding, as Article 18 of the Kyoto Protocol requires that these be adopted by the Parties as an amendment to the Kyoto Protocol'. See 'Memorandum of Fact and Law of the Respondent of 13 February 2008', in *Friends of the Earth v. The Minister of the Environment* (Federal Court, Court File No. T-1683-07), at para. 7.

[104] And irrespective of the interpretation of Article 18 of the Kyoto Protocol by individual parties such as Canada. However, see Halvorssen and Hovi, 'The Nature, Origin and Impact', *supra* note 94, at 166, arguing that the consequence can only be implemented by the non-compliant party itself. The apparent contradiction is resolved by distinguishing between the application of the consequence and its subsequent effect on the behaviour of the party concerned. It is not unusual for the effect of judicial rulings on the future behaviour of defendants to be uncertain.

[105] As in, for example, the cases of Greece in 2008, Croatia in 2009, and Bulgaria in 2010.

transactions of emission units through the International Transaction Log,[106] administered by the Secretariat, and as a result the party is no longer able to use such transactions for the purposes of meeting its emission target. Any such transaction attempted could not be officially processed, and would be ignored by ERTs and by the Committee. Further, where the party concerned fails to meet its emission target for the commitment period, the Committee will apply the aforementioned deduction rate, which will lead to an automatic deduction from the party's assigned amount for the subsequent commitment period.[107] Similar reasoning applies to the resolution by the Committee of a disagreement between an ERT and a party. Hence the compliance system utilizes the incentives and disincentives that the Protocol and its implementing decisions have generated. Its consequences are self-enforcing, even though their continued effectiveness depends on the creation of subsequent commitment periods and their ratification by all relevant parties – which would be the case even if the Compliance Procedures had been adopted by means of an amendment to the Protocol.[108]

5 Main interactions with other building blocks of the Kyoto Protocol

As an integral component of the Protocol's governance system, the compliance system is closely related to the system of 'measurement, reporting, and verification' under the Protocol – in the Protocol's context known as 'reporting and review' – and the carbon-market mechanisms. Measurement, reporting, and verification provide important input to, and benefit from, the compliance system. The compliance system, and in particular the EB, fulfils important functions with respect to the carbon-market mechanisms. Compliance with methodological and reporting requirements is a foundation for the proper functioning of the carbon market. Carbon-market mechanisms arguably provide a crucial way to achieve emission targets by enabling the acquisition of offsets. Suspending eligibility to participate in these mechanisms is thus a key 'stick' in the armoury of the Compliance Committee.[109]

[106] The International Transaction Log serves to verify transactions proposed by registries to ensure they are consistent with rules agreed under the Kyoto Protocol. See UNFCCC, 'International Transaction Log', available at <http://unfccc.int/kyoto_protocol/registry_systems/itl/items/4065.php> (visited 26 October 2011).

[107] The deduction would occur irrespective of whether the Party concerned might, as has been suggested, have a legal basis for arguing that they are not bound by the deduction; see Ulfstein and Werksman, 'The Kyoto Compliance System', *supra* note 103, at 58. The basis for such an argument seems to be weakened by the fact that the CMP adopted the Compliance Procedures by consensus.

[108] Sebastian Oberthür, 'Die Wirksamkeit von Verrechtlichung: Die Compliance-Mechanismen internationaler Umweltregime', in Klaus Jacob et al. (eds), *Politik und Umwelt*, Politische Vierteljahresschrift, Sonderheft 39/2007 (2007) 73–93, at 88; Lefeber, 'From The Hague to Bonn', *supra* note 9, at 52–54; for a similar line of argument, see Brunnée, 'The Kyoto Protocol', *supra* note 7, at 278.

[109] See *supra* Part 4.

The ERT process and the compliance system are two elements of a comprehensive approach towards implementation of, and compliance with, the Protocol. The review process, which takes up to one year, constitutes a first step (facilitative in nature) in the attempt to ensure compliance with the Protocol. During the review, ERTs are able to provide advice and recommendations, and the parties under review have the opportunity to address and resolve problems identified by the ERTs with the implementation of the Protocol.[110] It is only in those cases where serious implementation problems remain unresolved during the ERT process that a question of implementation will be indicated in the ERT report submitted to the Committee.

Considering the institutional arrangements of the Protocol's governance system, it is not surprising that the ERT process is the most significant trigger of the Compliance Procedures. As at the end of 2010, all EB proceedings had arisen from questions of implementations raised by ERTs. A functioning ERT system is arguably therefore an essential precondition for the proper functioning of the Committee; and the Committee has, accordingly, kept the functioning of the ERT system under close review (receiving regular updates on the ERT process from the Secretariat).[111]

The Committee provides an important further service to the carbon-market mechanisms by policing compliance with the eligibility requirements for participation in these markets. Ensuring compliance is important if the incipient carbon market is to function as intended. The eligibility requirements apply only to developed countries and comprise the proper establishment of the assigned amount, the existence and proper functioning of a national system to estimate net greenhouse gas emissions, the existence and proper functioning of a national registry for accounting of transfer of emission units, and compliance with core reporting obligations.[112] Eligi-

[110] Decision 22/CMP.1, *supra* note 77; see also Clare Breidenich and Daniel Bodansky, *Measurement, Reporting and Verification in a Post-2012 Climate Agreement* (Pew Center on Global Climate Change, 2009), available at <http://www.pewclimate.org/docUploads/mrv-report.pdf> (visited 10 January 2011); Pew Center, *Verifying Mitigation Efforts in a New Climate Agreement*, Pew Center on Global Climate Change, Post-2012 Climate Policy Brief (2009), available at <http://www.pewclimate.org/docUploads/brief-verifying-mitigation-efforts-in-new-climate-agreement-october2009.pdf> (visited 5 January 2011); UNFCCC, *Kyoto Protocol Reference Manual on Accounting of Emissions and Assigned Amounts* (2008), available at <http://unfccc.int/resource/docs/publications/08_unfccc_kp_ref_manual.pdf> (visited 10 January 2011).

[111] See the Annual Reports of the Compliance Committee, *supra* notes 7, 26, 27 and 39; 'Description of the Elements of the Review Process under Article 8 and Synthesis of the Information Regarding the Review of National Systems', Plenary of the Compliance Committee, Doc. CC/5/2008/2 (2008). The ERTs and their reports, and the UNFCCC roster of experts from which ERT members are drawn, have proved very useful, if not essential, to the Committee's task of assessing questions of implementation. In the first four cases addressed by the EB, the EB drew on expert advice from the ERT as well as the UNFCCC's roster of experts. The branch sought expert advice in accordance with Section VIII.5 of the Compliance Procedures; see *supra* Part 3.2. As indicated earlier, in the cases of Greece, Canada, and Bulgaria the expert advice constituted a major input into the EB's decisions. The ERT system and its infrastructure (including the roster of experts) is thus important not only as a triggering mechanism for questions of implementation, but also for decision-making on those questions in the course of the compliance proceedings.

[112] See Decision 3/CMP.1 'Modalities and Procedures for a Clean Development Mechanism as Defined in Article 12 of the Kyoto Protocol', UN Doc. FCCC/KP/CMP/2005/8/Add.1 (2006), at 6, para. 31 of Annex; Decision 9/CMP.1 'Guidelines for the Implementation of Article 6 of the Kyoto Protocol', UN Doc. FCCC/KP/CMP/2005/8/Add.2 (2006), at 2, para. 21 of Annex; and Decision 11/CMP.1 'Mo-

bility is established 'quasi-automatically' sixteen months after the submission of the initial report of a party that establishes its assigned amount, unless the EB finds that the party does not meet the eligibility requirements.[113] By the end of 2010, all Annex B parties to the Protocol (that is, all developed-country parties with emission targets), except Croatia, had achieved initial eligibility. A party remains eligible until such time as the EB suspends its eligibility after finding[114] that it no longer complies with one or more of the eligibility requirements.[115]

6 An assessment after five years of practice (2006–2010)

During the first five years of its operation, from 2006 to 2010, the Compliance Committee learned much from experience in applying its rules. It realized significant achievements, such as the full development and implementation of the compliance system that existed only on paper in 2006. However, the operation of the Committee during this period has also revealed several difficulties and weaknesses which point to the need for further improvement of the compliance system. A full assessment of the operation of the system would be beyond the scope of this paper, but a number of considerations are highlighted.

The first two years of the Committee's operation mainly involved the elaboration of further Rules of Procedure to fine-tune the functioning of the Committee. This process was influenced by the lessons learned from the experience of the FB with the submission of South Africa, on behalf of the G77 and China, in 2006.[116] The Rules of Procedure and working arrangements improved the Compliance Procedures and made the effective functioning of the Committee possible.

Since the end of 2007, the EB has demonstrated its ability effectively to resolve cases of non-compliance within the framework of the applicable rules. By the end of 2010 the EB had addressed questions of implementation with respect to Greece, Canada, Croatia, and Bulgaria. Both Greece and Bulgaria made successful efforts to return to compliance, after which their eligibility was reinstated and the EB closed their cases.[117] Canada was able to resolve the issue at hand before a preliminary finding was adopted.[118] The resolution of the question of implementation in the case of Croatia is pending at the time of writing. In August 2011, Croatia withdrew its ap-

dalities, Rules and Guidelines for Emissions Trading under Article 17 of the Kyoto Protocol', UN Doc. FCCC/KP/CMP/2005/8/Add.2 (2006), at 17, para. 2 of Annex.

113 As happened in the cases of Greece in 2008 and Croatia in 2009.

114 As happened in the case of Bulgaria in 2010.

115 Paras 32, 22, and 3 in the Annexes to Decisions 3/CMP.1, 9/CMP.1, and 11/CMP.1, respectively, *supra* note 112. A list with the eligibility status of Annex B parties is available at <http://unfccc.int/kyoto_protocol/compliance/items/2875.php> (visited 10 January 2011).

116 See *supra* Part 2.

117 See Decision under Paragraph 2 of Section X (Party concerned: Greece), *supra* note 78; Decision under Paragraph 2 of Section X (Party concerned: Bulgaria), *supra* note 78.

118 See Decision not to Proceed Further (Party concerned: Canada), *supra* note 63.

peal, announced that it would submit a plan to remedy its non-compliance and requested reinstatement of its eligibility. Both the submission of the plan by Croatia and a decision of the enforcement branch on a possible reinstatement were pending as of the time of writing (September 2011). The experience gained with the questions of implementation with respect to Greece and Canada enabled the plenary of the Committee, on the basis of a 'stock-taking exercise' of the EB, to propose additional Rules of Procedure, which were by and large adopted by CMP-4.[119]

The Compliance Procedures also represent a significant incentive for parties to avoid compliance problems and to attempt to resolve problems during the ERT process. No question of implementation has arisen from ERTs with respect to the reporting deadlines regarding either the initial report or the subsequent annual inventory submissions. This contrasts with the more common disregard of reporting deadlines for national communications under the UNFCCC and the Protocol, which disregard does not in itself constitute a question of implementation to be indicated by ERTs (but which could be raised by parties using the triggering mechanisms).[120] Further, an analysis of the working of the ERT process prepared for the Committee (focusing on national systems) confirmed that parties have in general worked hard to resolve implementation problems identified by the ERTs during the review stage. It is worth reiterating that only in a few instances could these problems not be resolved, turning into questions of implementation that were listed in ERT reports and forwarded to the Committee.[121] It may also be noted that no disagreement between an ERT and a party regarding actual emission figures and their adjustments had reached the Committee by mid-2011. Arguably, the natural tendency of states to argue for favourable estimates has been balanced by the prospect of having to defend those estimates before the Committee.

The major gap and weakness in the operation of the compliance system is the lack of mobilization of its facilitation function. As noted above,[122] the FB has not yet been called upon to address any question of implementation in substantive proceedings. It is possible that part of the facilitative function of the overall system is being effectively discharged through the ERT process; yet the FB has not been able to address Canada's potential non-compliance with its emission target, even though this is an issue that appears to fall squarely under its 'early-warning' function.[123] Only parties

[119] Report on the Meeting, Enforcement Branch of the Compliance Committee, Sixth meeting', Doc. CC/EB/6/2008/3 (2008), paras 6–9; Decision 4/CMP.4, *supra* note 6.

[120] Delays in the submission of national communications by developed-country parties to the Protocol are notified to the Committee under Decision 22/CMP.1, *supra* note 77, at Annex, para. 139. The CMP has so far not responded to the request by the Committee contained in its second annual report to specify what action the Committee may take in this respect; see Second Annual Report of the Compliance Committee, *supra* note 39, at para. 4(b); see also *supra* Part 2.

[121] Description of the Elements of the Review Process under Article 8 and Synthesis of the Information Regarding the Review of National Systems', Plenary of the Compliance Committee, Doc. CC/5/2008/2 (2008).

[122] See *supra* Parts 2 and 4.

[123] See *supra* Part 2.

are able to trigger the early-warning function (through either the self-trigger or the party-to-party trigger) leaving no basis for ERTs to indicate in their reports a question of implementation that relates to potential or likely future non-compliance. No question of implementation of this kind has to date been raised by a party. The inability of the FB to address, let alone to resolve, Canada's potential non-compliance has led to criticism of the compliance system as a whole.[124]

Developed-country parties to the Protocol, as a group, seem to be on course to achieve the overall target of reducing their greenhouse gas emissions 'by at least 5 per cent below 1990 levels in the commitment period 2008 to 2012', as is required by the Protocol's Article 3(1) in spite of Canada's declaration in public that it does not intend to meet its emission target. The Canadian government has made it clear that it does not plan to give effect to the necessary domestic policies and measures to achieve its target and has also voiced reservations about using the carbon-market mechanisms to this end.[125] According to data released by the UNFCCC in 2010, the 2008 emissions of the developed-country parties to the Protocol with emission targets were almost 17 per cent below 1990 levels. As a side-effect of the economic downturn in the late 1980s and early 1990s, the level of emissions in Central and Eastern European Countries 'with economies in transition' was almost 37 per cent below 1990 levels; while other developed-country parties were, counted together, slightly above 1990 levels (less than one per cent). Of these, the 15 states which were members of the European Union in 1997 appear to be heading toward fulfilment of their joint emission target (as notified under Art. 4 of the Protocol).[126] Amongst the remaining developed-country parties to the Protocol – Australia, Canada, Japan, Liechtenstein, Monaco, New Zealand, Norway, and Switzerland – no state is as far from compliance with its emission target as is Canada.[127] Further, no one of the parties in this category has publicly backed away from its Kyoto target by calling it, as Canada has, 'unrealistic' and 'unachievable' and by putting forward an emission target for 2020 that is less ambitious than its Kyoto target.[128]

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[124] See Peter J. Murtha, 'Effective International Compliance Is Needed to Avoid "Dangerous Anthropogenic Interference" with the Climate System', in 8 INECE Special Report on Climate Compliance (2009).

[125] See Minister of the Environment, *A Climate Change Plan for the Purposes of the Kyoto Protocol Implementation Act* (Environment Canada, 2007), available at <http://www.ec.gc.ca/doc/ed-es/p_123/pre_eng.htm> (visited 11 January 2011); see also René Lefeber, *An Inconvenient Responsibility* (Eleven International Publishing, 2009) 10–11.

[126] See also European Environment Agency, *Annual European Community Greenhouse Gas Inventory 1990–2007 and Inventory Report 2009* (EEA, 2009), available at <http://www.eea.europa.eu/publications/european-community-greenhouse-gas-inventory-2009/> (visited 11 January 2011); European Environment Agency, *Greenhouse Gas Emission Trends and Projections in Europe 2009* (EEA, 2009), available at <http://www.eea.europa.eu/publications/eea_report_2009_9> (visited 11 January 2011).

[127] 'Report of the Centralized In-depth Review of the Fourth National Communication of Canada', UN Doc. FCCC/IDR.4/CAN (2009). See also the review reports of the fourth national communications of other developed countries under the UNFCCC, available at <http://unfccc.int/national_reports/annex_i_natcom/idr_reports/items/4056.php>, and the fifth national communications of developed countries, available at <http://unfccc.int/national_reports/annex_i_natcom/submitted_natcom/items/4903.php> (both visited 11 January 2010).

[128] For 2008 emission figures, see 'National Greenhouse Gas Inventory Data for the Period 1990–2008', Note by the Secretariat, UN Doc. FCCC/SBI/2010/18 (2010); see also 'Annual Compilation and Ac-

It might be possible to improve the capacity of the compliance system to address, and resolve, potential or likely future non-compliance with emission targets might be improved. Assuming that parties will continue to be hesitant to use the party-to-party trigger, ERTs could be instructed to indicate a question of implementation where a party departs too far from a compliance trajectory. Alternatively, the Compliance Committee could be mandated regularly to review parties' performance with respect to their emission targets. In either case, further consideration is surely warranted to identify the appropriate branch to handle this and the adequate consequences to be applied. Under the rules currently in place, the early-warning function falls under the mandate of the FB, but the FB does not currently have the authority to go beyond issuing recommendations.[129]

Two additional observations might be made on the future relevance of the compliance system in terms of a projected future in which, firstly, no second commitment period is established under the Kyoto Protocol; and, secondly, its provisions are not incorporated into a new post-2012 agreement. Obviously, even in such a projection there would be little reason to discard the compliance system of the Protocol before the completion of the current compliance cycle. Parties will continue to have commitments under the Protocol – and the compliance system can continue to hold them accountable (even though the deduction rate would lose much of its sting) and can continue to fulfil its other important functions (including resolving disagreements between ERTs and parties; and ascertaining eligibility to participate in the carbon-market mechanisms). Further, any alternative to the Kyoto Protocol which contains international commitments would face the challenge of holding parties accountable (in respect of their emission mitigation and reporting); that alternative might also need to resolve disagreements over reported data; and it is likely to need to ensure the functioning of the carbon-market mechanisms. The Kyoto Protocol's compliance system has proved its ability to make a significant contribution to meeting the related functional demands; and its overall design and its individual elements thus establish an important benchmark.[130]

7 Conclusion

The compliance system has developed to form an integral part of the overall governance system of the Kyoto Protocol. It fulfills several functions which are central to

counting Report for Annex B Parties under the Kyoto Protocol', Note by the Secretariat, UN Doc. FCCC/KP/CMP/2010/5 (2010); the review reports of the fourth national communications of developed countries, including an assessment of the effects of planned policies and measures, are available at the Secretariat's website.

[129] See also Murtha, 'Effective International Compliance', *supra* note 124. Building a regular review function into the compliance system would incorporate the proposal by the United States and other parties to establish a public implementation review under a new post-2012 agreement.

[130] As mentioned in the introduction, engaging in a more detailed discussion on how the compliance system might be adapted – or replaced – within the context of a post-2012 regime would be beyond the scope of the present paper.

the functioning of the Protocol in general, beyond merely addressing problems relating to the fulfilling of emission targets. Even though the system is activated only once there is already a problem, its existence provides an important incentive to developed-country parties to achieve compliance, not least with the methodological and reporting requirements. In particular, the system is of great assistance to the ERT process and it supports resolution of disagreements between ERTs and individual parties. Furthermore, the compliance system plays a crucial role in the governance of the carbon-market mechanisms, especially as regards the determination and fulfilment of the eligibility requirements.

The strength of the compliance system is unique among MEAs. Driven by strong concerns about the participation of 'free-riders' in the Protocol, the enforcement component (including the consequences available for addressing compliance problems) goes far beyond the means available in other MEAs and, for that matter, many other international institutions. The core strength of the compliance system can be found in the incentives and disincentives which have been generated by the overall design of the Protocol and its implementing decisions. Although parties have not made the consequences legally binding, as they could have done by adopting an amendment to the Protocol, the consequences can be effectively applied as long as states do not withdraw from the Protocol and as long as new commitment periods follow.

There are other features which can be described as notable – and even as unprecedented. The emphasis on enforcement has led to the twin institutional setup of the two branches. The enforcement function has raised concerns about a potential politicization of the Compliance Committee and thus provided a rationale for the far-reaching independence of the Committee from the CMP, as well as an emphasis being placed on the independence and impartiality of Committee members. The independence of the Committee, combined with concerns about politicization, fuelled demands for the inclusion of explicit and detailed safeguards of due process, as enshrined in the Compliance Procedures. Finally, these concerns, combined with the economic repercussions of the decisions, especially those of the EB, reinforced requests for a high degree of automaticity and predictability of the procedures, including rigid timelines. Overall, the imperatives toward protection of the parties and the political independence of the Committee took precedence over political oversight of the Committee.

Since the adoption of the Compliance Procedures in 2005, the compliance system of the Protocol has evolved from a 'paper tiger' to a fully operational system with a functioning Compliance Committee at its centre. The Committee has elaborated Rules of Procedure and working arrangements that have enabled the application of the Compliance Procedures in practice. The operation of the compliance system has also generated experience of its crucial functions within the Protocol's overall governance system. The EB has proved its ability to effectively address and resolve cases of

non-compliance in respect of both methodological and reporting requirements, as well as the functioning of the carbon market. On the downside, the facilitative functions of the compliance system have yet to be used, and remain to be further developed.

As remarkable as the compliance system of the Protocol is, it is uncertain whether it will continue to be effective and ultimately be able to ensure parties' compliance with their emission targets. Whereas the compliance system may be considered strong when compared with that of other MEAs, and indeed many other international institutions, it is unclear whether it is strong enough to bring about and restore compliance in the face of significant economic and political incentives to defect.[131] In the event of a continuation of the Kyoto Protocol being negotiated, parties which are likely to be in non-compliance in the first commitment period might well be able to negotiate second-commitment-period targets which compensate for projected deductions. Above all, the uncertain future of the Protocol casts doubt on the compliance system's ability to effectively address non-compliance with emission targets; and, to some extent, it also casts doubt on the future of the compliance system in general.

Evaluation of the rules and practice of the Kyoto compliance system has clear relevance for international environmental law and governance generally.[132] To engage in detail with the broader debates about the need and options for a reformed or new compliance system for any post-2012 climate agreement is beyond the scope of this paper.[133] Nevertheless, the analysis of the compliance system is relevant to those debates. Investigating both the need for and options for a future compliance system would require considering the potential form and content of a post-2012 climate regime (which might deal with emission mitigation for both developed and developing countries, emissions from deforestation and forest degradation in developing countries, new and existing carbon-market mechanisms, financial assistance and investment, technology cooperation, and so forth), which is itself highly uncertain. It can be argued that an in-depth understanding of the existing compliance system of the Kyoto Protocol and its achievements would provide valuable (and perhaps

[131] It is not suggested that strength be equated with success. While compliance mechanisms of other MEAs might be weaker, they might at the same time be as – or even more – successful.

[132] For some examples of the large and expanding literature on implementation and compliance in international environmental governance, see Abram Chayes and Antonia Handler Chayes, *The New Sovereignty: Compliance with International Regulatory Agreements* (Harvard University Press, 1995); George W. Downs, David M. Rocke, and Peter N. Barsoom, 'Is the Good News about Compliance Good News about Cooperation?', 50 *International Organization* (1996) 379–406; Edith Brown Weiss and Harold K. Jacobson (eds), *Engaging Countries. Strengthening Compliance with International Environmental Accords* (MIT Press, 1998); David G. Victor, Kal Raustiala, and Eugene B. Skolnikoff (eds), *The Implementation and Effectiveness of International Environmental Commitments: Theory and Practice* (MIT Press, 1998); Kal Raustiala and Anne-Marie Slaughter, 'International Law, International Relations and Compliance' in Walter Carlsnaes, Thomas Risse and Beth A. Simmons (eds), *Handbook of International Relations* (2002) 538–558; Daniel Bodansky, *The Art and Craft of International Environmental Law* (Harvard University Press, 2010), especially chapters 10 and 11.

[133] For two relevant contributions, see Murtha, 'Effective International Compliance', *supra* note 124; and Pew Center, *Verifying Mitigation Efforts, supra* note 110.

even necessary) input into debates about how to enhance compliance with, and implementation of, future climate change-related agreements. There are good reasons to build on elements and functions that have proved effective and to look for possible improvements of less successful aspects of the current system.

Whatever the future of the Protocol may be, the rules and practice of its compliance system remain relevant for future international cooperation on climate change and, more broadly, international (environmental) governance. As states continue to engage in discussions on the future international framework for climate protection, the compliance system of the Protocol provides an important touchstone for their efforts to promote the fulfilment of commitments, prevent free-riding, and ensure that the carbon-market functions as designed. Beyond climate governance, the experience with the compliance system reinforces its significance as a precedent and standard for the independent review of state action to implement international requirements in the field of the environment and beyond.

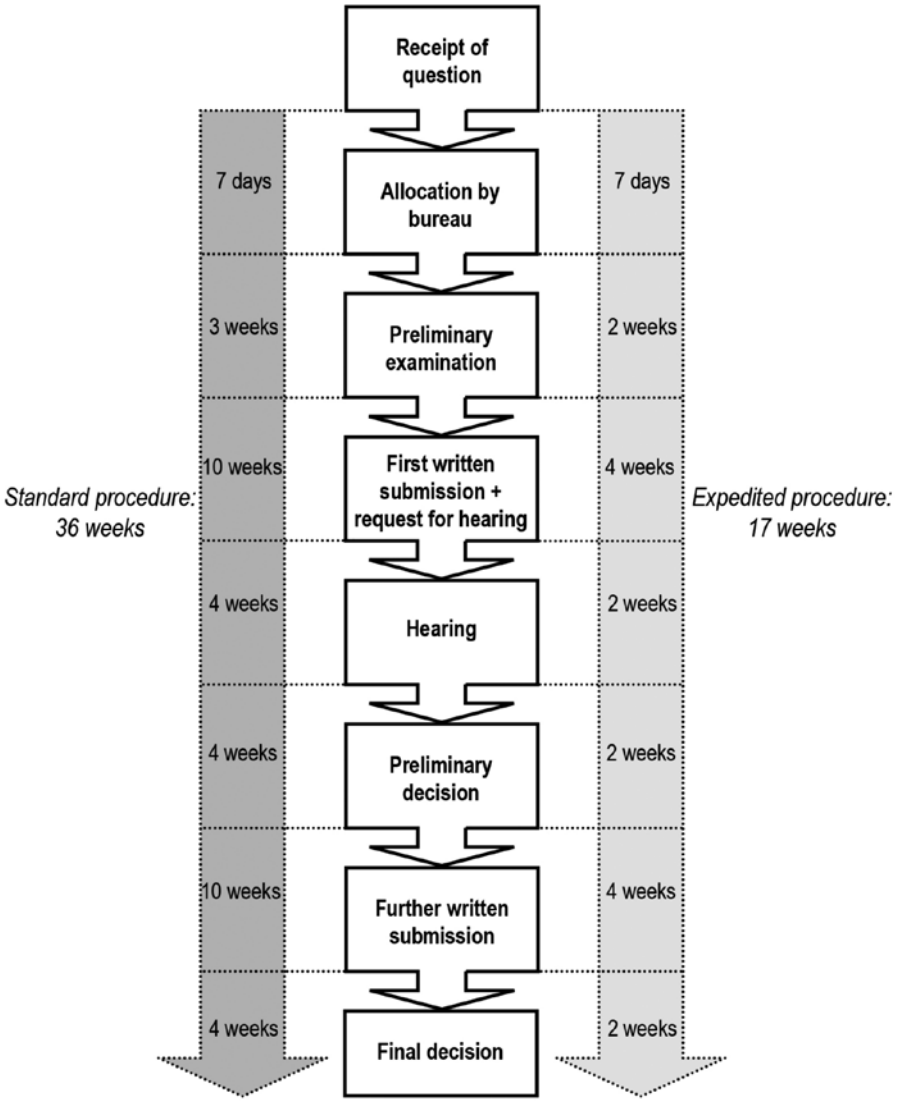

Figure 1. The Enforcement Branch procedures.

Note 1. The timelines given are net of the time required for notification of the party concerned (preliminary examination, preliminary decision) and for receipt of communications from the party concerned (first and further written submission, request for hearing) in accordance with Rule 10 of the Rules of Procedure. Some of the timelines are conditional on previous steps (see the Compliance Procedures, sections IX and X).

Note 2. In practice, the EB has held the meetings for the hearing and for the elaboration and adoption of the preliminary decision in combination. It has also allowed the party concerned to present its further written submission on the occasion of the meeting for the elaboration and adoption of the final decision (see main text).

A Perspective from UN Headquarters on Climate Change

Maria Pohjanpalo[1]

1 Introduction

The purpose of this short paper is to offer a glimpse at how climate change issues may be seen from the UN Headquarters point of view. The key question is to find out 'how New York actually fits into the picture', as often when discussing climate change in the UN context, commentators tend to focus on the process under the UN Framework Convention on Climate Change (UNFCCC)[2] and its Kyoto Protocol.[3] The idea here is, quite generally and in an introductory manner, to reflect on what the relevant UN instances or actors in New York are, regarding climate change; and on how they are engaged in work on climate change issues. The paper will also highlight some relevant events during the year 2010 in particular. Finally, a few concluding remarks will be made.

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[2] United Nations Framework Convention on Climate Change, New York, 9 May 1992, in force 21 March 1994, 31 *International Legal Materials* (1992) 849, <http://unfccc.int>.

[3] Kyoto Protocol to the United Nations Framework Convention on Climate Change, Kyoto, 11 December 1997, in force 16 February 2005, 37 *International Legal Materials* (1998) 22.

2 Relevant UN entities in New York

2.1 The Secretary-General

The United Nations Charter[4] established six principal organs of the United Nations: the General Assembly, the Security Council, the Economic and Social Council, the Trusteeship Council, the International Court of Justice, and the Secretariat.[5] The UN family naturally is much larger, encompassing 15 agencies and several programmes and bodies.[6]

The present UN Secretary-General, Mr. Ban Ki-Moon considers climate change as one of the top priorities for action and he has a climate change support team to assist him in this work.[7] The Secretary-General engages in higher political level work and is regularly in contact with the world's leaders. Two main ad hoc initiatives in the field may be mentioned in this context.

Firstly, the High-level Advisory Group on Climate Change Financing, co-chaired by Prime Minister Zenawi of Ethiopia and Prime Minister Stoltenberg of Norway. The Group was launched in February 2010 and it submitted its final report to the Secretary-General in November 2010.[8] The mandate of the Group was to consider different possible finance streams, public, private, traditional and innovative, to scale up long-term financing for mitigation and adaptation strategies in developing countries, focusing on the sources of funds. The work was guided by the political commitments contained in the Copenhagen Accord.[9]

The Advisory Group concluded that it is challenging but feasible to meet the goals of the Accord. According to the final report of the Group, funding will need to come from a wide variety of sources, public and private, bilateral and multilateral, including alternative sources of finance, the scaling up of existing sources and increased

4 Charter of the United Nations, 26 June 1945.

5 *Ibid*. Art. 7.

6 For a UN organizational chart refer to, for instance, <http://www.un.org/en/aboutun/structure/index.shtml> (visited 30 March 2011) and for a more extensive description of the UN system's structure, see, for instance, Tadanori Inomata, 'Building Institutional and Managerial Foundation for Environmental Governance with the United Nations System – Towards a New Governance Structure for Environment Protection and Sustainable Development', in Tuula Honkonen and Ed Couzens (eds), *International Environmental Law-making and Diplomacy Review 2009*, University of Joensuu – UNEP Course Series 9 (University of Joensuu, 2010) 45–64.

7 Refer to <http://www.un.org/sg/priority.shtml> (visited 30 March 2011) for the list of his priorities for action.

8 Report of the Secretary-General's High-level Advisory Group on Climate Change Financing, 5 November 2010. The report as well as other further information on the work of the Group, including the Terms of Reference of the Group may be found at <http://www.un.org/wcm/content/site/climatechange/pages/financeadvisorygroup> (visited 21 February 2011).

9 Decision 2/CP.15 'Copenhagen Accord', in Report of the Conference of the Parties on its 15th session, UN Doc. FCCC/CP/2009/11/Add.1 (2010), Addendum. The Copenhagen Accord contains, among others, a political commitment of approaching 30 billion USD for 2010–2012 and a goal of 100 billion USD a year by 2020. See para. 8 of the Accord.

private flows. Grants and highly concessional loans are crucial for adaptation in the most vulnerable developing countries, such as the least developed countries, Small Island Developing States (SIDS) and Africa. Strong commitments to domestic mitigation and the introduction of new public instruments based on carbon pricing are important for mobilizing climate financing, both public and private. Instruments based on carbon pricing are particularly attractive because they both raise revenue and provide incentives for mitigation actions.

Secondly, the High-level Panel on Global Sustainability which was launched in August 2010 must be mentioned. The Panel has met several times already. The Panel will deliver input to inter-governmental processes, including preparations for the UN Conference on Sustainable Development (Rio 2012), and the Conference of the Parties (COP) to the UNFCCC. In its work, the Panel has a strong emphasis on climate change, but it is not limited to it, as the scope is much wider. These other areas include food, water and energy security and poverty reduction. The mandate of the Panel is for 18 months and the Panel is to finish its work by the end of 2011. The Panel is co-chaired by President Tarja Halonen of Finland and President Jacob Zuma of South Africa.

The final report of the work of the Panel will be published and it will include analysis and recommendations. In the course of its work, the Panel will create platforms for discussion to generate input to its work. Given the Panel's special focus on climate change, the Panel may also prepare additional policy briefs in ways to best address the climate negotiations process, taking into account its own time schedule.[10]

2.2 Relevant parts of the UN Secretariat

Several parts of the UN Secretariat are particularly relevant to the work on climate change. In the Department of Economic and Social Affairs (DESA),[11] the Division of Sustainable Development[12] in particular is important; but the UN Forum on Forests Secretariat and the Population Division, for example, also handle issues relevant to different aspects of climate change. DESA has a specific working group on climate change, which convenes regularly to exchange information and joins working efforts of different divisions of DESA.

2.3 UN specialized Agencies, Funds and Programmes

Many of the UN specialized Agencies, Funds and Programmes have worked extensively on climate change issues and are also represented in New York. These include,

[10] Further information on the work of the panel, including its composition, mandate and summaries of discussion that have already taken place may be accessed at <http://www.un.org/wcm/content/site/climatechange/pages/gsp> (visited 21 February 2011).

[11] See <http://www.un.org/en/development/desa/index.html> (visited 30 March 2011).

[12] See <http://www.un.org/esa/dsd/csd/csd_index.shtml> (visited 30 March 2011).

inter alia, the UN Environment Programme (UNEP), the UN Development programme (UNDP), and the Food and Agricultural Organization (FAO). They have a considerable focus on climate issues, the work being conducted according to their own priorities and programmes of work.

As the work regarding climate change is somewhat spread out within the UN, coordination of the work and representation is an important aspect. The UN Chief Executive Board for Coordination (CEB)[13] is a high level UN coordination forum established by the Secretary-General. Its work includes climate change and the Millennium Development Goals (MDGs).[14] In addition, the CEB High-Level Committee on Programmes (a mechanism for system-wide coordination) has a working group dedicated to climate change.

The Secretariat of the CEB is located in New York and it has taken the lead in the UN system-wide coordination efforts in, for example, the previous Climate Change Conferences of the Parties. They continue their efforts for a common unifying view for the UN system. The CEB Secretariat convenes the higher level officials of the UN entities regularly to coordinate in order to better deliver as one UN. The UNFCCC Secretariat naturally services in different ways the negotiation process in particular; but in the wider UN system there are numerous UN entities that are important, for instance in the implementation phase of the outcome of the negotiations.

2.4 UN General Assembly

Returning to the principal organs established by the UN Charter, the UN General Assembly (UNGA) in its recent 65th session (2010) dealt with, among many other matters, sustainable development issues. Its agenda item regarding sustainable development included, among others: protection of global climate for present and future generations of humankind; implementation of the UN Convention to Combat Desertification[15] and Convention on Biological Diversity (CBD),[16] so covering all of the so-called Rio Conventions.[17] The UNGA adopted corresponding resolutions regarding each of the three Rio Conventions.[18]

[13] The CEB has its own website containing further information regarding its work; see <http://www.unsceb.org/ceb/home> (visited 21 February 2011).

[14] See <http://www.un.org/millenniumgoals/>.

[15] UN Convention to Combat Desertification in Countries Experiencing Serious Drought and or Desertification, Particularly in Africa, Paris, 17 June 1994, in force 26 December 1996, 33 *International Legal Materials* (1994) 1309, <http://www.unccd.int>.

[16] Convention on Biological Diversity, Rio de Janeiro, 5 June 1992, in force 29 December 1993, 31 *International Legal Materials* (1992) 822, <http://www.biodiv.org>.

[17] UNGA Agenda A65/251 (17 September 2010), Item 20 'Sustainable development': d), e), f). By 'Rio Conventions' are meant conventions which were created at the United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro in 1992.

[18] UNGA Res. 65/159; UNGA Res. 65/160; and UNGA Res. 65/161 (2011).

2.5 Economic and Social Council

The Economic and Social Council[19] and its functional commissions, in particular the Commission on Sustainable Development and the UN Forum on Forests, may also be mentioned in this context. The work conducted within the ECOSOC contributes to different dimensions of climate change whereby different functional commissions report to the ECOSOC. As a central body regarding development policy, it also aims to carry out development commitments that have emerged from different UN conferences and summits, including the implementation of the MDGs.

3 Relevant events at the UN Headquarters

The year 2010 was marked as the International Year of Biodiversity. A High-level meeting of the UNGA contributed to that in September 2010, prior to the opening of the UNGA General Debate.[20] Member States and other participants recognized, inter alia, that biodiversity and healthy ecosystems are an essential part of the solution to the challenges of climate change.[21] They noted the substantial benefits to be gained from the coherent implementation of the three Rio Conventions as well as other biodiversity-related conventions. For example, initiatives for reduced emissions from deforestation and forest degradation (REDD+)[22] could provide co-benefits for biodiversity and local livelihoods. They also highlighted that the Rio+20 Conference in 2012 provides timely opportunities to ensure that measures taken under the related conventions are mutually supportive.[23]

The High-level Summit on Millennium Development Goals was also organized in September 2010 in New York, partly parallel to the Biodiversity meeting. The MDG Goal 7 deals with ensuring environmental sustainability and it presents a target to reduce biodiversity loss; aiming to achieve, by 2010, a significant reduction in the rate of loss. The outcome document of the Summit[24] recognizes, inter alia, that climate change poses serious risks and challenges to all countries, especially developing countries. The UN Member States commit themselves to addressing climate change in accordance with the principles and provisions of the UNFCCC, including the

[19] See <http://www.un.org/en/ecosoc/> (visited 30 March 2011).

[20] See <http://www.un.org/en/ga/president/65/issues/biodiversity.shtml> (visited 30 March 2011) and 'International year of Biodiversity', UNGA Res. 61/203 (2006).

[21] High-level Meeting of the United Nations General Assembly on Biodiversity, 22 September 2010, New York, President's Summary.

[22] REDD aims to create a financial value for the carbon stored in forests, offering incentives for developing countries to reduce emissions from forested lands and invest in low-carbon paths to sustainable development. 'REDD+' goes beyond deforestation and forest degradation, and includes the role of conservation, sustainable management of forests and enhancement of forest carbon stocks. For further information on REDD+, refer to, for instance, <http://www.un-redd.org/AboutREDD/tabid/582/Default.aspx> (visited 30 March 2011).

[23] See *supra* note 21.

[24] 'Keeping the promise: united to achieve the Millennium Development Goals', UNGA Res. 65/1 (2010).

principle of common but differentiated responsibilities and respective capabilities. It is also stated in the document that addressing climate change will be of key importance in safeguarding and advancing progress towards achieving the MDGs.[25] In addition there is an extensive list of commitments to accelerating progress in order to achieve the MDG Goal 7, including references to all of the Rio Conventions and their implementation.[26]

Similarly to the biodiversity event, in 2009 there was a High-level event on climate change and a separate one regarding REDD+. As it can be seen from these examples, efforts to increase wider and high level political awareness and visibility regarding multilateral environmental agreements, including the climate change perspective, are taking place at the UN Headquarters.

Member States also undertook a two day High-level review of the Mauritius Strategy[27] for the Further Implementation of the Barbados Programme of Action for the Sustainable Development of Small Island Developing States[28] in September 2010, during the 65th Session of the UNGA. The resolution regarding the review[29] reaffirms the adverse effects and risks of climate change and sea-level rise to the SIDS and confirms that adaptation to these remains a major priority for SIDS.

The UN Conference on Sustainable Development (RIO+20) was already briefly mentioned above, in the context of one of the Secretary-General's High-level Panels. The first preparatory meeting of the Conference took place in May 2010 in New York. The second one will be in March 2011; and the third in 2012, immediately prior to the Conference in Brazil the same year. The final preparatory meeting is expected to focus on the outcomes of Conference. In addition, informal meetings will take place.

The Division on Sustainable Development in DESA will serve as the Secretariat of the process. The main themes of the process are Green Economy and Institutional Framework for Sustainable Development.[30] It is worth mentioning here that 2012 will be quite an active and interesting year as, in addition to the RIO+20 Conference, the Commission on Sustainable Development will deal with biodiversity and it is also the year when the Kyoto Protocol's first commitment period will end.

[25] *Ibid*. para. 26.
[26] *Ibid*. para. 77.
[27] Barbados Programme of Action, UN Doc. A/CONF.167/9 (1994), available at <http://www.unohrlls.org/UserFiles/File/SIDS%20documents/Barbados.pdf> (visited 9 March 2011).
[28] Mauritius Strategy, UN Doc. A/CONF.207/11 (2005), available at <http://www.sidsnet.org/docshare/other/20050622163242_English.pdf> (visited 9 March 2011).
[29] 'Follow-up to and Implementation of the Mauritius Strategy for the Further Implementation of the Programme of Action for the Sustainable Development of Small Island Developing States', UNGA Res. 63/213 (2009). Further detailed information on the review is available at <http://www.sidsnet.org/msi_5/index.shtml> (visited 22 February 2011).
[30] The Conference website provides detailed information, available at <http://www.uncsd2012.org/> (visited 22 February 2011).

4 Concluding remarks

The focus at the UN Headquarters tends to be on a higher political level and the angle in general is somewhat wider, linking relevant multilateral environmental agreements, different processes and goals, in particular to sustainable development and the MDGs. The 'UN Headquarters perspective' can be seen as being more of a system wide approach; whereas the UNFCCC process, for example, is more targeted and mainly deals with issues on a perhaps more technical level.

It is important to acknowledge the different levels involved, as well as the links to other processes and discussions. However, it is also important to maintain a clear focus on the most relevant substance and deal with it at the most suitable forum. At least in the background, it is good to keep in mind the 'big picture'; what is being considered, where and when. It is equally important to have the discussion channels open in order to take mutually supportive effective actions, avoid duplication or confusion and ensure the greatest possible synergies.

Taking into consideration this tendency to a system wide approach at the UN Headquarters level, it might be interesting to see whether for example the RIO+20 meeting will somehow also address climate change in the context of one of its themes; institutional framework for sustainable development.[31] Since the first Rio Conference in 1992, climate change as a topic has received increasing attention and it can also be seen as a cross-cutting theme, rather than just a separately focused one. Therefore, in order to ensure the synergies and coherence regarding climate change decision making and work, it may also merit discussion on the institutional structures in relation to climate change. At the same time, however, the UNFCCC and Kyoto protocol are of course autonomous multilateral conventions, and their respective COPs are the forums where the Parties to these conventions take relevant decisions.

[31] *Ibid.*

Technology Transfer and the UN Framework Convention on Climate Change

Mark Radka[1]

1 Introduction

This paper describes technology transfer in the context of the United Nations Framework Convention on Climate Change (UNFCCC),[2] and explains why it has been a central element in the international response to climate change and the UNFCCC negotiations for many years. The paper does not delve into specific legal elements or the negotiating positions of different groups, but rather focuses on why technology transfer has become so important to developing and developed countries both.

In its Fourth Assessment report,[3] the Intergovernmental Panel on Climate Change (IPCC) has estimated that, without concerted action, the global emissions of greenhouse gases (GHGs) from the energy sector will grow between 40 and 110 per cent between the years 2000 and 2030.[4] To keep the global average warming below the politically recognized target of two degrees celcius, however, global emissions must start declining by 2015 and decrease by some 50 to 85 per cent below the 2000 levels by 2050.[5] Most emissions (and CO_2, in particular) arise from the energy sector, implying that large changes to our energy systems are required at a time when demand for the services that energy makes possible is increasing, particularly in developing countries. The development of more efficient, less carbon intensive energy

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[2] United Nations Framework Convention on Climate Change, New York, 9 May 1992, in force 21 March 1994, 31 *International Legal Materials* (1992) 849, <http://unfccc.int>.

[3] IPCC, *Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (IPCC, 2007), available at <http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_synthesis_report.htm> (visited 27 January 2011).

[4] *Ibid*., Section 3.1.

[5] *Ibid*., section 5.4 Emission trajectories for stabilization, figure 5.1 and Table 5.1.

technologies and their accelerated deployment at a large scale is hence of central concern.

The changes required will be both challenging and costly; and, in describing them, the International Energy Agency (IEA) has referred to the need for a 'technology revolution' to occur.[6] In its 2008 *Energy Technology Perspectives* – an examination of different scenarios and associated projections of GHG emissions – the IEA examined the role of different technologies in reducing emissions. In the baseline scenario, emissions rise from 27 Gt in 2005 to 62 Gt in 2050; whereas if its aggressive BLUE Map scenario[7] were to be realized, emissions would decline to 14 Gt by 2050 (see Figure 1), a reduction of 48 Gt that is consistent with the IPCC's estimates of what is required to keep warming below 2 degrees. End-use energy efficiency accounts for 36 per cent of the reduction, while a shift to renewable energy sources accounts for 21 per cent and carbon capture and storage for 19 per cent. Nuclear energy and end-use fuel switching are also important. The key point to note is that many different technologies are important if emissions are to be brought down to levels consistent with the objectives of the UNFCCC.

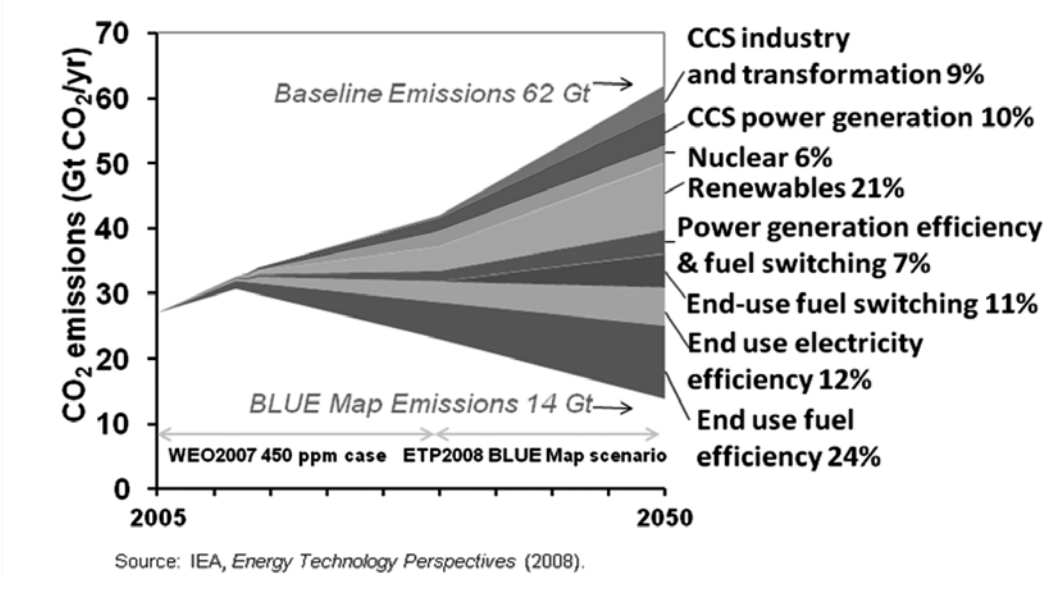

Figure 1: Projected CO2 emissions 2005–2050 under IEA's baseline and BLUE Map scenarios.

[6] International Energy Agency, *Energy Technology Perspectives* (IEA, 2008).

[7] IEA's *Blue Map Scenario* assumes a completely different energy future in which the whole world participates fully. For example, it presumes that CO2 emissions from the energy sector are cut in half by 2050. The scenario is the starting point for technology roadmaps that show *how* such a future could be realized.

The 2007 IPCC report makes the same point from an end-use perspective, pointing out that possibilities for reducing emissions exist in agriculture, buildings, energy supply, forestry, industry, transport and waste; and in developed and developing countries and countries with economies in transition (see Figure 2). It is in developing countries, however, where the growth in energy demand is greatest, and where much of the energy infrastructure will be put in place in the coming years. Energy investments are long lived, and choices made in the coming years will determine emission trajectories far into the future. To summarize, achieving the ultimate objective of the UNFCCC requires technological innovation and the rapid and widespread transfer and implementation of technologies for mitigation of greenhouse gas emissions.

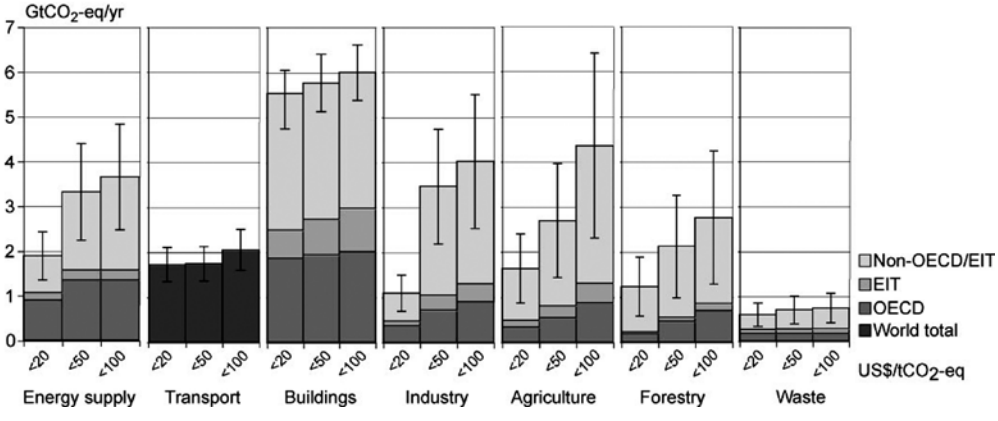

Figure 2: Emissions reduction potential in different sectors.[8]

2 Technology transfer

2.1 Definition

The IPCC has defined technology transfer as a broad set of processes covering the flows of know-how, experience and equipment, and encompassing the diffusion of technologies and technology cooperation across and within countries. Technology transfer comprises the processes of learning to understand, utilize and replicate a technology, including the capacity to choose it and adapt it to local conditions, and to integrate it with indigenous technologies.[9] Within the UNFCCC, much of the emphasis has been on measures that increase the diffusion of technologies across and within countries, particularly developing countries.

[8] IPCC, *Climate Change 2007, supra* note 3.

[9] IPCC, *Special Report on Methodological and Technological Issues in Technology Transfer* (IPCC, 2000), available at <http://www.ipcc.ch/ipccreports/sres/tectran/index.php?idp=0> (visited 27 January 2011).

Successful, i.e. sustainable, technology transfer requires a multi-facetted enabling environment that includes good macroeconomic conditions, the involvement of social organizations, existence of national institutions for technology innovation, and human and institutional capacities for selecting and managing technologies. Technology transfer is made easier when countries have national legal institutions that reduce risk and protect intellectual property rights, and the processes for establishing and enforcing codes and standards. Of particular importance is the ability to adapt and modify technologies and make them more suitable for specific conditions in the acquiring country. Not all of these elements of what is sometimes referred to as the *enabling environment* are easily addressed under the Climate Change Convention; but two elements which negotiations have emphasized are support for national institutions for technology innovation, and efforts that strengthen human and institutional capacities for selecting and managing technologies.

2.2 Progress on Technology Transfer in the UNFCCC

In the period leading up to and immediately after the 15th Conference of the Parties (COP15) in Copenhagen, much progress was made on negotiating a technology transfer package. A consensus began to emerge regarding the creation of a Technology Executive Committee which would oversee (in ways to be determined) international technology transfer activities conducted under the Convention; and a Climate Technology Centre and Network which would undertake various activities aimed at promoting the transfer of climate-relevant technologies. The remainder of this paper offers recommendations for priority near-term actions based on different technology opportunities. It attempts to answer such questions as 'Where might effort best be directed?'; and 'Where is public money best spent?'.

The good news is that the fundamental elements of the 'toolkit' for accelerating the uptake of existing climate-friendly technologies exist. For policy-makers, then, the question is how best to apply the various tools both domestically and internationally, with the general aim of integrating climate policies into broader developmental and economic policies.

2.3 Different support for different technologies

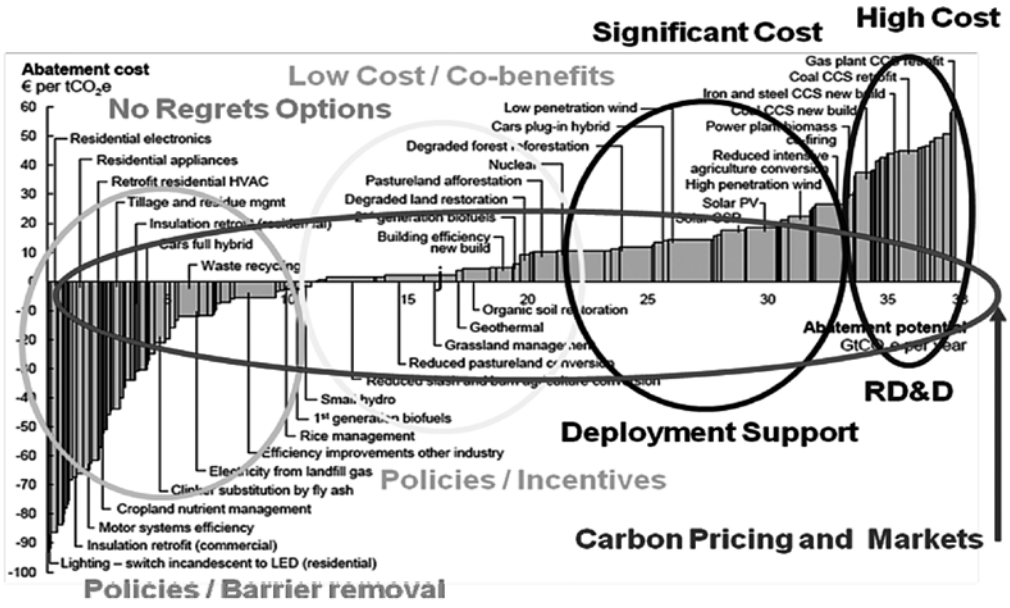

Figure 3: Matching support measures to marginal abatement cost.[10]

It is important to recognize that different technologies face different sets of barriers that prevent their wider uptake in the market. McKinsey has prepared so-called marginal abatement cost curves that present the marginal cost of reducing GHG emissions for different types of technologies and other measures (see figure 3). Although these curves neglect certain important costs and barriers,[11] they provide a convenient means of identifying representative approaches for accelerating the diffusion of various GHG technologies when these are arrayed by cost.

Some technologies that have negative economic cost – sometimes referred to as 'no regrets options' – are generally evidence of a market failure of some sort, various energy efficiency measures being typical. Here, interventions should aim at overcoming barriers that prevent the market from functioning more efficiently. Examples include mandated efficiency standards for electrical appliances, lighting devices, and buildings. Transferring these 'technologies' often means changing polices and putting in place education, enforcement and information programmes which ensure their effectiveness.

[10] Author's adaptation of Global GHG Abatement Cost Curve 2.1, in McKinsey and Company, *Impact of the Financial Crisis on Carbon Economics* (2010), available at <http://www.mckinsey.com/~/media/mckinsey/dotcom/client_service/Sustainability/PDFs/ImpactFinancialCrisisCarbonEconomicsGHGcostcurveV21.aspx> (visited 25 August 2011) 5.

[11] Not included, for example, are costs of changing policies and regulations, and costs of training and capacity-building efforts.

Low-cost reduction measures often yield some co-benefits, an example being afforestation, where emission reductions might also yield benefits in terms of flood prevention. Incentives might be needed to make it economically attractive for landowners to change their behavior.

Moving along the marginal abatement cost curve, costs increase. Some renewable energy supply technologies are close to being competitive to conventional fossil fuel technologies, and require some sort of deployment support – such as a so-called 'feed in tariff' which guarantees a higher price to the generator of renewable electricity. Here the premise is that experience in manufacturing and deployment will bring eventual cost reductions both from scale and the cumulative learning. At the far end of the cost curve lie high marginal abatement cost technologies, many of them at this point in the research and development (R&D) stage and so not yet commercialized. Research and development support is the most appropriate public intervention for this group of technologies. The general point to make is that clustering technologies by marginal abatement cost suggests the policy support and treatment that hastens their market acceptance and – where it is a goal – their transfer across borders.

To support work on the Expert Group on Technology Transfer established under the UNFCCC, UNEP, the US National Renewable Energy Laboratory (NREL),[12] and the Energy Research Centre of the Netherlands (ECN)[13] have examined features of existing mechanisms being used in projects having technology transfer as an objective.[14] Some characteristics of successful efforts emerged from the analysis of case studies.

Firstly, strong incentives for collaboration and shared interests must exist between the partners; along with stable, long-term funding support. Secondly, clearly defined missions and metrics naturally help, but the flexibility to respond to evolving conditions is useful because technologies evolve – sometimes quickly – and efforts which aim to accelerate their transfer must be correspondingly nimble. Thirdly, given that most technologies are owned by the private sector while policy changes generally require government intervention, the participation of both public and private sectors is important. Fourthly, technology networks, in particular, seem to be most effective when they are closely connected to policy processes so that the members understand the opportunity for informing key policy decisions and have opportunities for interaction with policy-makers. Fifthly, approaches which take an integrated approach running across R&D, demonstration and deployment are generally more successful. Finally, open and efficient information-sharing almost always yields benefits.

[12] See <http://www.nrel.gov>.

[13] See <http://www.ecn.nl/home/>.

[14] UNEP, An exploration of Options and Functions of Climate Technology Centres and Networks (UNEP, 2010), available at <http://www.unep.fr/energy/pdf/CTCN_UNEP-20101118_final.pdf> (visited 27 January 2011).

3 Linking technology transfer and finance

UNEP's own work has further articulated the links between finance and technology transfer using climate technology investment projects as the basis for analysis. Doing so, there are three distinct categories of costs associated with climate projects. The first of these are the conventional, clearly understood, Business-As-Usual (BaU) costs of the default infrastructure; for example, the cost of a coal-fired power plant, shown at the bottom of the triangle in Figure 4.

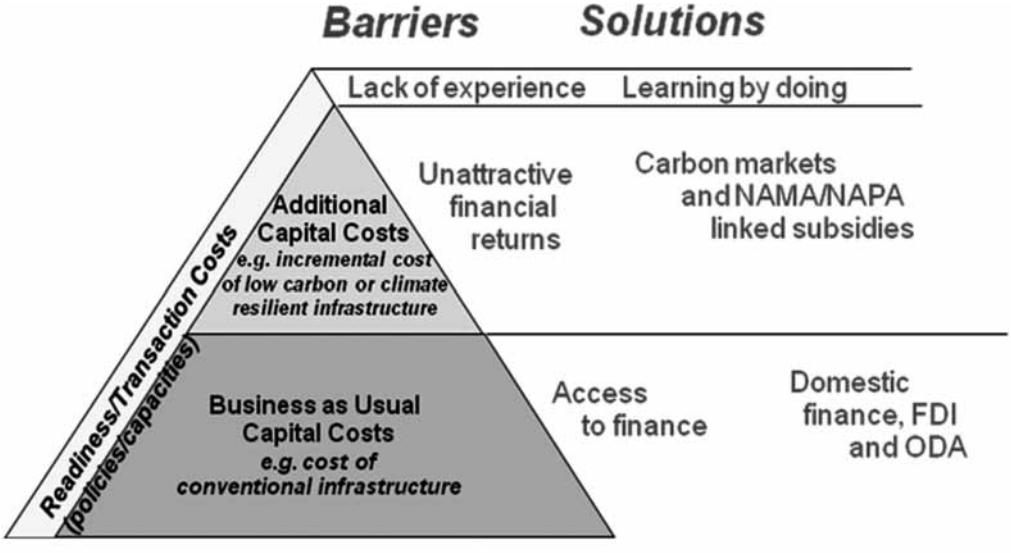

Figure 4: Matching support measures to marginal abatement cost.[15]

The second category encompasses the additional capital costs of building the low carbon or climate resilient infrastructure alternative, and is shown in the right side of the Figure 4. Finally, there are the soft costs related to putting in place the policies, institutions and skills needed for investment in the alternative technology. This category UNEP refers to as readiness or initial transaction costs, which are shown on the left side of the triangle in Figure 4.[16]

Each of these categories of costs has different barriers associated with it. For the soft costs, the real barriers come from lack of experience in both the public and private sectors to plan for, build, maintain and regulate climate technology projects. Training and other capacity development programmes, support for policy and legislative changes, and the other measures that make up typical development assistance programmes are the means normally used to remove these barriers. Pre-investment sup-

[15] Source: UNEP archives.

[16] See UNEP, *Bridging the Gap: Addressing the Lack of Early Stage Financing for Low Carbon Infrastructure Deployment in Developing Economies* (UNEP, 2011) for a more thorough presentation of this material.

port can also include preparation of country investment strategies, assessment of renewable energy resources potential, technology needs assessments, and analysis of investment options for low-carbon development.

Where additional capital costs arise, the main barrier is that projects involving new, climate-friendly technologies are not financially viable unless the carbon externality or additional costs of adaptation can be paid for in some way. In other words, where the alternative technology is more expensive, the additional costs constitute a barrier for investment and any transfer of technology unless a means can be found to pay for them. These additional costs can be paid for through carbon markets, if they are operating effectively and the carbon price is sufficiently high. If not, some sort of funds transfer is needed, an example being mandated feed-in tariffs for renewable energy projects.

The cost barrier in the BaU case is, in many instances, the difficulty many developing countries have in obtaining access to financing for technology-based projects given the overall investment climate, perceptions of risk, or other factors that retard inward investment, even for projects that would be financially feasible if undertaken elsewhere. It can, of course, be argued that BaU capital costs lie outside the remit of climate finance and should be addressed through normal financing channels.

The first projects involving the transfer of a climate technology to a new country face proportionally higher readiness costs, a fact that should influence the design of any programme or effort aiming to support the transfer. Over time – as laws are enacted, policies changed, experience and skills gained – efforts aimed at developing readiness will grow to be less critical (see Figure 5).

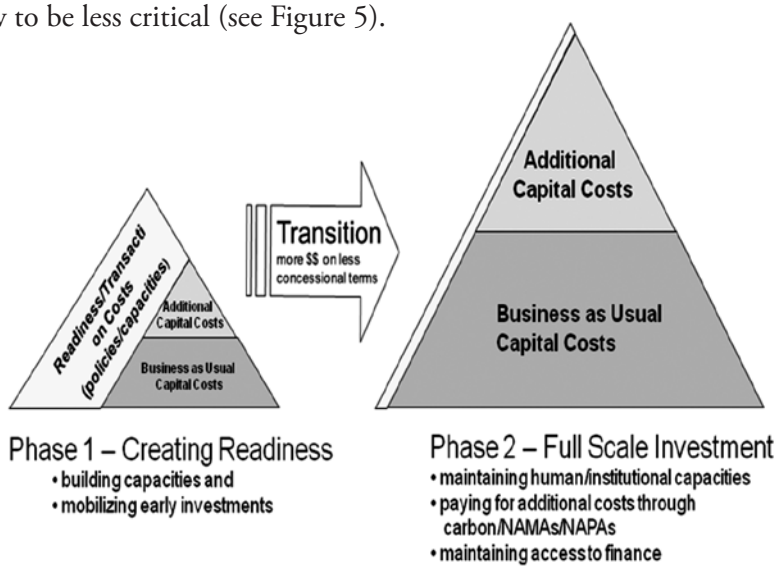

Figure 5: Phasing support brings about a smoother transition to full scale investment in new technologies.[17]

[17] Source: UNEP archives.

During the initial phase, however, the focus should be on building capacity and mobilizing first-movers to bring about early investments, ideally through 'learning by doing'. By the time a country is ready for full-scale investment, the technology, markets and institutional capacities will be well enough established for investment to scale-up fully.

If donors and their development partners adopt a phased approach, developing countries get support that is better tailored to their needs. Fast moving countries can go directly to full scale investment, where the scale of financing involved is expected to be much larger and on more commercial terms.[18] Such fast moving countries might not even need support for financing underlying costs, but only for additional costs.

As noted above, it is important that capacity-building and readiness activities are combined with investment activities; blending the two creates a better environment for learning in both the public and private sectors. The early experience with National Adaptation Plans of Action (NAPAs)[19] offers the clearest example of the consequences of not linking well the readiness and investment phases. On the whole, NAPAs have led to little direct investment or action but rather to frustration in developing countries.

4 Building readiness in developing countries

As the preceding section has emphasized, the lack of underlying demand for and the capacity to absorb and deploy investment for new technologies makes providing readiness or pre-investment support to developing countries critical. Many solutions suggest themselves, and a few are offered below as examples.

First among these might be building capacity in developing countries to prepare low-emission development plans, low-carbon growth plans, or the equivalent, and linking these to so-called monitoring, reporting and verification (MRV) provisions in the UNFCCC. Capacity-building efforts are rarely a poor investment, particularly when, as noted above, they are linked to 'learning by doing' through a real project involving some transfer of technology. Up front capability-development and measures aimed at expanding ability to handle investment in clean energy technologies should be a priority.

[18] The BRIC countries (Brazil, Russia, India and China), for example.

[19] NAPAs provide a process for Least Developed Countries (LDCs) to identify priority activities that respond to their urgent and immediate needs to adapt to climate change. The main content of a NAPA is a list of ranked priority adaptation activities and projects, as well as short profiles of each activity or project. In principle, these help the development of proposals for implementation of the NAPA. Experience has been mixed, however, and many NAPAs have amounted to paper exercises only.

Regional technology centres and climate change networks are now an agreed element of the UNFCCC.[20] Although the details have yet to be worked out, centres and networks can play a powerful role in hastening the spread of superior technologies. There is good international experience from such approaches in the global effort to phase out the use of chlorofluorocarbons (CFCs) and other substances that deplete the stratospheric ozone layer.[21] Such centres can be helpful in developing national or regional technology roadmaps and market assessments, among other measures.

Evidence is growing that the Clean Development Mechanism (CDM) has helped in the transfer of low carbon technologies to developing countries, particularly in the energy sector.[22] Strengthening developing country capabilities for preparation and implementation of CDM projects continues to make sense even if there are uncertainties about the future of the mechanism in the Kyoto Protocol's second commitment period. So-called programmatic CDM approaches that bundle many small GHG emission reduction interventions into a larger 'project' are particularly promising for least developed countries.

5 Concluding reflections

Technology options for most developing countries have not yet been properly analyzed and conditions for expanding markets for newer technologies remain poorly understood in most instances. That said, there is increasing understanding of the importance of measures that increase readiness and the value of soft interventions, such as those that provide expert advice or strengthen networks of experts. There is also growing recognition of the need for a more differentiated approach to technology transfer, one that is based on country groups and differences in national circumstances. Rarely is a 'one size fits all' approach successful when it comes to technology, and it should be no surprise, then, that the same is true when it comes to its transfer.

Recent developments in the UNFCCC give cause for optimism that support measures agreed by Parties will indeed take these and other considerations into account in the technology mechanism agreed at COP16 in Cancun.[23] Through the Technology Mechanism decision, which is part of a larger decision taken under the Ad Hoc

[20] See The Cancun Agreements: Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention', Decision 1/CP.16, in '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, UN Doc. FCCC/CP/2010/7/Add.1 (2011), para. 117.

[21] UNEP, *Networking Counts: Building Bridges for a Better Environment. Montreal Protocol Experiences in Making Multilateral Environmental Agreements Work* (UNEP and SIDA, 2002), available at <http://www.uneptie.org/ozonaction/information/mmcfiles/3947-e.pdf> (visited 27 January 2011).

[22] UNFCCC, *The Contribution of the Clean Development Mechanism under the Kyoto Protocol to Technology Transfer* (2010), available at <http://cdm.unfccc.int/Reference/Reports/TTreport/TTrep10.pdf> (visited 4 September 2011).

[23] See Decision 1/CP.16, *supra* note 20, at para. 117.

Working Group on Long Term Cooperative Action, parties agreed to establish a Technology Executive Committee (TEC) and a Climate Technology Centre and Network (CTCN).

The Technology Executive Committee is mandated to maintain an overview of technology needs, technology transfer issues, and barriers, and provide guidance to the parties on technology transfer issues. The CTCN decision foresees a network of national, regional, sectoral and international technology networks, organizations and initiatives that provide advice and support to developing countries, including through capacity-building support and training and partnerships. Much needs to be worked out, but the trends are encouraging.

Part III

National and Regional Climate Change Perspectives

The Role of AOSIS in UNFCCC Negotiations

Lisa Benjamin[1]

1 Introduction

Small island developing states (SIDS) are particularly vulnerable to the effects of climate change. In some instances, their very survival is threatened.[2] This vulnerability motivated the formation of a coalition of SIDS, which, although diverse in economic, political, and geographic characteristics, decided to 'pool their sovereignty'[3] to form the Alliance of Small Island States (AOSIS) to increase their individual influence and effectiveness in the United Nations Framework Convention on Climate Change (UNFCCC)[4] negotiations. Although its members are small in size and economic and political clout, AOSIS has proven an effective negotiating bloc in UNFCCC negotiations by successfully employing a number of different negotiating strategies.

Despite this, AOSIS operates at a distinct disadvantage within the negotiations, having neither substantial emissions with which to leverage concessions, nor deep pockets to fund technological innovation or adaptation activities. To the contrary, members of AOSIS are desperately in need of both substantial emissions reductions and financing from other, more powerful participants in these negotiations. These unequal dynamics place AOSIS member states in an unenviable position; their participa-

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[2] For more detailed information, see IPCC, Climate Change 2007: Synthesis Report (2007), available at <http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf> (visited 15 June 2011).

[3] Pamela S. Chasek, 'Margins of Power: Coalition Building and Coalition Maintenance of the South Pacific Island States and the Alliance of Small Island States', 14 *Review of European Community and International Environmental Law* (2005) 125–137 at 126.

[4] United Nations Framework Convention on Climate Change, New York, 9 May 1992, in force 21 March 1994, 31 *International Legal Materials* (1992) 849, <http://unfccc.int>.

tion in the negotiations constituting 'an issue of equity, and of survival'.[5] Although confronted by many disadvantages, it appears that most AOSIS negotiators surveyed are relatively satisfied with the progress the coalition has made to date, despite the traditional capacity constraints on its members.

This paper briefly considers the history of AOSIS in UNFCCC negotiations; the negotiating strategies it has employed; and the views of a selection of AOSIS negotiators, articulated through an analysis of the results of a small survey of AOSIS negotiators who participated in the last UNFCCC Conference of the Parties (COP) in Cancun, Mexico (COP 16).[6]

2 The history of AOSIS in UNFCCC negotiations

The formation of AOSIS is closely connected to the changing international approach to small island states. Grote has charted the evolution of international treatment of SIDS, and posits that there are three main eras of SIDS discourse.[7] The first period, from 1972 to 1982, Grote argues, was one in which small island states first attracted international attention as part of an international movement for a new international economic order to address structural disadvantages suffered by developing nations.[8] Then termed 'developing island countries' (or DICs), these were widely defined by the 1974 Report of the Panel of Experts in New York, and included large islands such as Indonesia and the Philippines, while focusing on features of smallness (small territories with dense populations, remoteness from markets and exposure to natural disasters).[9] One of the Panel's foci was on the future viability of very small newly independent DICs as states in socioeconomic terms, citing their limited ability to deliver essential services and opportunities for their people.[10]

The second era, from 1983 to 1992, saw a re-shifting of global power away from the United Nations Conference on Trade and Development (UNCTAD),[11] and a

[5] Tuiloma Neroni Slade, 'The Making of International Law: The Role of Small Island States', 17 *Temple International and Comparative Law Journal* (2003) 531–544 at 540. His Excellency Tuiloma Neroni Slade was the Chairman of AOSIS in 1997.

[6] The survey represents a small number of AOSIS negotiators' views, and is not intended to set out a generalized perspective of the views of all AOSIS members. The characteristics of AOSIS member states, and thus their views, are diverse (as this paper attempts to highlight), and so the survey results show only a snapshot of some negotiators' views.

[7] See Jenny Grote, 'The Changing Tides of Small Island States Discourse – A Historical Overview of the Appearance of Small Island States in the International Arena', 43 *Verfassung und Recht in Ubersee* (2010) 164–191, available at <http://www.vrue.nomos.de/fileadmin/vrue/doc/Aufsatz_V2.pdfRUE_10_02.pdf> (visited 6 April 2011).

[8] *Ibid*. at 165.

[9] *Ibid*. at 170.

[10] *Ibid*. at 172.

[11] UNCTAD was established in 1964 and works to promote 'development-friendly integration of developing countries into the world economy.' For more information on UNCTAD see <http://www.unctad.org>.

change in nomenclature to island developing countries (or IDCs), but with little progress towards addressing the special needs and problems of this group. Grote states that during this period, 'the theoretical basis of the request for such recognition had finally become completely ineffectual, as developed countries were no longer prepared to accept invocations of historical responsibility as justification of their duty to promote the development of disadvantaged developing countries'.[12]

Grote argues that from 1992 onwards, climate change, and the vulnerability of the newly titled small island developing states to its effects, has regenerated international interest in the special circumstances of this group, stating that climate change has 'become their [ie: SIDS'] single most defining feature'.[13] To vantage shifting international concerns, the emphasis of SIDS changed during these three periods from a focus on socioeconomic concerns in the 1970s, to geopolitical security concerns in the 1980s, to an emphasis, beginning in the 1990s on economic and environmental vulnerability.[14] Campling states that as neoliberalism has become the hegemonic discourse of the day so 'the weak and the marginalized are compelled to situate their concerns within this discourse'[15] by emphasizing economic vulnerabilities. International recognition of SIDS' economic and environmental vulnerability to climate change has led to a measure of success for AOSIS within UNFCCC negotiations.[16]

The formation of AOSIS in 1990 coincided with what Bodansky has stated was the second 'fault line' in the UNFCCC negotiations between the North and the South;[17] the South arguing for greater representation, inclusion of not just environmental but developmental concerns into the climate change debate, and a movement of the negotiations away from the narrow confines of the International Panel on Climate Change (IPCC) scientific debate to the UN General Assembly, where developing countries enjoyed greater participation.[18]

AOSIS was formed during the Second World Climate Conference in 1990 by 24 member states,[19] and it set itself three initial goals related to the international negotiations on climate change:

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[12] Grote, 'The Changing Tides', *supra* note 7, at 178–179.

[13] *Ibid*. at 182.

[14] Liam Campling, 'A Critical Political Economy of the Small Island Developing States Concept – South-South Cooperation for Island Citizens?' 22 *Journal of Developing Societies* (2006) 235–285 at 239–241.

[15] *Ibid*. at 243.

[16] The special status of some states, including AOSIS states, as 'particularly vulnerable' to climate change is now being questioned within the G-77. See 'Vulnerability is not a Beauty Contest', CXXVII *Eco Newsletter* of 1 December 2010.

[17] Although this paper refers to the 'North' and 'South' as a reference to what is commonly referred to as the global North and global South in multilateral negotiations, the author of this paper recognizes that these are over-generalized terms.

[18] Daniel Bodansky, 'The History of the Global Climate Change Regime', available at <http://graduateinstitute.ch/webdav/site/iheid/shared/iheid/800/luterbacher/luterbacher%20chapter%202%20102.pdf> (visited 6 April 2011).

[19] Chasek, 'Margins of Power', *supra* note 3, at 131. The World Conference was preceded the previous year

- to develop a common negotiating position for the intergovernmental negotiating committee deliberations for a framework convention on climate change;
- to highlight the special vulnerability of small island states to climate change; and
- to consider adaptation strategies and to ensure that the concerns of AOSIS were addressed in an 'effective Convention'.[20]

AOSIS membership has since expanded to 42 states and observers from the African, Caribbean, Indian Ocean, Mediterranean, Pacific and South China Sea regions.

Current AOSIS members[21]		
Antigua and Barbuda	Jamaica	St. Vincent and the Grenadines
Bahamas	Kiribati	Suriname
Barbados	Maldives	Timor-Leste
Belize	Marshall Islands	Tonga
Cape Verde	Mauritius	Trinidad and Tobago
Comoros	Nauru	Tuvalu
Cook Islands	Niue	Vanuatu
Cuba	Palau	
Dominica	Papua New Guinea	
Dominican Republic	Samoa	
Fiji	Singapore	
Federated States of Micronesia	Seychelles	
Grenada	Sao Tome and Principe	
Guinea-Bissau	Solomon Islands	
Guyana	St. Kitts and Nevis	
Haiti	St. Lucia	
Current observer states		
American Samoa	Guam	
Netherlands Antilles	U.S. Virgin Islands	

AOSIS is a coalition which works primarily through its member states' diplomatic missions to the United Nations in New York; operates without a formal charter, a

by the Small State Conference on Sea Level Rise organized by the Government of the Maldives. At this Conference 13 small island developing states and Brunei and Darussalam adopted the Male Declaration on Global Warming and Sea Level Rise (available at <http://unesdoc.unesco.org/images/0009/000977/097720eb.pdf> (visited 6 April 2011)).

[20] John Ashe, 'The Role of the Alliance of Small Island States (AOSIS) in the Negotiation of the United Nations Framework Convention on Climate Change (UNFCCC)' 23 *Natural Resources Forum* (1999) 209–220 at 210. Since 1990, AOSIS has also been instrumental on issues beyond climate change, specifically in the area of sustainable development, and was the primary mover behind the 1994 Barbados Global Conference on Sustainable Development of SIDS which established the Barbados Programme of Action for the Sustainable Development of SIDS (UN Doc. A/CONF.167/9, part I, Annex I (1994), available at <http://islands.unep.ch/dsidspoa.htm> (visited 6 April 2011)).

[21] Source: <http://www.sidesnet.org/aosis/members.html> (visited 6 April 2011).

budget or a secretariat;[22] and is a member of the G-77 and China negotiating bloc within UNFCCC negotiations. Its member states represent approximately one-fifth of United Nations membership, and approximately one-quarter of developing states, but less than one per cent of the world's land area.[23]

There is no universal definition of a small island developing state; however, there are currently 51 SIDS included in the list used by the United Nations Department of Economic and Social Affairs (UNDESA).[24] However, not all members of AOSIS are listed, and not all UNDESA SIDS are members of AOSIS. AOSIS represents a diverse collection of states, prompting several authors[25] to point out that some members of AOSIS are neither small,[26] islands,[27] developing[28] or even states.[29] Given that some AOSIS members are not independent states, they are not all, therefore, members of the United Nations, and given some members' political associations with larger, industrialized countries, some AOSIS members are also not members of the G-77. Some SIDS are also considered to be 'least developed countries', and so are also individually members of that UNFCCC negotiating bloc.

Regionally, SIDS are also diverse, with Caribbean SIDS having over 'four times more people than the Pacific SIDS, and nearly one-third higher gross domestic product per capita'.[30] Even within regions, many SIDS are economic competitors, often within the same industries, such as tourism, offshore banking, and fisheries.[31]

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[22] *Ibid*.

[23] Carola Betzold 'Borrowing Power to Influence International Negotiations: AOSIS in the Climate Change Regime, 1990–1997' (2010) 1–14, available at <http://www.psa.ac.uk/journals/pdf/5/2010/1603_1456.pdf> (visited 6 April 2011) at 3.

[24] See UNEP Regional Office for Latin American and the Caribbean, *Climate Change in the Caribbean and the Challenge of Adaptation* (UNEP, 2008), available at <http://www.pnuma.org/raiz/Climate_Change_in_the_Caribbean_Final_LOW20oct.pdf> (visited 6 April 2011) at 3.

[25] See, for instance, Ian Fry, 'Small Island Developing States: Becalmed in a Sea of Soft Law' 14 *Review of European Community and Environmental International Law* (2005) 89–99 at 89; and Betzold, 'Borrowing Power', *supra* note 23, at 2.

[26] Singapore, Cuba and Papua New Guinea have relatively large land masses. See also Liam Campling, 'A Critical Political Economy' *supra* note 14, at 249 who points out that although there is no universal definition of 'small' the Commonwealth and World Bank have described small states as having populations of less than 1.5 million.

[27] Belize, Guyana and Suriname are part of mainland Central and South America.

[28] Some authors have pointed to the relative prosperity of states like Singapore, The Bahamas and Barbados.

[29] Some AOSIS member states are not fully independent. Some, like the Netherland Antilles, are dependent territories and some members like the Cook Islands and Niue are 'freely associated' with New Zealand, and others like the Marshall Islands and Palau with the United States. Some authors have argued that the very diversity of AOSIS has weakened its effectiveness in negotiations, and even that 'failure to properly define the island states category in itself can be seen as a strategy to keep the discourse sterile'. See Grote, 'The Changing Tides', *supra* note 7, at 165. However, Daniel Brindis, 'What Next for the Alliance of Small Island States in the Climate Change Arena?' 7 *Sustainable Development Law & Policy* (2007) 45 and 83 at 1 has argued that AOSIS should in fact broaden its alliance to work with other vulnerable low-lying populations even at the sub-state level.

[30] Chasek, 'Margins of Power', *supra* note 3, at 134.

[31] Slade has argued that the characteristics of small island states can lead its citizens to display a 'general reluctance to yield separate identity' and they have a 'natural instinct for independence and independent-mindedness'. See Slade, 'The Making of International Law', *supra* note 5, at 533. See also Campling, 'A Critical Political Economy' *supra* note 14, at 251 who points out that smallness and remoteness can often

However, despite these differences, most SIDS share common geographic and socio-economic vulnerabilities, which include:

- low-lying areas vulnerable to sea level rise and storm surges;
- geographic positions strongly affected by tropical storms and cyclones;
- high temperatures;
- scarce land resources;
- considerable dependence on scarce or depleted fresh groundwater resources;
- small natural resource bases, with nutrient depletion, soil loss, deforestation and biodiversity loss occurring;[32]
- concentrations of population and infrastructure along coastal areas;
- dependence on a narrow range of export products;
- susceptibility to international trade and commodity price fluctuations;
- small domestic markets and limited ability to develop economies of scale;
- limited opportunities for economic diversification;
- high transport and communication costs (particularly acute in archipelagic nations); and
- weak institutional structures and limited human capacity.

Motivated by these common vulnerabilities, and, arguably, by 'an acute sense of injustice',[33] AOSIS has managed to influence the UNFCCC negotiations in a manner that some have described as a 'force that outweighs the sum of its parts'.[34]

3 AOSIS achievements in UNFCCC negotiations

The appointment of AOSIS's first Chairman, Robert van Lierop, to the Intergovernmental Negotiating Committee's Bureau[35] represented an early recognition of the voice of AOSIS during the formation of the UNFCCC negotiations. This afforded AOSIS an ideal opportunity to shape the agenda and, to a certain extent, to influence the outcome of negotiations leading to the UNFCCC. AOSIS achieved this by combining as a negotiating bloc to ensure effective participation within the negotiations and by adopting 12 specific objectives.[36] AOSIS was successful in ensuring that most of its 12 objectives were included within the Convention, including:

lead to social cohesion and less likelihood of violent political or social conflict, leading to more social and political resilience than other developing countries in the face of adversity.

[32] See Jon Barnett, 'Titanic States? Impacts andRresponses to Climate Change in the Pacific Islands', 59 *Journal of International Affairs* (2005) 203–219 at 207.

[33] W. Jackson Davis, 'The Alliance of Small Island States (AOSIS): The International Conscience', 2 *Asia-Pacific Magazine* (1996) 17–22 at 18.

[34] Daniel Brindis, 'What Next for the Alliance', *supra* note 29, at 1.

[35] Chasek, 'Margins of Power', *supra* note 3, at 132.

[36] Ashe, 'The Role of the Alliance', *supra* note 20, at 212.

- a preambular reference to the particular problems and special needs of SIDS;
- an indirect reference to SIDS within the Convention by the inclusion of the special needs of vulnerable countries in Art. 3(2);
- inclusion of the precautionary principle in Art. 3(3);
- inclusion of the goal of stabilization of greenhouse gases (GHGs) in Art. 4(2) (although a reference to 'immediate and significant cuts' in GHGs was not included); and
- references to a funding mechanism and institutional mechanisms of the Conference of Parties (including a secretariat and a subsidiary body for science and technology).[37]

AOSIS was not, however, successful in securing specific commitments for emissions reductions within the Convention itself, or a reference to the 'polluter pays' principle.[38]

Building on its relative success with the Convention, AOSIS called for an immediate start to negotiations on a new Protocol to include binding emissions reductions. AOSIS put forward a draft Protocol to facilitate negotiations as early as 1994;[39] the 1997 Kyoto Protocol[40] being based upon the initial AOSIS draft.[41] However, the 20 per cent emissions reduction target proposed by AOSIS was not adopted, and much weaker emissions reductions replaced it within the Kyoto Protocol, marking a failure for AOSIS on one of its most important objectives.[42] The failure to agree strong mitigation action, primarily because of economic concerns, has continued to plague the negotiations, leading some authors to argue that the shift from the predominance of environmental to economic concerns within the negotiations represents a decline in influence of the AOSIS coalition.[43]

[37] For a detailed analysis of the achievement of the AOSIS objectives, see Ashe, 'The Role of the Alliance', *supra* note 20, at 211–215.

[38] The 'polluter pays' principle broadly states that the person responsible for the pollution should be required to bear the costs of such pollution. However, it is debatable whether this has, in fact, crystallized into a principle of customary international environmental law, mainly because the extent of the costs which would be applicable remains unclear. For more information on the principle see, for instance, Philippe Sands, *Principles of International Environmental Law* (Cambridge University Press, 2007) 279–285.

[39] Farhana Yamin and Joanna Depledge, *The International Climate Change Regime. A Guide to Rules, Institutions and Procedures* (Cambridge University Press, 2004) at 38.

[40] Kyoto Protocol to the United Nations Framework Convention on Climate Change, Kyoto, 11 December 1997, in force 16 February 2005, 37 *International Legal Materials* (1998) 22.

[41] See Betzold 'Borrowing Power', *supra* note 23, at 7. AOSIS was also instrumental in the establishment of the Clean Development Mechanism to fund adaptation activities. The Clean Development Mechanism allows industrialized countries to earn certified emission reduction (CER) credits which they can use to meet their emissions targets under the Kyoto Protocol. CERs are earned by industrialized countries investing in emission-reduction projects in developing countries. Two per cent of the value of the CERs issued is levied and invested in the Adaptation Fund. For more information on the CDM mechanism, see <http://cdm.unfccc.int>.

[42] Betzold 'Borrowing Power', *supra* note 23, at 7.

[43] See Alexander Gillespie, 'Small Island States in the Face of Climatic Change: The End of the Line in International Environmental Responsibility' 22 *UCLA Journal of Environmental Law & Policy* (2003–2004) 107–129 at 128–129.

Particularly during the period of 1990–1997, and even today, AOSIS can be considered a major player in the climate change regime. Its members have regularly been invited to chair negotiation groups, with Ambassador John Ashe from Antigua acting as Chair of the Ad Hoc Working Group on Further Commitments for Annex I parties under the Kyoto Protocol (AWG-KP) group since 2009. This represents a measure of confidence in the individual negotiators themselves, who have managed to demonstrate strong capabilities within the negotiations, which is remarkable given the traditional negotiating constraints of small countries.[44] Although a member of the G-77, AOSIS has adopted an independent position within the negotiations by calling for not only deep emissions cuts by Annex I parties, but for formal emissions cuts by developing countries as well.[45] By circumventing traditional and competitive negotiating positions, and symmetric power relations which can arguably lead to deadlock,[46] AOSIS has managed to build a respected reputation within the negotiations.

AOSIS's success has been attributed to its sense of unity, leadership and the emerging consciousness within the international community of the importance of its cause.[47] AOSIS has also benefited from the multilateral process itself. Drumbl argues that the inclusive nature of the multilateral process provides, in some part, a sense of cooperation, as nations whose contributions are minimal may benefit from the agreement of larger developing countries such as Brazil, India and China, to less favorable terms than they might in bilateral negotiations.[48] Zartman argues that asymmetric power relations within negotiations often lead to more mutually satisfactory outcomes than expected.[49] In addition, AOSIS has successfully employed a number of negotiation strategies.

Carola Betzold identifies four strategies employed by AOSIS during 1990–1997 which has allowed it to 'borrow power' in order to influence the negotiations.[50] Employing a discourse of vulnerability as part of a context-based strategy, AOSIS appealed to principles and morality, presenting their member states as 'innocent

[44] For a consideration of such constraints, and ways in which they might be overcome, see Elizabeth Mrema and Kilaparti Ramakrishna, 'The Importance of Alliances, Groups and Partnerships in International Environmental Negotiations', in Tuula Honkonen and Ed Cozens (eds), *International Environmental Law-making and Diplomacy Review 2009*, University of Eastern Finland – UNEP Course Series 9 (University of Eastern Finland, 2010) 183–192.

[45] See Slade, 'The Making of', *supra* note 5, at 541.

[46] William William Zartman, 'The Structuralist Dilemma in Negotiation' (Research Group in International Security, 1997), available at <http://id.cdint.org/content/documents/The_Structuralist_Dilemma_in_Negotiation.pdf> (visited 6 April 2011) at 7.

[47] Jackson Davis, 'The Alliance of Small Island States', *supra* note 33, at 19–20.

[48] Mark A. Drumbl, 'Northern Economic Obligation, Southern Moral Entitlement, and International Environmental Governance' 27 *Columbia Journal of Environmental Law* (2002) 363–380 at 373.

[49] William Zartman 'The Structuralist Dilemma', *supra* note 46, at 7. Zartman at 3 describes a new concept of power as action by one party intended to produce movement by another, so power is no longer defined by components (i.e. the control of resources) or by the result of negotiations, but as a purposeful action.

[50] Betzold, 'Borrowing Power', *supra* note 23, at 1.

victims'[51] of the actions of other negotiation participants. AOSIS sought also to isolate obstructionist members and build coalitions with more progressive participants, such as the European Union, in a target based strategy.[52] This strategy enjoyed limited success, as short-term cost concerns from the majority of industrialized countries outweighed the long-term benefits of deep emissions cuts. Bertzold points to a third strategy; of third party based support which AOSIS embraced in accepting both scientific and lobbying support.[53] Slade argues that this openness to third party assistance is characteristic of SIDS, displaying 'pragmatism and reasonableness, preferring consensus building to obstruction and confrontation'.[54] NGO support has been particularly useful for enhancing the coalition's impact within UNFCCC negotiations.[55] Finally, Bertzold argues that AOSIS employed process based strategies, or 'learning to play the game' strategies.[56] For example AOSIS gained first-mover advantage by putting forward a draft Kyoto Protocol early on in negotiations, as this draft eventually formed the basis of the Kyoto Protocol.[57]

Beyond the period 1990–1997, one may argue that AOSIS is still enjoying substantial influence on the course of negotiations. In Cancún, AOSIS was successful in establishing a contact group to discuss a new draft legal form of the outcome from the long-term cooperative action (LCA) negotiations, including a new work programme on Loss and Damage, and the establishment of an Adaptation Committee within the COP16 decision.[58] There were also institutional and process successes by a reference to the prioritization of funding for SIDS in the new fast start finance fund, and representation of SIDS on the Board and transitional committee for the new green climate fund.[59] However, the most important AOSIS goals[60] have not found significant enough traction within the negotiations in recent years to be included as firm commitments in COP decisions, although both the Copenhagen Accord[61] and the Cancún COP16 decision do include a review of the long-term 2 degree Celsius goal in 2015. The COP16 decision states that the 2015 review will

51 *Ibid*. at 6.
52 *Ibid*. at 7.
53 *Ibid.* at 8. Of particular note is the support provided by the NGO Foundation of International Environmental Law and Development (or FIELD).
54 Slade 'The Making', *supra* note 5, at 534. This openness has arguably also earned AOSIS a measure of resentment among G-77 partners, who may be suspicious of outside influence.
55 See Yamin and Depledge, *The International Climate Change Regime*, *supra* note 39, at 38.
56 Bertzold, 'Borrowing Power', *supra* note 23, at 9.
57 *Ibid*. at 9.
58 'Outcome of the work of the Ad Hoc Working Group on long-term Cooperative Action under the Convention', COP Draft decision -/CP.16, available at <http://unfccc.int/files/meetings/cop_16/application/pdf/cop16_lca.pdf> (visited 22 June 2011).
59 *Ibid*.
60 In particular, a limit of global average surface temperature increases to well below 1.5 degree Celsius from preindustrial levels, global CO_2 reductions of 45 per cent by 2020 and by 95 per cent from 1990 levels by 2050, and the peaking of global GHG emissions by 2015 in a legally binding agreement.
61 Decision 2/CP.15 'Copenhagen Accord', in Report of the Conference of the Parties on its 15th sess., UN Doc. FCCC/CP/2009/11/Add.1 (2010), Addendum.

consider strengthening the long-term goal on the basis of the best available scientific knowledge, including in relation to the 1.5 degree Celsius goal.[62]

However, there is a general reluctance among industrialized countries to commit to deep emissions reductions unless all major economies do the same,[63] and this deadlock within the negotiations continues to leave AOSIS negotiators in a difficult, and often frustrating, position. It is surprising, then, that most AOSIS negotiators appear to be satisfied with the progress the coalition has made to date, although it is clear that many of the negotiators consider that various capacity constraints hamper their negotiating positions.

4 Survey of AOSIS negotiators

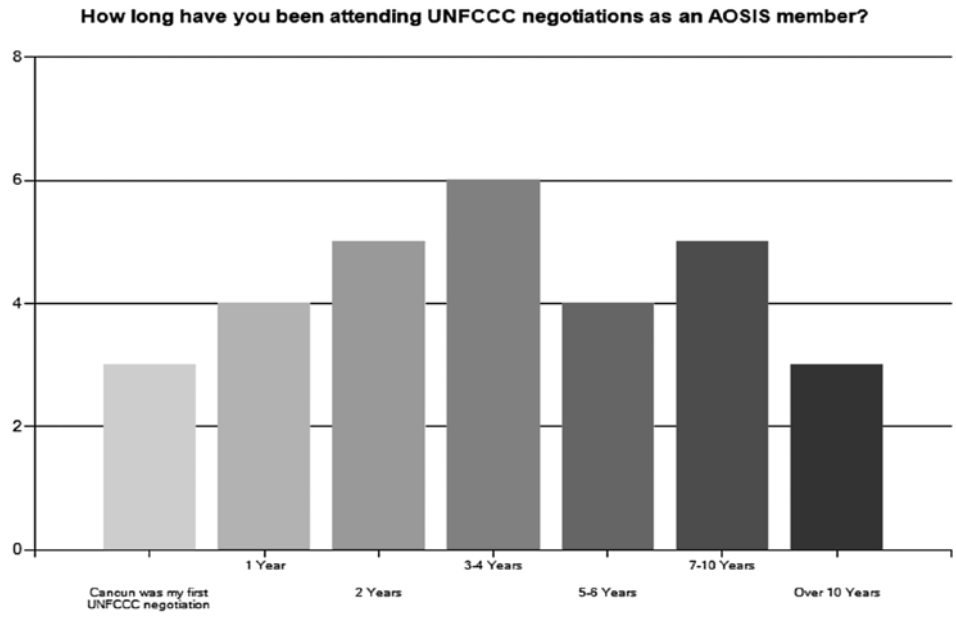
4.1 Introduction

A survey of AOSIS negotiators was sent by email on 22 December 2010, and responses were accepted until 15 January 2011. Thirty responses were received, out of approximately one hundred and fifty AOSIS negotiators who attended week one and/or week two of the 2010 COP16 negotiations. This represents approximately 20 per cent of active AOSIS negotiators who were contacted. Sixty per cent of the responders were male, and 40 per cent were female, with the most responders (40 per cent) being between the ages of 46–55, followed closely (33.3 per cent) by responders between the ages of 36–45. Fourteen of the responders were from Pacific SIDS, eleven from Caribbean SIDS, and four from the AIMS region.[64] There was a fairly even distribution of experience among responders (see below).

[62] Paras 4 and 139(a) of 'Outcome of the work of the Ad Hoc Working Group on long-term Cooperative Action under the Convention', COP Draft decision -/CP.16, *supra* note 58.

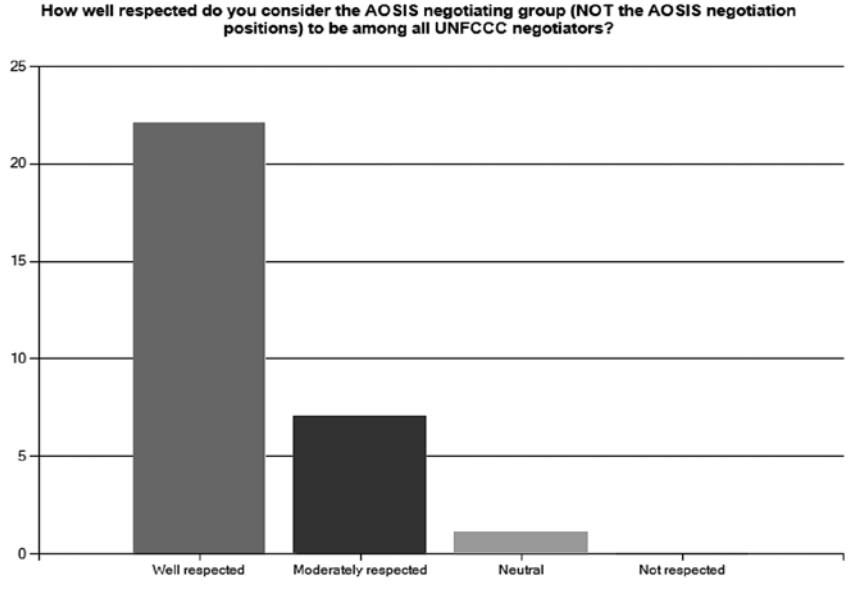
[63] The author recognizes that the negotiating blocs and positions of industrialized and developing countries are complex and vary by issue. A recent Guardian article has highlighted the difficulty of the EU in committing to a 30 per cent emissions reduction because of global economic competitiveness issues. See 'Hopes of 30% cut in greenhouse gas emissions dashed', *Guardian* of 10 February 2011, available at <http://www.guardian.co.uk/environment/2011/feb/10/hopes-greenhouse-emissions-cuts-dashed> (visited 22 June 2011).

[64] One of the responders did not specify.



4.2 Reputation of AOSIS

The majority of responders (73.3 per cent) considered that AOSIS was well respected among UNFCCC negotiators.[65] Forty-three per cent of responders considered that AOSIS was very effective in building alliances with other negotiating blocs/countries, and 40 per cent of responders considered AOSIS moderately effective in doing so.



[65] The survey question referred to the reputation of AOSIS as a negotiating bloc, not the AOSIS negotiating positions.

4.3 Priority goals

In terms of priority goals, 21 (72.4 per cent) of responders listed greater finance and direct access commitments for adaptation as their first priority, followed closely (56.7 per cent) by a 1.5 degree Celsius limit with concomitant ppm limits and a 2015 emissions peak.[66] The majority of responders (51.7 per cent) considered that AOSIS had been moderately effective in achieving their two top priorities, and 27.6 per cent considered that AOSIS had been very effective.

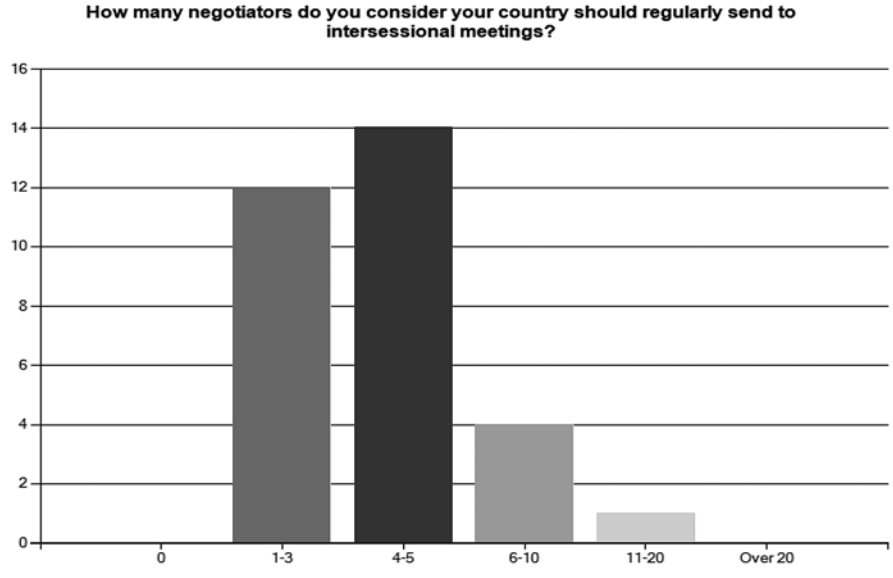
4.4 COP negotiations

This series of questions asked how many negotiators were usually sent to COP negotiations, and how many negotiators the responders felt should be sent. In terms of representation at COP negotiations, 43.3 per cent regularly sent 4–5 negotiators. These numbers are consistent with the responders views of how many negotiators should be sent (41.4 per cent feeling they should send 4–5 negotiators). However, while 30 per cent sent 1–3 negotiators, and 20 per cent sent 6–10 negotiators, 34.5 per cent of responders felt their country should send 6–10 negotiators. A slight majority of responders (51.7 per cent) stated that 1–2 of their negotiators regularly relied on external funding to attend COP negotiations.

4.5 Intersessional meetings

The position regarding how many negotiators were sent to intersessional negotiations contrasted more sharply with how many negotiators responders felt should be sent to intersessional meetings. While 80 per cent of responders stated that they sent 1–3 negotiators to intersessional meetings, only 40 per cent of responders felt that they should send 1–3 negotiators, and 46.7 per cent considered that they should send 4–5 negotiators instead. This disparity may be due to funding issues, with seventy per cent of responders stating that 1–2 of their negotiators relied on external funding to attend these meetings.

[66] Note that participants were allowed to choose several priorities as ranking as number 1. The other two options, which were also highly subscribed to as number 1 priorities, were a legally binding second commitment period under the Kyoto Protocol for Annex 1 countries (51.7 per cent) and a comprehensive, legally binding agreement for both Annex 1 and non-Annex 1 countries (46.7 per cent). Other priorities specified by individual responders were greater finance and direct access commitments for REDD+, finance for mitigation and a 350ppm emissions peak, capacity-building, technology transfer, nationally appropriate mitigation action (NAMA) support, priority for SIDS generally, UNFCCC institutional monitoring of compliance, maximum financial commitments by industrialized countries, an international mechanism for loss and damage and fast start funding made available urgently for most vulnerable SIDS.



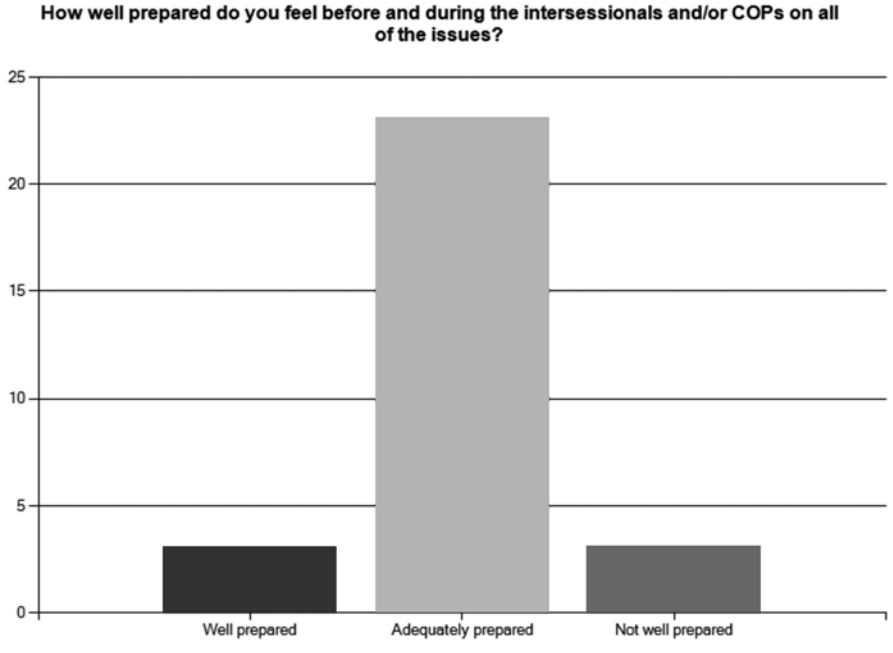
4.6 Capacity constraints

Sixty per cent of responders stated that their inability to attend all of the intersessional meetings affected their negotiating capacity 'a lot', and 66.7 per cent felt that their inability to attend all of the COP meetings affected their negotiating position 'a lot'. The view of respondents was that funding issues also had a large capacity constraining effect, with 66.7 per cent of responders stating this affected their negotiating capacity 'a lot'. The major capacity constraint felt by responders was a lack of numbers of participants to attend various meetings (79.9 per cent). Other capacity constraints included:

- lack of awareness/training on technical/scientific issues (40 per cent felt that this affected their negotiating position 'a lot');
- lack of local/regional data (30 per cent felt that this affected their negotiating position 'a lot');
- lack of historical knowledge of the UNFCCC process/documents (20 per cent felt that this affected their negotiating position 'a lot');
- integration/exchange of personnel/experience at the international/local level (51.7 per cent felt that this affected their negotiating position 'a lot'); and
- lack of access/relationships with other negotiating blocs/countries (30 per cent felt that this affected their negotiating position 'a lot').[67]

[67] Other capacity issues offered by responders were lack of good knowledge of English, lack of good negotiation skills, changing political agendas locally, lack of documentation (especially in French), lack of continuity of personnel at negotiations or change of focus on agenda items for personnel, space and time for negotiation, lack of technical expertise, logistics of accommodation to negotiation venue and visa issues.

Only 10 per cent of responders felt 'well prepared' for intersessional and/or COP negotiations, and the majority, 79.3 per cent of responders, felt they were 'adequately prepared', whilst 10.3 per cent felt that they were 'not well prepared'.[68]



5 Conclusion

The capacity constraints felt by AOSIS negotiators are not unexpected. Developing countries, and especially small countries, often face capacity difficulties in multilateral negotiations such as the UNFCCC negotiations. These constraints often include small delegations, limited staff and human capacity to attend the vast number of often simultaneous meetings, and the reliance on other countries or NGOs to represent their interests.[69] As Chasek points out, many Caribbean countries have been forced to downsize their New York missions at the United Nations, leaving a smaller pool of potential negotiators.[70] When negotiators are changed, it presents issues of continuity of representation and historical knowledge, which in turn may affect personal relationships with other negotiating blocs which may have been developed.[71]

[68] This latter percentage may be a function of the high number of responders (23.3 per cent) for whom COP16 was either their first COP or who had only been involved in negotiations for one year.

[69] See Pamela Chasek, 'NGOs and State Capacity in International Environmental Negotiations: The Experience of the Earth Negotiations Bulletin', 10 *Review of European Community and International Environmental Law* (2001) 168–176 at 168–169.

[70] *Ibid*. at 170.

[71] *Ibid*.

Despite these pressures, it is interesting to note that most of the AOSIS negotiators who responded were satisfied with the performance of their negotiating bloc. AOSIS has consistently demonstrated a remarkable ability to make progress in the negotiations despite the small size and relative powerlessness of its member states. This is no minor feat, for as a negotiating bloc, AOSIS has its internal tensions and has not been successful on all fronts. It appears, however, that despite constraints on its members, a combination of factors, including the early decision to pool resources, strong leadership, and the use of a variety of negotiation strategies, has benefited AOSIS as a negotiation bloc, and enabled it to not only actively participate in and influence the UNFCCC negotiations, but also to satisfy its various constituent members as well. AOSIS' management of its members' interests and its successful negotiating strategies can, therefore, serve as a demonstrative model as to how negotiating blocs can be effective for small states that may traditionally be marginalized in multilateral negotiations.[72] Mrema and Ramakrishna state that '[f]or smaller delegations, [such] coalitions ensure and guarantee that their interests and priorities are considered; since, within such coalitions, delegations are able to gain trust and respect and thus gain support for their ideas'.[73]

The performance of AOSIS confirms the view held in international law that multilateral negotiations conducted within international organizations have been advantageous for weaker states by enabling them to have a 'greater impact on the initiation of multilateral conferences and the forming of MLTs [multilateral treaties]'.[74] Blum notes that the use of coalitions in multilateral negotiations can afford weaker states more cost-effective participation, because they can share both efforts and resources which they would have to bear alone in bilateral negotiations.[75]

The near future, however, does not look bright for the coalition within UNFCCC negotiations. Despite limited success at the latest COP16/CMP6, the effects of the acrimonious nature of the negotiations in Copenhagen linger on.[76] It was recently announced that the UN Secretary-General is to end his 'hands on' involvement with the international climate change regime in order to focus on broader issues of sustain-

[72] Note Sewell's and Zartman's approach: 'Power is the fundamental consideration in negotiations, underlying other basic values such as well-being, interests, and even existence…' in John W. Sewell and I. William Zartman, 'Global Negotiations: Path to the Future or Dead-End Street?', 6 *Third World Quarterly* (1984) 374–410 at 383. Also see Kotzian, who argues that, depending on which frame is adopted in negotiations, appeals to norms and reasoning will have an impact when the arguing frame is utilized. Peter Kotzian 'Arguing and Bargaining in International Negotiations: On the Application of the Frame-Selection Model and Its Implications', 28 *International Political Science Review* (2007) 79–99 at 93.

[73] See Mrema and Ramakrishna, 'The Importance of Alliances, Groups and Partnerships', *supra* note 44, at 190.

[74] Gabriella Blum, 'Bilateralism, Multilateralism, and the Architecture of International Law', 49 *Harvard International Law Journal* (2008) 323–379 at 341.

[75] *Ibid*. at 341. However, note Blum's assertion at 342 that multilateral negotiations are not always more beneficial to weaker states, and in some instances bilateral negotiations can be beneficial.

[76] In fact, Navroz Dubash referred to the Copenhagen negotiations as ending in 'almost [a] complete collapse'. Navroz K. Dubash, 'Copenhagen: Climate of Mistrust', 44 *Economic and Political Weekly* (2009) 8–11 at 8.

able development at the Earth Summit in Rio de Janeiro in 2012.[77] The UN Assistant Secretary-General Robert Orr explained that '[i]t is very evident that there will not be a single grand deal at any point in the near future'.[78] This development may signal a de-emphasis on the UNFCCC multilateral process for the next few years. Considering the urgency of the issue of climate change for SIDS, it may mean that AOSIS must allocate already overstretched resources to its sustainable development agenda, and push the issue of climate change through not only UNFCCC negotiations but the Rio+20 forum as well.

[77] The United Nations Conference on Sustainable Development (or Rio +20) will be held in Rio de Janeiro from 4–6 June 2012, twenty years after the United Nations Conference on Environment and Development which was held in Rio de Janeiro from 3–14 June 1992. The Rio +20 Conference has adopted two themes: (a) a green economy in the context of sustainable development and poverty eradication; and (b) the institutional framework for sustainable development. For more information see <http://www.earthsummit2012.org>.

[78] Suzanne Goldenberg, 'Ban Ki-moon ends hands-on involvement in climate change talks', *Guardian* of 27 January 2011, available at <http://www.guardian.co.uk/environment/2011/jan/27/ban-ki-moon-un-climate-change-talks?INTCMP=SRCH> (visited 28 June 2011).

South Africa's Position on Climate Change: Fiddling while the Earth Burns?

Michael Kidd[1]

1 Introduction

South Africa is a significant carbon emitter and has a role as setting an example amongst developing countries, especially Africa. South Africa, therefore, is an important player in the climate change arena.[2] This paper examines South Africa's position on climate change, with a view to ascertaining whether the official pronouncements are backed up by appropriate action. Although the policy underpinning the approach is relatively new, there are several signs that suggest that the targets may be difficult to achieve. Is South African making all the right noises but, in reality, fiddling while the earth burns?

This study of South Africa is not just a parochial evaluation but is potentially relevant to other countries situated similarly as regards economic development – as one of the so-called BRICS (Brazil, Russia, India, China and South Africa) countries, South Africa is becoming an important player on the international climate change plane. Moreover, several of the issues raised in this study are likely to resonate with the experiences of developing countries generally, not just those mentioned above.

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[2] See Fang Rong, 'Understanding Developing Country Stances on Post-2012 Climate Change Negotiations: Comparative Analysis of Brazil, China, India, Mexico, and South Africa' 38 *Energy Policy* (2010) 4582–4591.

2 Context: South Africa's greenhouse gas emissions profile

South Africa's economy is energy-intensive and largely fossil-fuel powered.[3] The most recent greenhouse gas (GHG) inventory in South Africa is for 2000, reviewed in 2009.[4] In 2000, South Africa's total GHG emissions amounted to 437.3 million tones CO_2e.[5] The principal contributors to this amount were energy supply and consumption (78.9%), industrial processes (14.1 per cent), agriculture (4.9 per cent) and waste (2.1 per cent).[6] If disaggregated by gas, 76.6 per cent is made up of carbon dioxide (CO_2), 17.5 per cent of methane (CH_4) and 5.5 per cent of nitrous oxide (N_2O).[7]

Viewed comparatively, Table 1 sets out South Africa's comparative rank by emissions for different categories, by grand total and per capita. Figure 1 represents South Africa's comparative per capita emissions ranking for 2002 for energy and cement production (i.e. excluding net emissions from land use, land use change and forestry activities (LULUCF)) compared to selected countries and categories of countries. Figure 2 represents a comparison of emissions intensity, which divides emissions by economic output ($ of GDP), with GDP measured in international dollars on a power purchasing parity basis. This indicates that South Africa is a very inefficient user of energy.

These statistics demonstrate that South Africa is a significant contributor to GHG emissions internationally. According to the World Resources Institute's analysis of the GHG emissions data for 2000, South Africa is ranked 19th in the top GHG emitting countries, the only African country in the top 25.[8]

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3 Department of Environmental Affairs, *National Climate Change Response Green Paper* (2010) at 4 (hereafter referred to as *Green Paper*). The *Green Paper* appeared in GN 1083 in GG 33801 of 25 November 2010.

4 Department of Environmental Affairs and Tourism (DEAT), *Greenhouse Gas Inventory 1990 to 2000* (2009), available at <http://www.pmg.org.za/files/docs/090812greenhouseinventory.pdf> (visited 8 December 2010).

5 *Ibid*. at iii. This figure does not include emissions or sinks relating to agriculture, land use change and forestry activities.

6 *Ibid*.

7 Calculated from figures provided in DEAT, *Greenouse Gas Inventory, supra* note 4 at 87. Cf. Thapelo Letete, Mondli Guma and Andrew Marquard, *Information on Climate Change in South Africa: Greenhouse Gas Emissions and Mitigation Options* (Energy Research Centre, 2010), available at <http://www.erc.uct.ac.za/Information/Climate%20change/Climate_change_info-complete.pdf> (visited 18 February 2011).

8 Kevin A Baumert, Timothy Herzog and Jonathan Pershing, *Navigating the Numbers: Greenhouse Gas Data and International Climate Change Policy* (World Resources Institute, 2005), available at <http://pdf.wri.org/navigating_numbers.pdf> (visited 18 February 2011) at 110. The 2000 data, although somewhat dated, although the source is particularly reliable. The United States Energy Information Administration ranks South Africa 11th internationally for carbon-dioxide emissions (which, it is important to note, is not the same as GHG emissions: see EIA analysis of South Africa's statistics, available at <http://www.eia.gov/countries/country-data.cfm?fips=SF> (visited 4 August 2011).

Table 1: South Africa's GHG emissions world ranking by indicator.[9]

	Rank by emissions	*Rank by emissions per capita*
Cumulative emissions 1950-2000, only energy CO_2	14	46
Cumulative emissions 1950-2000, CO_2 energy and LULUCF	21	63
Annual emissions 2000, CO_2 only, no LULUCF, i.e. energy CO_2	14	39
Annual emissions 2000, CO_2 only, with LULUCF	18	54
Annual emissions 2000, six gases, no LULUCF	19	47
Annual emissions 2000, six gases, with LULUCF	21	63
Annual emissions 2000, three gases, no LULUCF	19	47
Annual emissions 2000, three gases, with LULUCF	21	65

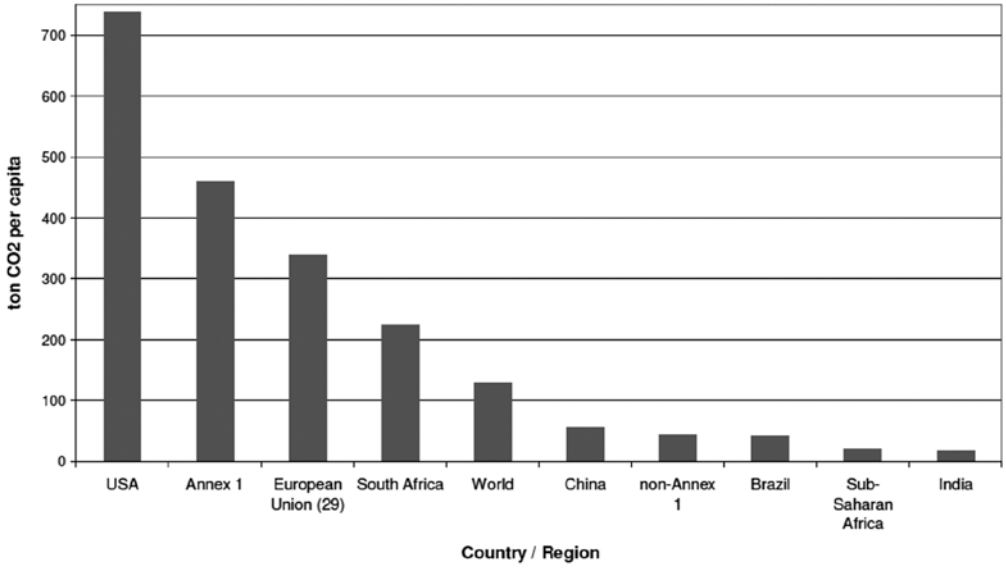

Figure 1: Comparison of 2002 CO2 emissions per GDPppp (2000 US$) from energy and cement production.[10]

[9] Table sourced from Letete et al., *Information on Climate Change, supra* note 7, at 15.
[10] *Ibid*. at 14. GDPppp is purchasing-power equivalent Gross Domestic Product.

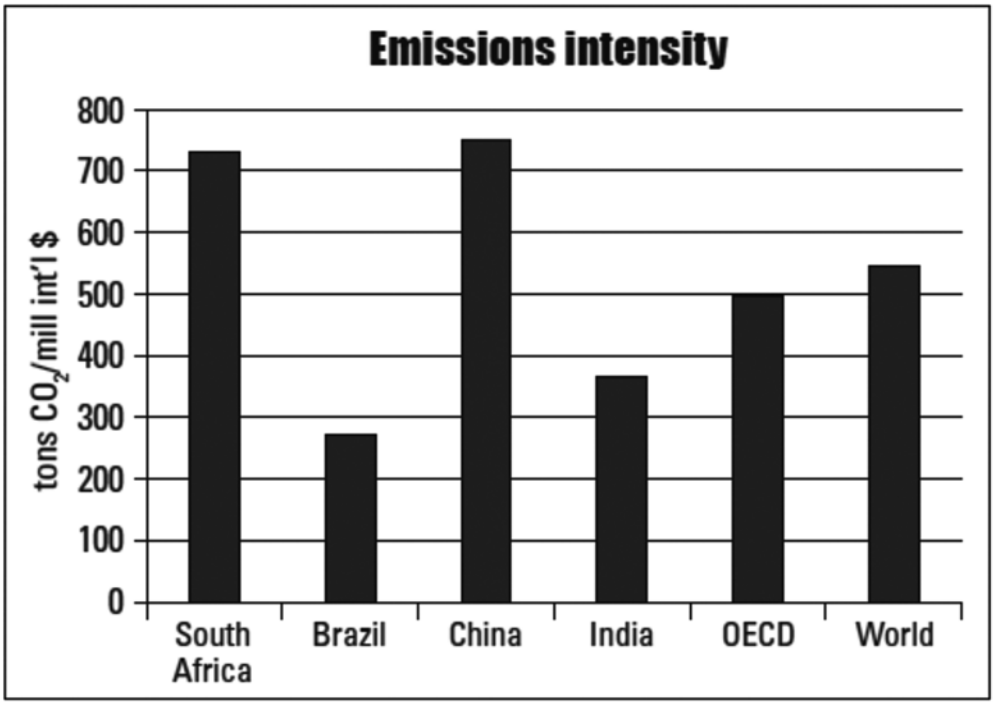

Figure 2: Comparative Emissions Intensity.[11]

3 South African policy relating to climate change

3.1 Introduction

As indicated above, the major contributor to South Africa's GHG emissions is the energy sector. In the light of this, discussion of the relevant policy must not only focus on that policy that is directly related to climate change, but also on the policy documents which focus more on energy. I will discuss the relevant policy documents in chronological order of their publication.[12]

3.2 White Paper on the Energy Policy of the Republic of South Africa 1998

The main objective of the White Paper was the integration of various energy-related policy processes and to provide policy stability for energy suppliers, investors and consumers.[13] The White Paper does expressly consider the issue of climate change in

[11] Figure sourced from Department of Environmental Affairs and Tourism, *Long Term Mitigation Scenarios: Strategic Options for South Africa* (2007) at 3.

[12] With the exception of the last two documents: I deal with the *Climate Change Green Paper* last because it is effectively the 'last word' on climate change policy in South Africa at the time of writing and it segues neatly into the next section on legislation.

[13] Department of Minerals and Energy, *White Paper on the Energy Policy of the Republic of South Africa* (December 1998) at 17. Note that, in South Africa, a White Paper is a (national) government policy

the context of the UNFCCC[14] and Kyoto Protocol,[15] but the approach adopted is to 'monitor'[16] international developments and to plan for possible 'pressure on South Africa to take greater cognisance of its global environmental impacts [which] will undoubtedly increase'.[17] Despite cognisance being taken of the climate change imperatives (likely in 1998 to have been far lower in profile than in 2010), the White Paper indicates that

> to fulfil the national energy policy of making clean, affordable and appropriate energy available to all sectors of the population, a balanced least-cost mix of energy supply is promoted. Coal will therefore dominate other energy sources in South Africa for many years to come.[18]

Nevertheless, the White Paper also commits itself to

> a "no regrets" approach in the energy sector with regard to the potential global environmental impacts of energy activities. A "no-regrets" option is defined as that which decreases and minimises environmental impacts commensurate with cost effectiveness and positive cash flow.[19]

Overall, climate change is recognized in the White Paper as one of many factors to take into account in the development of energy policy, but clearly does not attach to it the degree of importance required today.

3.3 Integrated Energy Plan 2003

The integrated energy plan is aimed at ensuring that supply meets projected demand. Various scenarios are considered, which do take into account climate change considerations.[20] The dominant consideration, however, is clearly cost. In its conclusions, the Plan states that

> coal remains the dominant primary energy source over the planning horizon. In all circumstances where cost is the major driver, coal generally emerges as the least expensive option. The use of such coal energy presupposes the increased use of

document that is usually followed by legislation that gives effect to the policy directions therein. It has no legal status (by which I mean it is not justiciable in the courts).

14 United Nations Framework Convention on Climate Change, New York, 9 May 1992, in force 21 March 1994, 31 *International Legal Materials* (1992) 849, <http://unfccc.int>.

15 Kyoto Protocol to the United Nations Framework Convention on Climate Change, Kyoto, 11 December 1997, in force 16 February 2005, 37 *International Legal Materials* (1998) 22.

16 *White Paper* at 93.

17 *Ibid*. at 92.

18 *Ibid*.

19 *Ibid*. at 93.

20 Department of Minerals and Energy, *Integrated Energy Plan for the Republic of South Africa* (2003) at 20.

> clean coal technologies. Moreover, coal remains the largest indigenous energy resource currently available.[21]

Clearly, the 'cost' referred to does not take into account the myriad externalities relating to the mining and use of coal. To be fair, the plan does recognize a role to be played by renewable energy and indicates that the 'current target for renewable energy is 10 000 GWhr by the year 2012'.[22] For the year 2000, South Africa's primary energy supply was approximately 4 782 PJ[23] and final energy demand was 2 363 PJ for the same year.[24] The target for renewable energy, therefore, is 0.75 per cent of the supply and 1.5 percent of demand at the 2000 levels. This indicates the relatively peripheral role to be played by renewable energy, especially if the 2000 levels of supply and demand will not remain at those levels, but will increase significantly.

3.4 White Paper on the Renewable Energy Policy for the Republic of South Africa 2003

This follows on from the 1998 White Paper, as that document pledged support for renewable energy. This was given added impetus by the Johannesburg Plan of Action[25] of 2002, which included the following goals:

> Diversify energy supply by developing advanced, cleaner, more efficient, affordable and cost-effective energy technologies, including fossil fuel technologies and renewable energy technologies,… [and]
>
> With a sense of urgency, substantially increase the global share of renewable energy sources with the objective of increasing its contribution to total energy supply, recognizing the role of national and voluntary regional targets'.[26]

According to the White Paper, it sets out 'Government's vision, policy principles, strategic goals and objectives for promoting and implementing renewable energy in South Africa'.[27] It has two further goals: to inform the public and the international community of the government's goals, and how the government intends to achieve them; and to inform government agencies and Organs of State of these goals, and their roles in achieving them.[28]

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[21] *Ibid*. at 25.

[22] *Ibid*. By way of comparison, according to International Energy Agency data, in 2008 Denmark produced 58 426 GWh from renewable sources and Mexico 47 303 GWh. See <http://www.iea.org/stats/renewdata.asp?COUNTRY_CODE=DK> and <http://www.iea.org/stats/renewdata.asp?COUNTRY_CODE=MX> respectively (both visited 8 December 2010).

[23] *Ibid*. at 6. PJ denotes Peta Joules, which is 1015 Joules.

[24] *Ibid*. at 7.

[25] Plan of Implementation of the World Summit on Sustainable Development, UN Doc. A/CONF.199/20 (2002).

[26] *Ibid*. para. 20(e).

[27] Department of Minerals and Energy, White Paper on the Renewable Energy Policy of the Republic of South Africa (2003) at 1.

[28] *Ibid*.

The overall vision of the White Paper is to increase the contribution of renewable energy to the energy mix, 'thus contributing to sustainable development and environmental conservation'.[29] This is an admirable objective, but the vision is somewhat limited. The White Paper sets a rather conservative target:

> 10 000 GWh (0.8 Mtoe) renewable energy contribution to final energy consumption by 2013, to be produced mainly from biomass, wind, solar and small-scale hydro. The renewable energy is to be utilised for power generation and non-electric technologies such as solar water heating and bio-fuels. This is approximately 4% (1667 MW) of the estimated electricity demand (41539 MW) by 2013. This is equivalent to replacing two (2x 660 MW) units of Eskom's combined coal fired power stations.[30]

One of the shortcomings of the White Paper, in the view of the present author, is that renewable energy is seen in the 'big picture' largely as an energy source to feed 'into the grid', rather than a source that can power individual consumers' needs. This is despite the fact that solar power, for example, is discussed in the document as being appropriate for use by individuals. 'South Africa experiences some of the highest levels of solar radiation in the World'[31] and that average daily solar radiation in South Africa varies between 4.5 and 6.5 kWh/m^2 (16 and 23 MJ/m^2), compared to about 3.6 kWh/m^2 for parts of the United States and about 2.5 kWh/m^2 for Europe and the United Kingdom.[32] These facts suggest that far greater emphasis should be given to use of solar energy for domestic power generation (not just water heating), given that solar power is used extensively in Western Europe (with far lower solar radiation) for domestic generation, to such an extent that many users sell power back to the grid.

3.5 A National Climate Change Response Strategy for South Africa 2004

This policy document[33] contains strategies

> designed to address issues that have been identified as priorities for dealing with climate change in South Africa. Whereas the national strategy must recognise international realities, including the growing pressure for quantified commitments of some kind by developing countries, including South Africa, it must be seen within the context of the present economic realities of the country and the inequitable distribution of global wealth. Thus the point of departure reflected

[29] *Ibid*.
[30] *Ibid*. at 25. Eskom (Electricity Supply Commission, translated from Afrikaans) is South Africa's parastatal electricity supply company.
[31] *Ibid*. at 20.
[32] *Ibid*., citing G. Stassen *Towards a Renewable Energy Strategy for South Africa*, Ph.D Thesis, University of Pretoria (1996).
[33] Department of Environmental Affairs and Tourism, *A National Climate Change Response Strategy for South Africa* (2004).

in this strategy is achievement of national and sustainable development objectives, whilst simultaneously responding to climate change.[34]

The document contains objectives, and 'interventions' intended to meet those objectives, as follows:[35]

- Create a synergy between national government objectives, sustainable development and climate change.
- To enable the relevant national government departments to address climate change issues in South Africa.
  - Ensure that the relevant national government directorates and sub-directorates have the capacity to carry out their assigned functions regarding climate change response, including the CDM.
  - Establish procedures for CDM projects.
- Offset South Africa's vulnerability to climate change.
  - Extension of health protection and health promotion measures.
  - Water resource management and contingency planning.
  - Adaptation of rangeland practices.
  - Adaptation in agriculture.
  - Changes in forestry practices.
  - Protecting plant biodiversity
  - Protection of animal biodiversity
  - Protecting marine biodiversity
  - Formulate actions that will offset the economic vulnerability of South Africa to climate change response measures.
- Create a national greenhouse gas mitigation plan that furthers the process of sustainable development in South Africa in the light of CDM, technology transfer, donor funding and capacity building opportunities.
  - The efforts of all stakeholders will be harnessed to achieve the objectives of the Government's White Paper on Renewable Energy (2003) and the Energy Efficiency Strategy, promoting a sustainable development path through coordinated government policy.
  - Initiating the Government's joint implementation strategy for the control of exhaust emissions from road-going vehicles.
  - Implement a transport sector mitigation programme through the National Department of Transport, in conjunction with the Government's energy efficiency strategy (2003) and the joint implementation strategy for the control of exhaust emissions from road-going vehicles.
  - Develop and implement an appropriate coal-mining sector mitigation programme through the Department of Minerals and Energy and the mining industry.

[34] At iii.

[35] These objectives and interventions are taken verbatim from the document. The interventions are the sub-bullet points.

- Implement sustainable industrial development through coordinated policies, strategies and incentives through the Department of Trade and Industry and the various industry sectors.
- Reduce greenhouse gas emissions in the agricultural sector through the National Department of Agriculture.
- Facilitate the establishment and extension of forest schemes through the Department of Water Affairs and Forestry and the forestry industry.
- Optimise waste management practices to minimise the emissions of greenhouse gases and develop a government position, through all relevant departments and all spheres of government and industry, to implement a waste sector mitigation programme.

• Optimise South Africa's potential to benefit from climate change mitigation by suitable international response and positioning.
  - Maintain an appropriate attendance at UNFCCC and related meetings.
• To ensure that government departments in all spheres work together on a cooperative basis in dealing with climate change.
  - Use the Government Committee for Climate Change to consolidate the government position.
• Ensure that South African environmental law provides for climate change issues.
  - Use the ongoing law reform process to ensure that climate change issues are provided for in South African legislation.
• Improve the level of education, training and awareness regarding climate change in South Africa and capacitate the government and other sectors to deal with climate change issues effectively to the benefit of the country.
  - Accelerate the process of relevant education, training, awareness and capacity building in South Africa to speed up the implementation of climate change response.
• Ensure that there is an effective and integrated programme of climate change research, development and demonstration in South Africa.
  - Set up a database of climate change related research, development and demonstration projects and integrate the research, development and demonstration programme for South and Southern Africa.
• Identify and put in place an information handling system that incorporates greenhouse gas data.
  - Introduce greenhouse gas emissions into air quality legislation and put in place a national information handling system that incorporates greenhouse gas data alongside air pollution data.
• Ensure that South Africa gets the best possible access to available climate change funding.
  - Ensure that an investment friendly climate is developed and maintained to attract developed country partners to invest in climate change related projects in South Africa.

- Coordination of Climate Change donor funds that are procured for South Africa.
- Involve the public sector and financing institutions linked to government, such as the Industrial Development Corporation and the Development Bank of South Africa.

The purpose of reproducing these objectives in full is twofold. First, it is interesting to assess how these objectives underpin (or do not underpin) future policy directions. Second, several of these objectives seem not to have been taken any further in the six years since they have been set out. It is interesting also to note that some of the objectives are stated in a somewhat curious way. For example, under the heading 'International concerns', the stated objective is to 'optimise South Africa's potential to benefit from climate change mitigation by suitable international response and positioning', which is quite different from the usual view that mitigation will do anything but benefit a country. Many of these issues will be picked up further in this paper, but one final element that is worth noting at this juncture is the exhortation to government to integrate its response to climate change. Whilst this is a prerequisite, in the present author's opinion, for an effective climate change response, on overall reflection it appears that this message has not been heeded. It still very much appears that the Department of Environmental Affairs is beating a lone drum in this respect.[36]

3.6 Long Term Mitigation Scenarios 2008

In March 2006, the Cabinet of the South African government commissioned a process aimed at examining greenhouse gas mitigation options. The purpose of the Long Term Mitigation Scenarios (LTMS) document[37] was 'to outline different scenarios of mitigation action by South Africa, to inform long-term national policy and to provide a solid basis for our position in multi-lateral climate negotiations on a post-2012 climate regime'.[38]

The scenarios were sketched between two limits: the 'growth without constraints' (GWC) limit and the 'required by science' (RBS) limit, the latter based on a reduction of emissions of between 30 and 40 per cent from 2003 levels by 2050. The document examines various interventions (referred to as 'wedges' in the document due to their shape if represented graphically) that can be used to reduce the GWC levels closer to the RBS level, although the gap cannot be closed completely, according to the document. These 'wedges' include a wide variety of interventions, some of

[36] By this I am not suggesting that other government sectors, such as the Department of Foreign Affairs, which is obviously involved in the international negotiations, are completely ignoring climate change. I am referring to government sectoral approaches, largely in relation to domestic developmental policy, where lip service may be paid to climate change concerns but there is not much, if anything, to suggest a departure from business as usual.

[37] Energy Research Centre, *Long Term Mitigation Scenarios: Technical Summary* (2007).

[38] *Ibid*. at 2.

which can be implemented immediately and others introduced only later. They include responses ranging from the general, such as energy efficiency, to the more specific – such as the use of 'cleaner coal' in energy generation and changes in the transport sector including increased use of public transport and moving from road to rail for freight transport.

The document highlights the important role that can be played by economic instruments, including CO_2 taxes and incentives for renewable electricity, solar water heating and biofuels. Interestingly, it was reported that a senior official in the Department of Environment told the Parliamentary Committee in a briefing on the scenarios document that it was the 'first document to be published by the Department that spoke of climate change',[39] ignoring completely the *National Climate Change Response Strategy for South Africa* of 2004.

3.7 Integrated Resource Plan for Electricity 2009

In January 2008, South Africa experienced the debilitating phenomenon of 'load shedding', where the available supply of electricity did not meet the demand. In order to avoid unpredicted blackouts, load shedding entailed particular areas experiencing scheduled cuts in power supply for a specific period of time. As it turned out, the situation was not permanent, and things eventually returned to normal.[40] The spectre of load shedding, however, has not been permanently consigned to history and there are prospects of electricity supply battling to meet anticipated demand in the future, which is the context within which the Integrated Resource Plans (2009 and 2010 – see below) must be considered.

The Integrated Resource Plan (IRP) for Electricity is required by electricity regulations on new generation capacity in terms of the Electricity Regulation Act.[41] Its significance to climate change policy is that electricity generation is a significant source of GHG emissions in South Africa. The IRP 'gives effect to the following policy objectives':[42]

> (i) 10 000 Gwh (approximately 4 per cent of the energy mix) of renewable energy usage;
> (ii) the implementation of Energy Efficiency and Demand Side Management through financial incentives scheme (*sic*); and
> (iii) installation of one million solar water heaters.

[39] Parliamentary Monitoring Group, available at <http://www.pmg.org.za/report/20080610-climate-change-and-long-term-mitigation-strategies> (visited 7 February 2011).

[40] See Terence Creamer, 'Why SA is load shedding when demand is peaking at a mere 33 000 MW' *Engineering News Online* of 24 January 2008, available at <http://www.engineeringnews.co.za/article/why-sa-is-load-shedding-when-demand-is-peaking-at-a-mere-33-000-mw-2008-01-24> (visited 3 February 2011).

[41] Act 4 of 2006.

[42] GN 1243 in GG 32837 of 31 December 2009 at 10.

The IRP contains a schedule of power-generation sources including two new coal-fired power stations (Medupi and Kusile) and makes it clear (although not using express words to the effect) that coal remains the primary energy source. From the policy objectives stated above it is also manifestly clear that renewable energy sources are regarded very much as peripheral.

3.8 Integrated Resource Plan 2 2010

At the time of writing, the final IRP2 (as the 2010 Integrated Resource Plan is termed) has not yet been released. A draft was released in October 2010, amidst concerns about lack of transparency and public involvement in its formulation, as well as an expected 'bias' against renewable energy.[43] According to the draft IRP, its primary objective is 'to determine the long-term electricity demand and detail how this demand should be met in terms of generating capacity, type, timing and cost'.[44] The IRP is based on certain assumptions: a GDP growth trajectory of on average 4.5 per cent over the next 20 years which will require 41 346 MW of new capacity; at least 3420 MW of demand side management programmes as well as gradual reduction in energy intensity due to, inter alia, increased energy efficiency.[45] The plan anticipates bulk demand being provided principally by coal-fired generation (due, inter alia, to the low direct costs of coal and South Africa's high coal reserves), despite the recognition of the external costs of such an approach. The bottom line is that renewable energy, although provided for in the plan, is still accorded a peripheral role.

3.9 Carbon Tax Discussion Document

This discussion document[46] concludes that a carbon tax appears to be the most appropriate economic instrument to reduce GHG emissions in the country. According to the document

> [w]hile it would not guarantee a fixed quantitative reduction in such emissions over the short term, a carbon tax set at an appropriate level and phased in over time would provide a strong price signal and certainty to both producers and consumers, acting as an incentive for more environmentally friendly behaviour over the long term.[47]

Implementation of a carbon tax in South Africa should be 'informed by' the following policy considerations:[48]

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[43] Leonie Joubert, 'Energy policy' *Business Day* 12 July 2010, available at <http://www.businessday.co.za/Articles/Content.aspx?id=114454> (visited 2 February 2011).

[44] Executive summary of IRP 2010 at vi.

[45] *Ibid*.

[46] National Treasury, *Reducing Greenhouse Gas Emissions: The Carbon Tax Option* (2010), Discussion Paper for Public Comment.

[47] *Ibid*. at 9.

[48] *Ibid*. at 9–10.

- In the absence of an international climate change agreement and a global emissions pricing system, a partial, rather than full, internalisation of the externality should be targeted as an interim measure.
- While a carbon tax based on measured and verified emissions is preferred, a proxy tax can be considered and levied according to the carbon content of fossil fuels (i.e. a fuel input tax). A tax of R75 per ton of CO2 and with an increase to around R200 per ton CO2 (at 2005 prices) would be both feasible and appropriate to achieve the desired behavioural changes and emission reduction targets.
- The carbon tax should be introduced at a modest rate, which will increase over a set time period, giving taxpayers an opportunity to adjust to the new tax.
- The tax should, over time, be equivalent to the marginal external damage costs of carbon.
- Coverage should be comprehensive, covering all sectors.
- Relief measures, if any, should be minimised and temporary. The design of the tax needs to minimise the potential regressive impacts on low-income households and protect the competitiveness of key industries. Revenue recycling to minimise the costs of the tax could be achieved through some form of tax shifting. The full earmarking of revenues is not in line with sound fiscal policy principles, although some form of on-budget funding for specific environmental programmes should be considered.

The carbon taxes discussion document will be followed (in 2011 apparently) by a discussion document on emissions trading.[49] Clearly, market mechanisms are an important component of a comprehensive response to climate change, as recognized in the *Climate Change Green Paper* (see below). It is strange, however, that there is no direct reference in the *Green Paper* to this document, and vice versa.

3.10 National Climate Change Response Green Paper 2010[50]

The purpose of the policy outlined in the Green Paper, which appeared late in 2010, is to commit South Africa to making

> a fair contribution to the stabilisation of global greenhouse gas concentrations in the atmosphere and the protection of the country and its people from the impacts of unavoidable climate change. It presents the Government's vision for an effective climate change response and the long-term transition to a climate resilient and low-carbon economy and society – a vision premised on Government's commitment to sustainable development and a better life for all.[51]

[49] *Ibid*. at 10.
[50] GN 1083 in *GG* 33801 of 25 November 2010.
[51] *Ibid*. at 5.

The Green Paper sets out the following strategies that require implementation in order to achieve the country's climate change response objectives:[52]

- Taking a balanced approach to both climate change mitigation and adaptation responses in terms of prioritisation, focus, action and resource allocation.
- Prioritising the development and maintenance of the science-policy interface and knowledge management and dissemination systems to ensure that climate change response decisions are informed by the best available information.
- The short-term prioritisation of adaptation interventions that address immediate threats to the health and well-being of South Africans including interventions in the water, agriculture and health sectors.
- The prioritisation of mitigation interventions that significantly contribute to a peak, plateau and decline emission trajectory where greenhouse gas emissions peak in 2020 to 2025 at 34 per cent and 42 per cent respectively below a business as usual baseline, plateau to 2035 and begin declining in absolute terms from 2036 onwards, in particular, interventions within the energy, transport and industrial sectors.
- The prioritisation of mitigation interventions that have potential positive job creation, poverty alleviation and/or general economic impacts. In particular, interventions that stimulate new industrial activities and those that improve the efficiency and competitive advantage of existing business and industry. In order to accurately identify these sectors and the job creation, industrial development potential of these, work will be done in order that the White Paper provides a clear understanding and prioritisation of these and their potential.
- Prioritising the development of knowledge generation and information management systems that increase our ability to measure and predict climate change and, especially extreme weather events, floods, droughts and forest and veld fires, and their impacts on people and the environment.
- The mainstreaming of climate change response into all national, provincial and local planning regimes.
- The use of incentives and disincentives, including through regulation and the use of economic and fiscal measures to promote behaviour change that would support the transition to a low carbon society and economy.
- Acknowledging that, with the energy intensive nature of the South African economy, the mitigation of greenhouse gases is generally not going to be easy or cheap and that Government must support and facilitate the mitigation plans of, in particular, the energy, transport and industrial sectors.
- The recognition that sustainable development is also climate friendly devel-

[52] Reproduced verbatim from the document at 6–7.

opment and that the more sustainable our development path is, the easier it will be to build resilience to climate change impacts.

- Recognise that measures taken by developed countries in their efforts to respond to climate change may have detrimental effects on high carbon and energy intensive economies such as South Africa. These response measures may include trade measures including border tax adjustments, and could be reflected in a reluctance to trade in goods with a high carbon footprint. South Africa's climate change strategy must recognise and address this and also create mechanisms that will give high carbon sectors the support and time to move to lower carbon forms of production.
- Recognise that South Africa's response to climate change will have major implications for both the Southern African region and for Africa as a whole and ensure that national responses are aligned to, support and operate as part of a broader regional response.

The Green Paper considers policy approaches in the context of, first, those sectors of South African society that most require adaptation (viz. water, agriculture and human health) and, second, those sectors where mitigation will be most important (energy, industry and transport). The document also considers three other important sectors – disaster risk management; natural resource sectors; and human society, livelihoods and services. The approach is to identify, for each of these sectors, the key challenges or impacts and then to set out the policy responses, which take the form of actions (for example, in the context of water, to 'continue to develop and maintain good water management systems and institutions, from village through to national level, to ensure we achieve our equity objectives, and can sustain affordable provision of water to all').[53]

Many of the identified actions involve increased research, investigation or 'exploration' of various issues, which is not unexpected in a document such as this. There are also several actions involving developing awareness, the development of more issue-specific plans and strategies, and increased investment in infrastructure – both maintenance and expansion. In light of the fact that this is not the place to evaluate each policy response individually, only certain of these responses will be highlighted here because they are noteworthy in the sense that they influence the overall policy framework, or, as this is essentially a legal analysis, because they envisage direct legal responses.[54]

Responses that are interesting from a general policy-direction perspective primarily relate to energy. The Green Paper recommends that a 'climate constraint' be integrated into the Integrated Energy Plan (IEP) and the Integrated Resource Plan for

[53] *Ibid*. at 9.

[54] Many of the actions identified may eventually have to be implemented by means of regulation. The current exercise examines only those where there is a direct regulatory device mentioned or clearly envisaged in the stated policy response.

Electricity Generation (IRP).[55] It would probably be argued by the originators of these documents (IEP and IRP) that this has been done, but the extent to which this integration has been taken on board in a real, as opposed to window-dressing, manner is a concern.

An important commitment is the recommendation to review and 'scale up' the 10 000 GWh 2013 Renewable Energy target 'in order that it can sustain long term growth in order to promote competitiveness for renewable energy with conventional energies in the medium and long term'.[56] Although this is a desirable direction if a genuine approach to reduction of GHG emissions is to be sustained, the absence of a more specific target may well permit minimal improvements in this regard, to the extent that any gains have an insignificant overall impact.

Likely to be a contentious response is the suggestion that the potential for nuclear energy be explored and further developed.[57] It is clear that nuclear energy will have to be included in discussions of the appropriate future energy mix for the country, but it is clear from widespread opposition to the proposed pebble bed reactor[58] that any nuclear development will have to be well justified and demonstrably beneficial to South Africa's interests.

It is also interesting that some of the stated policy responses (worded in such a way as to suggest that they are new initiatives, not bolstering of existing activities) are either clearly already being done (at least on paper) or are arguably contained in existing activities or regulatory requirements. For example, one of the responses is to 'ensure that a comprehensive biodiversity monitoring system is established that can provide timely information on specific risks'.[59] The wording suggests that this is something that needs to be established in the future, but it is exactly what is provided for already in the National Environmental Management: Biodiversity Act[60] in Chapter 3.

Responses requiring legal innovations are found throughout the document. Those that relate to improved implementation of, or the securing of compliance with, existing legislation are: the acceleration of the 'finalisation and implementation of cost reflective water and water-use pricing including effluent charges';[61] and the 'vigorous'

[55] Green Paper §5.4.1
[56] *Ibid*. at §5.4.7
[57] *Ibid*. at §5.4.9
[58] In 2004, Eskom announced that South Africa would build a pebble bed modular (nuclear) reactor. There was strong opposition to this (see, for example, John Yeld, 'Pebble bed fuel gets go-ahead', *Cape Argus* 8 of 30 January 2007. As costs mounted, and in the face of lack of investment, the South African government decided to terminate the project in September 2010 (see government announcement, available at <http://www.southafrica.info/news/pbmr-mothballed.htm> (visited 4 August 2011).
[59] *Ibid*. at §5.8.4
[60] Act 10 of 2004.
[61] Green Paper at §5.1.4

enforcement of compliance with water quality standards.[62] The extension of existing regulatory mechanisms is envisaged in the recommendation to 'reduce the incidence of respiratory diseases by improving air quality through reducing ambient particulate matter (PM) and sulphur dioxide (SO2) concentrations by legislative and other measures to ensure full compliance with National Ambient Air Quality Standards by 2020';[63] the use of s 29(1) of the National Environmental Management: Air Quality Act,[64] to manage GHG emissions from all significant industrial sources (i.e. sources responsible for greater than 0.1 per cent of total emissions for the sector) 'in line with approved mitigation plans prepared by identified industries and/or sectors';[65] and to ensure that the Minimum Requirements for Landfills are revised and amended to reflect greenhouse gas mitigation considerations by 2012.[66]

The setting of mandatory (presumably legally required) targets and frameworks are also envisaged in several responses, without specifying existing legislation in terms of which this may be done: these include the development of renewable energy policy, legal and regulatory frameworks;[67] and the setting of 'ambitious and mandatory' targets for energy efficiency – 'made mandatory through available regulatory instruments and other appropriate mechanisms'.[68] The latter is something that can be done without much difficulty in order to reduce, not insignificantly, energy usage.[69]

The establishment of new legislative interventions is envisaged by several policy responses. This will necessitate research in order to develop appropriate legislation for the South African context, but this will be facilitated by the fact that several of these regulatory mechanisms are in place in other countries. The introduction of a carbon tax is placed on the agenda twice: one response urges the use of 'market-based policy measures such as an escalating carbon tax to price carbon and internalise the external costs of climate change';[70] whilst a second suggests that South Africa '*continue to* develop and implement an escalating CO2 tax on all energy related CO2 emissions, including process emissions from the coal to liquid fuel process'.[71] The United States is currently increasing legislative efforts to require energy efficiency.[72]

Various energy-efficiency measures are recommended, which will probably require new legislation: the development and implementation of 'mandatory appliance label-

[62] *Ibid*. at §5.1.11
[63] *Ibid*. at §5.3.1. Such standards are set in terms of s9, 10 and 11 of the National Environmental Management: Air Quality Act 39 of 2004.
[64] See further discussion on this below.
[65] Green Paper at §5.5.3
[66] *Ibid*. at §5.9.21
[67] *Ibid*. at §5.4.10
[68] *Ibid*. at §5.4.13
[69] See Lester R Brown, *Plan B 4.0: Mobilizing to Save Civilization* (W. W. Norton & Company, 2009) at 84–6.
[70] Green Paper at §5.4.3
[71] *Ibid*. at §5.5.4
[72] John M Broder, 'Obama orders new rules to raise energy efficiency', *New York Times* of 5 February 2009, available at <http://www.nytimes.com/2009/02/06/us/politics/06energy.html> (visited 4 February 2011).

ling for household appliances';[73] the introduction of 'Minimum Energy Performance Standards (MEPS) for appliances and equipment, as well as proposals for mandatory energy rating labelling';[74] and the legislation of 'requirements for the installation of energy management systems in large-scale office buildings'.[75] Related to the latter is the recommendation to mandate the 'National Home Builders Registration Council (NHBRC) to ensure that building construction conforms to green building requirements, including measures such as use of controlled ventilation, recycled material, [and] solar power'.[76] The energy-saving benefits of so-called 'green buildings' are clear,[77] and the European Union has a Directive on the energy performance of buildings which can provide South Africa with guidance in this regard.[78] Also probably requiring new legislation will be the objective of promoting the 'development and implementation of appropriate standards and guidelines and codes of practice for the appropriate use of renewable energy, energy efficient and low carbon technologies'.[79]

Another legislative innovation will be the development of a 'legislative policy and regulatory framework to support carbon capture and storage'.[80] It is likely that the Australian lead in legislating for the storage of greenhouse gas will be instructive in this regard.[81]

Finally (on the legal theme), there are responses relating to reporting of emissions. The Green Paper recommends the development, implementation and maintenance of a 'greenhouse gas emissions information management system in respect of the energy sector that provides accurate, up to date and complete information to the South African Air Quality Information System's National Greenhouse Gas Inventory hosted by the South African Weather Service'.[82] Such a greenhouse gas emissions information management system must provide 'measurable, reportable and verifiable information on all significant interventions (i.e. interventions that reduce greenhouse gases by greater than 0.1% of emissions from the sector)'.[83] A similar response requires the 'mandatory submission of greenhouse gas emission data to the National Atmospheric Emission Inventory by all significant emitters and compilers of greenhouse gas emission related data and/or proxy data by 2013'.[84]

[73] Green Paper at §5.4.15
[74] *Ibid*. at §5.4.16
[75] *Ibid*. at §5.4.17
[76] *Ibid*. at §5.9.8
[77] Brown, *Plan B 4.0, supra* note 69, at 87–91.
[78] Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings.
[79] Green Paper at §5.4.22
[80] *Ibid*. at §5.4.23
[81] See the Offshore Petroleum Amendment (Greenhouse Gas Storage) Act 2006 (Cth); the Greenhouse Geological Sequestration Act 208 (Vic) and the Greenhouse Gas Storage Act 2009 (Qld).
[82] Green Paper at §5.4.19. See, further, Rina Taviv, Stanford Mwakasonda and Jongikhaya Witi, *Developing the GHG inventory for South Africa* (2008).
[83] Green Paper at §5.4.20
[84] *Ibid*. at §8.4.2

As for governance, the Green Paper contains some important responses. The document commits all government departments and all state owned enterprises – (i) 'by 2012, [to] conduct a review of all policies, strategies, legislation, regulations and plans falling within its jurisdiction or sphere of influence to ensure full alignment with the National Climate Change Response Policy' (NCCRP); and (ii) by 2014, to 'ensure that all policies, strategies, legislation, regulations and plans falling within its jurisdiction or sphere of influence are fully aligned with the [NCCRP]'.[85] Insofar as governance structure is concerned, the Green Paper envisages the formation of the Interministerial Committee on Climate Change, at executive (Cabinet) level. The Committee is intended to 'foster the exchange of information, consultation, agreement, assistance and support among the spheres of government with respect to climate change and government's response to climate change'. Integration throughout government of climate change response actions is critical and it is important, therefore, that this Committee plays a central role to achieve this.

The Green Paper also deals with issues of resource inputs (for example, financing climate change responses) and monitoring, evaluation and review. As with most policies, the acid test will be the way in which the policy is translated into action. The implementation of the policy will ultimately, for the most part, have to be carried out by means of legislation, whether by means of using or amending existing laws (such as the Air Quality Act)[86] or by enacting dedicated climate change response legislation. Several responses, as pointed out above, require further research or examination as to appropriate ways of addressing the issue in question, which suggests that a single enactment may be delayed too long (pending completion of all the underlying research and investigation) in order to be optimally effective. If climate change response is to use existing law, it is necessary to examine what the law currently entails as far as climate change is concerned.

4 South African law relating to climate change

Currently, South Africa has little in the way of legislation that directly addresses climate change issues, although there are some specific legislative provisions that can be used for that purpose and a legislative framework which arguably requires more pro-action by government in this regard.

At the apex of South Africa's legal system is the Constitution, including a Bill of Rights, which 'applies to all law, and binds the legislature, the executive, the judiciary

[85] *Ibid*. at §6.1
[86] National Environmental Management: Air Quality Act 39 of 2004.

and all organs of state'.[87] The Constitution includes the so-called 'environmental right'[88] which provides

> Everyone has the right…
> (a) to an environment that is not harmful to their health or well-being; and
> (b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that-
> (i) prevent pollution and ecological degradation;
> (ii) promote conservation; and
> (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

Added to this are the national environmental management principles in the National Environmental Management Act,[89] which principles revolve around the concepts of people being at the centre of environmental management and sustainable development. Section 24 of the Constitution together with the national environmental management principles arguably requires the South African government to address climate change and its possible impacts on South Africa, by means of legislation and other reasonable measures.

When it comes to addressing GHG emissions, the National Environmental Management: Air Quality Act[90] has potential. Although the Act contains no express reference to 'climate change',[91] it does provide that an atmospheric emission licence must contain greenhouse gas emission measurement and reporting requirements.[92] In addition, the Act provides for the declaration of 'priority air pollutant',[93] and this section could be used to declare GHGs as priority pollutants. Priority pollutants would then be specially regulated by means of pollution prevention plans provided for in respect of the specific pollutants. This is, in fact, envisaged by the Green Paper.[94] At the time of writing, the power in s 29 has not yet been used for this purpose, and it is important to note that it is a directory provision, not a mandatory one, so there is no compulsion on the Minister to make such a declaration.

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87 Section 8(1) of the Constitution of the Republic of South Africa 1996.
88 Section 24.
89 Act 107 of 1998.
90 Act 39 of 2004. Hereafter referred to as the Air Quality Act.
91 There is an oblique reference in the Preamble.
92 Section 43(1)(*l*).
93 Section 29, which provides (in s 29(1)) that

> The Minister or MEC may, by notice in the *Gazette*-
> *(a)* declare any substance contributing to air pollution as a priority air pollutant; and
> *(b)* require persons falling within a category specified in the notice to prepare, submit to the Minister or MEC for approval, and implement pollution prevention plans in respect of a substance declared as a priority air pollutant in terms of paragraph (*a*).

94 See text corresponding to *supra* note 54.

Also relevant is the Electricity Regulation Act,[95] under which regulations were promulgated requiring the periodic production of the Integrated Resource Plans, as discussed above.[96] The Act contains amongst its objectives the achievement of efficient, effective, sustainable and orderly development and operation of electricity supply infrastructure in South Africa; ensuring that the interests and needs of present and future electricity customers and end users are safeguarded and met, having regard to the governance, efficiency, effectiveness and long-term sustainability of the electricity supply industry within the broader context of economic energy regulation in the Republic; and the promotion of the use of diverse energy sources and energy efficiency.[97] There is, however, no explicit reference to climate change considerations in the Act.

Finally, in 2010, the Minister of Finance announced in his budget speech a flat rate CO_2 emissions tax on new motor vehicles, with effect from 1 September 2010.[98]

Although South Africa's law relating to climate change is currently sparse, legislative innovation seems certain in the light of the Green Paper's recommendations and South Africa's commitments to GHG emissions reduction made on the international plane, to which our attention now turns.

5 South Africa's recent role in international climate change negotiations

South Africa ratified the Framework Convention on 29 August 1997 and the Kyoto Protocol on 31 July 2002. It is a Non-Annex I party to the Convention.[99] During the approach to the United Nations Climate Change Conference (incorporating COP15 and CMP5) in Copenhagen, Denmark in December 2009, South Africa was aligned with the common African position as set out in the Nairobi Declaration on the African Process for Combating Climate Change.[100] The salient features of the declaration were commitments to

- urge developed countries to set ambitious targets to reduce their emissions, by 2020, of at least 40 per cent below 1990 levels, and, by 2050, by between 80 and 95 per cent below those levels, and to achieve the concentration of 450 ppm of carbon dioxide equivalent in the atmosphere;

[95] Act 4 of 2006.
[96] Electricity Regulations on New Generation Capacity: GN R721 GG 32378 of 5 August 2009.
[97] Section 2.
[98] See National Treasury, *Press Release regarding CO2 vehicle emissions tax* (26 August 2010), available at <http://www.treasury.gov.za/comm_media/press/2010/2010082601.pdf> (visited 7 February 2011).
[99] Annex I parties are generally developed countries or countries with their economies in transition. Non-Annex I parties are generally developing countries.
[100] This document is available at <http://www.unep.org/roa/Amcen/Amcen_Events/3rd_ss/Docs/nairobi-Decration-2009.pdf> (visited 4 February 2011).

- urge developed countries to support Africa by providing finance, technology and capacity-building in a measurable, reportable and verifiable manner;
- reaffirm African nations' strong commitment that adaptation for climate change is the first priority at the national and regional levels; and
- agree that any African climate change mitigation efforts will be voluntary and will require adequate financing, technology and capacity support.

Inter Press Service then reported that, the day before the Copenhagen Conference, South Africa broke ranks from the common African position and announced a (conditional) 34 per cent reduction in GHG emissions from business as usual by 2020 and 42 per cent by 2025.[101] This 'commitment' will be discussed in more detail below. The Conference itself was a frustrating process for those who expected a binding agreement, with the eventual compromise result being the Copenhagen Accord – a 'political rather than … legal'[102] document which parties decided to 'take note of' rather than adopt. Even this limited outcome, however, was only possible due to the breaking of an impasse through negotiations of a smaller group of 28 countries, followed by an even smaller meeting involving the presidents of the BASIC countries[103] together with the President of the United States.[104]

The Accord 'requires' of developing countries (including South Africa) that nationally appropriate mitigation actions (NAMAs) that receive international support (for instance, funding and technical support) 'will be subject to international measurement, reporting and verification (MRV) in accordance with guidelines adopted by the Conference of the Parties'.[105] As for NAMAs that do not receive support, developing countries are required to submit their mitigation actions in a defined format for compilation by the UNFCCC Secretariat; non-Annex I parties are required to 'implement' the actions; and such actions will be subject to domestic MRV to be reported biennially.[106]

South Africa 'associated itself' with the accord,[107] but made it clear in its communication to the Secretariat that

> … the extent to which this action will be implemented depends on the provision of financial resources, the transfer of technology and capacity building support by developed countries … [and] … requires the finalisation of an ambitious, fair, effective and binding multilateral agreement …

[101] Servaas van den Bosch, 'South Africa's empty promise' (15 December 2009), available at <http://allafrica.com/stories/200912150890.html> (visited 4 February 2011).
[102] Daniel Bodansky, 'The Copenhagen Climate Change Conference: A Postmortem' 104 *American Journal of International Law* (2010) 230–240 at 235.
[103] Brazil, South Africa, India and China.
[104] Bodansky, 'The Copenhagen Climate Change Conference', *supra* note 102, at 234.
[105] Decision 2/CP.15 'Copenhagen Accord', in Report of the Conference of the Parties on its 15th sess., UN Doc. FCCC/CP/2009/11/Add.1 (2010), Addendum, para 5.
[106] *Ibid*.
[107] Letter from South African Government to the UNFCCC Secretariat dated 29 January 2010.

As for the future, and as will be expanded on further below, any commitment that South Africa has made to reducing GHG emissions is contingent on, inter alia, the finalization of a binding multilateral agreement. Since such agreement will have to include both the United States and China, prospects for such an agreement do not look good at the moment.

6 Analysis

6.1 Introduction

The 2010 National Climate Change Response Green Paper states as an objective that South Africa is aiming at a 34 per cent reduction in GHG emissions from business as usual by 2020 and 42 per cent by 2025.[108] This corresponds to the announcement made the day before the Copenhagen Conference in late 2009. The first aspect to note about this objective is that it is not a reduction in absolute terms, but a reduction from 'business as usual', which is unrestrained growth. Emissions will, therefore, continue to grow, but at a lower rate than would have been the case in the absence of mitigation actions. The second observation is that this 'commitment' is contingent on international support (technology and funding) and the finalization of 'an ambitious, fair, effective and binding multilateral agreement'.[109] In the analysis that follows, an evaluation will be made as to whether this is a realistic objective or whether it is an 'empty promise' behind which South Africa continues to fiddle while the earth burns. Several issues will be discussed here which may contribute to this evaluation.

6.2 Continued reliance on coal

In the 2003 Integrated Energy Plan, untapped coal reserves in South Africa are estimated at 55 billion tonnes, and coal is regarded as 'plentiful and inexpensive to exploit'.[110] Various scenarios were raised in that plan, but notwithstanding different policy approaches envisaged in these scenarios, the Plan concluded that 'coal remains the dominant primary energy source over the planning horizon'.[111] This thinking has not changed in the intervening period and renewable energy is still seen as a fringe source. In the 2009 Integrated Resource Plan, central sources of electricity for the short- to medium-term are seen to be the Medupi coal-fired power station (the first unit of which will be commissioned in 2012), and the Kusile coal-fired station (the first unit of which to be commissioned in 2013). The IRP2 process, which is yet to see a final document, has been criticized on the basis that the drafters of the plan

[108] Green Paper at §4.
[109] See *supra* note 107.
[110] Department of Minerals and Energy, *Integrated Energy Plan for the Republic of South Africa* (2003) at §3.
[111] *Ibid*. at §6.

assume that coal and nuclear are the only real power-generation options for the next few decades.[112]

In evaluating the suitability for South Africa of increased coal-fired energy generation (not only in respect of climate change), it is instructive to consider some of the characteristics of the Medupi Power Station, as an example. When Medupi is fully operational, it will be producing 4 800 MW of power (more than a tenth of total current capacity), and also producing of 30Mt of CO_2.[113] It is scheduled to commence operation in 2012, but to become fully operational only some time after that. Controversially, Eskom accessed a loan from the World Bank of US$3 billion in order to construct the project.[114] The power station will reportedly require 14.6 Mt of coal annually for the next 40 years[115] and will require enormous amounts of water in a region of the country which is already facing water stress.

Underlying increased future reliance on coal is the fact that coal is regarded as cheap. This notion ignores the externalities of mining and using coal. Ironically, at the time of writing, some concerns are being raised about the rising cost of coal internationally, which may possibly impact negatively on the cheap coal assumption which underpins South Africa's energy policy.[116] The 'cheap coal' assumption is a fundamental foundation of the apparent assumption that coal-fired energy is necessary for development, which is considered in the next section. Before examining that, however, it is worth quoting the Minister of Energy Affairs in her budget speech of 2010, who stated that

> [w]orking together with the Department of Science and Technology and through SANEDI (our energy research entity), we will find home grown scientific answers to the issue of carbon capture and storage as well as *using our abundant coal reserves to produce clean forms of energy to reduce greenhouse emissions*.[117]

With this kind of thinking in government, one wonders how realistic the emissions reduction targets are.

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[112] Joubert, 'Energy policy', *supra* note 43.

[113] Carol Paton, 'Hot Air v Action', *Financial Mail* of 29 July 2010, available at <http://www.fm.co.za/Article.aspx?id=116438> (visited 7 February 2011).

[114] Janice Roberts, 'World Bank approves Eskom loan', *Mail & Guardian* of 9 April 2010. For criticism, see, for example, Khadija Sharife, 'South Africa: Country's Dirty Secret – Eskom and the Medupi Power Plant', available at <http://allafrica.com/stories/201005140838.html> (visited 7 February 2011).

[115] Jonathan Faurie, 'Medupi project on track for scheduled delivery', *Engineering News Online* of 5 December 2008, available at <http://www.engineeringnews.co.za/article/medupi-project-on-track-for-scheduled-delivery-2008-12-05> (visited 7 February 2011).

[116] Chris Yelland, 'Analysis: Eskom pushing for coal price controls, mining regulation', *The Daily Maverick* of 7 February 2011, available at <http://www.thedailymaverick.co.za/article/2011-02-04-analysis-eskom-pushing-for-coal-price-controls-mining-regulation> (visited 7 February 2011).

[117] 2010 Budget Speech by Ms. Dipuo Peters, MP, Minister of Energy, 20 April 2010 at 5.

6.3 Will burning more coal reduce poverty?

Government officials persist in insisting that development (or economic growth) is dependent on more cheap electricity (or, in other words, more electricity generated by coal).[118] While this may appear to be intuitively self-evident, one must interrogate this notion in order to ask exactly what type of development is required or why economic growth is so important. Ultimately, the government is concerned with reduction of poverty and increased employment.[119] The crucial question must be, therefore, whether the type of development that needs substantially more cheap electricity is that which will address poverty and unemployment.

Economic analysis in recent years has indicated that modest growth in GDP has been accompanied by widespread substitution of labour by capital equipment.[120] Moreover, 'as the economy has become more capital-intensive it has also become more unequal, showing increasing job losses and increased labour productivity, with no 'trickle-down effect' experienced by the poor'.[121] In addition, the cheap cost of energy has resulted in the economy becoming highly energy-intensive, 'with more energy used to produce equivalent levels of economic output than in most other countries'.[122] In the light of these observations, it has been argued that 'the trajectory of growth must shift towards labour intensive industries, and away from the current emphasis on mining and refining and relatively high class consumer durables' so as to ensure that the poor have access to productive assets.[123]

Some observations that might serve to add further doubt to the government's line (which one commentator describes as 'simplistic nonsense')[124] are:

> Firstly, in the late 1980s, the 1990s and the early 2000s, when Eskom's price of electricity was by far the lowest in the world, South Africa's economic growth rate was low and its rate of unemployment was very high.

[118] See Yelland, 'Analysis: Eskom', *supra* note 116, who puts it thus: the premise is that

> abundant, cheap coal for the generation of electricity in South Africa is good for Eskom, for commerce and industry, for the economy and the country and ultimately for the consumer. Eskom claims increases in the cost of coal will lead to an increased price of electricity, which has a negative impact on GDP and economic growth and, therefore, a negative impact on employment.

[119] See, for example, President Zumas' State of the Nation Address of 11 February 2010.

[120] H. Bhorat, S. Dieden and J. Hodge, *The Impact of Structural and Production Method Changes on Employment Growth of Occupational Groups in South Africa*, 6 Trade and Industry Monitor (1998). See also Harald Winkler (ed.), *Energy Policies for Sustainable Development in South Africa. Options for the Future* (Energy Research Centre, University of Cape Town, 2006), available at <http://www.iaea.org/OurWork/ST/NE/Pess/assets/South_Africa_Report_May06.pdf> (visited 19 February 2011) at 79.

[121] *Ibid*.

[122] *Ibid*.

[123] Neva Seidman Makgetla and Tanya Meelis, 'Unpacking Unemployment', 10 *New Agenda* (2003) 87–107. See also Winkler, *Energy Policies, supra* note 120, at 79.

[124] Yelland, 'Analysis: Eskom', *supra* note 116.

> Secondly, the artificially low Eskom electricity price enjoyed by BHP Billiton's Hillside, Bayside and Mozal aluminium smelters in recent years, which was significantly below the cost of electricity production, did not enhance the country's economic growth or reduce the high rate of unemployment in South Africa.
>
> On the contrary, in response to secret, low electricity price deals with Eskom, BHP Billiton imported bauxite to South Africa by ship, and exported cheap South African electricity around the world in the form of aluminium ingots. The fact that this was done at a time of electricity shortages and load-shedding in South Africa inhibited economic growth and caused job losses.[125]

As the present paper involves ultimately a legal analysis, one must be careful not to suggest that this is unassailable economic analysis. Far from it; the purpose of this brief discussion is not to argue that the government line is wrong, but to point out that many people have doubts about it[126] and that it has not been adequately dissected and explained. If increased coal-reliant energy generation is necessary to uplift the average South African, then the linkages between the action (burning coal) and the result (development of the type that increases employment and reduces poverty) need to be made more explicit than they have been. It would, seem, however, that there are alternative routes to poverty-reduction that do not rely on coal and these seem not to have been properly considered in the determination of energy and climate change policy.

Having raised concerns about some of the assumptions underlying South Africa's energy (and hence climate change) policy, I turn now to considering aspects of South Africa's mitigation and adaptation strategies.

6.4 Mitigation: the example of transport

South Africa has committed itself to ambitious GHG emissions reduction targets and there are several sectors, as identified within the 2010 Green Paper, where mitigation will be most critical. Given that the timeframe within which these reductions are to occur is ten to fifteen years from now, it is necessary to consider how realistic these goals are in the context of what is currently happening in regard to mitigation. It is beyond the scope of this paper to consider the question in respect of all sectors in South Africa, but it is proposed to take one sector as an example. The sector in question is transport. In the Green Paper, transport is identified as 'the most rapidly growing source of greenhouse gas emissions in South Africa, and [as being] the second most significant source of greenhouse gas emissions'.[127] In 2000, transport emissions contributed 12 per cent of total energy emissions, and in 2004, transport was

[125] *Ibid*.
[126] I have quoted only Yelland but his is not a lone voice.
[127] Green Paper at §5.6

responsible for 25.7 per cent of energy demand.[128] 84 per cent of transport energy use was contributed by road transport.[129]

Among the specific objectives for addressing climate change in the transport sector in the Green Paper are to 'continue to put in place transport policies and developments that result in a modal shift in passenger transport to public and low carbon forms of transport including plans to move freight from road to rail over time',[130] and 'encourage the integration of land use and transportation planning in cities in a manner that encourages public transport, non-motorised transport (walking and cycling) and promotes alternative communication methods such as telecommuting, in order to reduce long term transport fuel use patterns'.[131] These objectives must be seen in the light of the fact that, between 1997 and 2004, the national percentage of people who used cars rose from 30 per cent to 45 per cent[132] (and there is nothing to suggest that this percentage is not still increasing).[133]

Two principal aspects of the objective are moving freight from road to rail and increasing public transport in an urban environment where there is a coherent transport plan. Are such changes likely in ten to fifteen years? In the 1996 White Paper on a National Transport Policy[134] there are numerous fairly vague statements of transport goals, highlighting improved infrastructure and noble ideals such as efficiency, effectiveness and safety, but there are few express policy objectives to the effect, for example, that carriage of freight by road ought to be changed to rail conveyance. In the absence of any significant programme (if any at all) in respect of converting road freight to rail, what are the prospects of such a move being made within ten years, in such a way that there could be a positive result from an emissions perspective? There are currently 325 539 heavy vehicles registered to operate on South African roads.[135] Significant numbers of these vehicles will be affected in the event that a policy is developed to convert road to rail. Leaving aside the development of an implementation plan for such conversion, the consultation that will be necessary with the owners and operators of the heavy trucks currently carrying freight on South African roads will take time, which suggests it is unlikely that any significant progress will be made in this sector before 2020, by when South Africa intends to reduce emissions by 34 per cent.

[128] *Ibid*.
[129] *Ibid*.
[130] *Ibid* at §5.6.1
[131] *Ibid* at §5.6.2
[132] Marianne Vanderschuren, T. E. Lane and W. Korver, 'Managing Energy Demand through Transport Policy: What Can South Africa Learn from Europe?' 38 *Energy Policy* (2010) 826–831 at 829.
[133] Although growth in motor vehicle sales dropped off as a result (seemingly) of economic factors from 2008, the overall growth trajectory is still upward.
[134] Department of Transport, *White Paper on a National Transport Policy* (1996).
[135] 'Live vehicle population as per the National Traffic Information System', eNaTIS of 31 January 2011, available at <http://www.enatis.com/images/stories/statistics/livevehpopulationvehclassprov20110131.pdf> (visited 7 February 2011). Heavy vehicles are those that have a gross vehicle mass of more than 3 500 kg and exclude buses.

As for public transport, South Africa is not renowned for comprehensive public transport systems, and probably the most widely-spread transport service, the privately owned minibus taxi, is not strictly a 'public' transport service. Whilst there are some efforts afoot in various public transport sectors to improve services (for example, the minibus taxi recapitalization programme),[136] these efforts are uncoordinated. As Walters observes

> [a]t present each [public transport] mode is being dealt with from a "silo" approach which, if not dealt with firmly and timeously, will result in sub-optimal public transport systems in the main urban and metropolitan areas. One of the major challenges will therefore be to integrate the respective modes via integrated transport plans and to render seamless public transport services across all transport areas. This will require significant consultation with the affected parties in an effort to convince such parties of the benefit of a systems approach.[137]

This discussion demonstrates that efforts at transforming the transport sector in order to reduce GHG emissions will probably be starting almost from scratch, although there have been recent innovations in the form of a carbon tax on new vehicles.[138] This suggests that it will take significant effort to make a difference at least in the transport sector.

6.5 Adaptation

The 2010 Green Paper identifies three key adaptation sectors: water, agriculture, and human health. At the risk of sounding overly pessimistic, there are no shining beacons on the international horizon suggesting that there will be a regime which provides for sufficient international, binding mitigation actions to reduce the GHG levels to acceptable levels. This suggests that adaptation will be relatively much more important than mitigation. Whilst the Green Paper identifies several strategic objectives aimed at enhancing adaptation, most of these rely on further research and investigation. There are a few existing legal measures that are relevant to adaptation, predominantly in the water sector, and they almost all focus on better implementation and enforcement of existing water legislation.[139] If legislation is to be improved or new legislation enacted in order to address adaptation concerns, those aspects requiring further investigation must be explored sufficiently soon in order that the research results can be applied in practice.

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[136] The taxi recapitalization programme is a government initiative to bring about safe, effective, reliable, affordable and accessible taxi operations by the introduction of new taxi vehicles that will replace aging, and often unsafe vehicles that are currently used. It faces a great challenge due to enormous vested interests in the current capital invested in the industry.

[137] Jackie Walters, 'Overview of Public Transport Policy Developments in South Africa', 22 *Research in Transportation Economics* (2008) 98–108 at 107.

[138] See above, text corresponding to footnote 98.

[139] See Green Paper at §5.1

Clearly, an important facet of adaptation is disaster management, and this is recognized in the Green Paper.[140] South Africa does have disaster management legislation (the Disaster Management Act)[141] but increased effort will have to be put into early warning, preparedness, emergency response and post-disaster recovery, particularly since climate-related disasters will not be completely unforeseen.

7 Conclusion

South Africa has committed itself to ambitious and challenging GHG emission targets (in the absence of current international law requirements binding the country) for 2020 and 2025 (assuming its conditions are met). The initial commitment is to reduce emissions below the business-as-usual baseline by 2020, which is less than a decade away. Yet at the same time that these commitments are being made on the international plane, and reinforced in domestic policy, South Africa is also developing energy policy that seems to fly directly in the face of its climate change objectives. For the foreseeable future, South Africa's energy mix will be overwhelmingly coal-based. While some policy statements recognise, at least on paper, that coal has significant externalities, large swathes of the country are being prospected and mined for coal and even protected areas are not safe from the tentacles of the mining industry. It may well be that the targets will be achievable despite Medupi and Kusile and the recommissioning of certain 'mothballed' coal-fired power plants, but there is a strong suspicion in civil society that this is not the case. At the very least, the government needs to be more transparent and provide better, scientifically and economically rigorous, justification for its policies and for the policies' underlying assumptions.

In any event, for South Africa to achieve its mitigation targets requires an integrated response. Up until now, it has appeared as if the climate change response agenda has been piloted by the Department of Environmental Affairs whilst other government departments (for example, Energy) have paid it lip service if they have acknowledged it at all. One would hope that the Interministerial Committee envisaged in the Green Paper will assist in this regard.

South Africa is one of the world's highest emitters of greenhouse gases and the highest in Africa. Whilst it is important that it works together with other developing countries to develop an international structure that recognizes common but differentiated responsibilities[142] in an appropriate way, it ought certainly as a leading emitter to demonstrate leadership in addressing climate change. International leadership

[140] *Ibid*. at §5.7

[141] Act 57 of 2002.

[142] The Rio Declaration recognizes this in Principle 7, noting that different countries have contributed in differing degrees to international environmental degradation. It is based on an idea of universal participation, whilst, essentially, relaxing duties and enhancing benefits (funding, for example) to those parties regarded as less responsible for the problem – see Philippe Sands, *Principles of International Environmen-*

requires a coherent domestic approach and much work is still needed, in the present author's view, for this to be in place.

It is hoped that this paper has contributed to an understanding of the increasingly important role played by South Africa in the international climate-change negotiations, and how there seems to be an uneasy relationship between its international pronouncements and what is being done domestically to address climate change concerns. This may well echo what is happening in other countries on the development path and, clearly, in those that are already regarded as developed. Probably the main lesson that other (particularly developing) countries can learn from this paper is that it is critical for any progress on climate change action that there be co-ordinated response, as emphasized above.

Finally, and with the important purpose of recognizing that South Africa is not alone in dragging its heels on climate change, it is worth reiterating that South Africa's emissions reduction targets are conditional on a realistic, binding multilateral agreement on climate change being adopted. This, of necessity, must involve all countries, particularly some of those who have been most reluctant to make commitments up until now. As Fang correctly observes,[143] South Africa and other prominent developing countries[144] will not adopt legally binding targets in the absence of developed countries doing so.

tal Law (2nd ed., Cambridge University Press, 2003) 55–56. In the climate change regime, this is recognized by the categorization of different countries into the different Annexes.

[143] Fang, 'Understanding Developing Country Stances', *supra* note 2, at 4590.

[144] Fang refers to the 'Plus Five': China, India, Brazil and South Africa (the BASIC) countries and Mexico.

Brazil's National Policy on Climate Change and the Carbon Market

Natascha Trennepohl[1]

1 Introduction

Brazil has been a key player in the international negotiations on climate change, hosting the Earth Summit in 1992, which opened the United Nations Framework Convention on Climate Change (UNFCCC)[2] for signature. Afterwards, the Brazilian delegation presented during the negotiations of the Kyoto Protocol[3] (KP) a proposal[4] to set emission reduction targets based on historic emissions and its contribution to the increase in temperature. In the sequence, the country signed the Kyoto Protocol in 1998 and ratified it in 2002.

The KP established binding greenhouse gas (GHG) emission reduction targets to a number of industrialized countries in the commitment period from 2008 to 2012. Brazil, as an emerging economy, does not have mandatory targets under the Protocol. However, the country has been engaged in the climate negotiations, not only as part of the freshly established BASIC group,[5] but also playing sometimes 'the role of a

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[2] United Nations Framework Convention on Climate Change, New York, 9 May 1992, in force 21 March 1994, 31 *International Legal Materials* (1992) 849, <http://unfccc.int>.

[3] Kyoto Protocol to the United Nations Framework Convention on Climate Change, Kyoto, 11 December 1997, in force 16 February 2005, 37 *International Legal Materials* (1998) 22.

[4] This proposal is known as the 'Brazilian Proposal'. See Implementation of the Berlin Mandate. Additional proposals from Parties. Addendum. Note by the secretariat, UN Doc. FCCC/AGBM/1997/MISC.1/Add.3 (1997).

[5] The BASIC group is a political alliance formed by Brazil, South Africa, India, and China.

"balancer" between Northern and Southern interests in the negotiations'.[6] Recently, during the Sixteenth Conference of the Parties (COP16) of the UNFCCC, held in Cancun in 2010, the Brazilian delegation was strongly engaged in the negotiations of a second commitment period of the Kyoto Protocol.[7]

One year earlier, during the Fifteenth Conference of the Parties (COP15) in Copenhagen, Brazil showed itself as a progressive leader among emerging economies when former President Luís Inácio Lula da Silva brought up a voluntary commitment of reducing GHG emissions and, even more surprisingly, declared that Brazil would financially support developing countries if necessary.

Back home, after the COP15 meeting, President Lula signed law 12.187 of 2009,[8] which not only sets an emissions reduction target but also establishes principles, objectives, and instruments of the National Policy on Climate Change (Política Nacional sobre Mudança do Clima, or PNMC for short). This law formalizes Brazil's commitment of reducing between 36.1 and 38.9 per cent of its projected GHG emissions by 2020. Afterwards, at the time of the negotiations in Cancun, decree 7.390 of 2010[9] was signed, regulating articles of the PNMC and detailing Brazil's projected emissions for 2020.[10]

In spite of the progress made in terms of political and legal commitment embodied in the Brazilian climate law, some challenges still need to be overcome before the National Policy and a domestic carbon market[11] can be fully implemented. The process of setting and implementing mitigation measures not only has the participation of the government, but it also has the involvement of the private sector and civil society, pushing for action. The Brazilian Association of Technical Standards (Associação Brasileira de Normas Técnicas, or ABNT),[12] for example, established a

6 Ken Johnson, 'Brazil and the Politics of the Climate Change Negotiations', 10 *Journal of Environment and Development* (2001) 178–206 at 192. The author analyses Brazil's position in the climate negotiations in the 90s and concludes that 'Brazil is not simply a protagonist of developing world interests'.

7 Timan Santarius et al. argue that 'the Brazilians have their claim in the "success" of keeping the Kyoto Protocol alive at Cancun'. See Timan Santarius et al., 'One Step Forward and Two Sideward: Regional Analysis of Climate Policy in 2010 and the Cancun Climate Conference (COP16)', *Heinrich Böll Stiftung* (January 2011), available at <http://www.boell.de> (visited 20 January 2011) at 14.

8 Law 12.187 of 2009 was sanctioned by the President on 29 December 2009 and contains in its 13 articles the institutional framework and general guidelines of the National Policy on Climate Change (NPCC). Article 5 lists as NPCC's guidelines the 'commitments Brazil has undertaken under the UNFCCC, the KP and other documents on climate change the country may come to sign'. For the complete version, see 'Lei 12.187 de 29 de Dezembro de 2009', available at <http://www.planalto.gov.br> (visited 31 January 2011).

9 According to 'Decree no. 7.390 of 9 December 2010', available at <http://www.planalto.gov.br> (visited 31 January 2011). 6 o, 11 e 12 da Lei n o 12.187, de 29 de dezembro de 2009, which established the National Policy on Climate Change.

10 Articles 5 and 6 of Decree 7 390 of 9 December 2010 define an emissions reduction target between approximately 1.17 – 1.26 GtCO2eq by 2020, considering the business as usual scenario (3.2 GtCO2eq).

11 Carbon markets are based on the trade of GHG emission reduction credits. They can be mandatory, based on a legal requirement, or voluntary. Law 12.187 of 2009 directly refers to Brazil's domestic carbon market as the Brazilian Market of Emission Reductions (MBRE).

12 See, generally, <http://www.abnt.org.br/>.

Voluntary Carbon Market Study Committee to define a standard for this new market within the national scenario.[13] Additionally, it was reported in the Brazilian press that the adoption of a cap-and-trade system[14] is being analyzed by a working group at the Ministry of Finance[15]. Therefore, the architecture and elements of other trading schemes, such as the European Union Emission Trading System (EU ETS),[16] may help Brazilian (and other) policy-makers to design national schemes and learn from positive examples.

In short, the structure of this paper will be as follows: firstly, Brazil's position in the climate negotiations will be highlighted. Secondly, roles and responsibilities of key actors involved in the establishment of the National Policy will be presented. Thirdly, the main characteristics of Brazil's National Policy on Climate Change will be described. Fourthly, the current situation of the carbon market will be presented. Fifthly, special attention will be given to some design elements of the EU ETS that can be used as examples. Finally, conclusions will be drawn, showing a possible future development scenario for Brazil's climate policy and the domestic carbon market.

2 Brazil in the climate negotiations

Brazil's position in the international environmental discussions has not always been as progressive as it is nowadays in the climate negotiations. In the early 70s, poverty was considered the main issue and 'environmental protection should come only after a dramatic development of the country's economy and an increase of the per capita income to the same level of developed countries'.[17]

[13] Karina Ninni, 'Comissão vai normatizar mercado voluntário de carbono: Trabalho deve durar mais de um ano, de acordo com coordenador da comissão', *O Estadão*, São Paulo, 8 April 2010.

[14] Cap-and-trade is a policy tool, a market-based mechanism used to limit pollution. See Robert N. Stavins, 'Experience with Market-Based Environmental Policy Instruments' *Discussion Paper* (Resources for the Future, 2001) at 20. Arnaud Brohé et al. explain cap-and-trade as 'a system where the government defines a new set of property rights to use the atmosphere based on an emissions limit or cap. Then, after the distribution of the allowances between actors involved in the scheme, it allows trade in these allowances so that actors can choose to conduct abatement or b[u]y additional allowances'. See Arnaud Brohé et al., *Carbon Markets: An International Business Guide* (Earthscan, 2009) at 42.

[15] Marta Salomon, 'Empresas terão de pagar por poluição acima das metas', *O Estadão*, São Paulo, 4 May 2010. The State and Trends of the Carbon Market 2010 also refers to the fact that in Brazil 'policy makers are considering introducing a domestic cap and trade scheme, primarily covering the energy, transport, industrial and agribusiness sectors'. See Alexandre Kossoy and Philippe Ambrosi, *State and Trends of the Carbon Market 2010* (The World Bank, 2010) at 32.

[16] According to the European Commission Climate Action website, the EU Emissions Trading System (EU ETS) is 'a cornerstone of the European Union's policy to combat climate change and its key tool for reducing industrial greenhouse gas emissions cost-effectively'. The system is also described as 'being the first and biggest international scheme for the trading of greenhouse gas emission allowances' and as 'cover[ing] some 11 000 power stations and industrial plants in 30 countries'. See <http://ec.europa.eu/clima/policies/ets/index_en.htm> (visited 1 February 2011).

[17] Eduardo Viola, 'Brazil in the Context of Global Governance Politics and Climate Change, 1989–2003', *VII Ambiente e Sociedade* (2004), 27–46 at 30.

In the past decades, however, the economic reality in Brazil has changed and the country has become one of the fastest growing economies in the world. In 2010, for example, its Gross Domestic Product (GDP) growth of 7.5 per cent ranked eighth in the world considering the GDP at purchasing power parity.[18] In addition, it is also possible to note a change in relation to the perception of global environmental problems since Brazil has shifted its position from denying their importance to recognizing that cooperation and solidarity at the international level are the basis to deal with climate change.[19]

Ken Johnson analyzes the environmental debates in the 90s and argues that Brazil 'has taken a proactive role in the climate negotiations and has made a number of important contributions to the ongoing negotiations on global warming'.[20] The author mentions the Brazilian proposal to set different targets for Parties based on historic emissions, as well as the Clean Development Fund proposal, which was changed and later adopted as the Clean Development Mechanism.[21]

Eduardo Viola also highlights Brazil's key role in the climate negotiation process stating that 'the launch of the CDM proposal implied a moment of remarkable collaboration between the American and Brazilian diplomacies'; which, however, did not last long since Brazil confronted the United States position several times during the negotiations of the Kyoto Protocol and supported the European Union in the proposal for a strong compliance regime and for the inclusion of limits in carbon sinks. The author concludes by stating that 'Brazil was a prominent country in articulating the alliance between the European Union, Japan, and emerging countries that made possible the success in the final negotiation of the Protocol'.[22]

As mentioned in the introduction, Brazil ratified the Kyoto Protocol in 2002, but it came into force only in 2005 after Russia's ratification. Brazil continued to play a

[18] See Brazil's profile in Central Intelligence Agency (CIA). 'The World Factbook' available at <https://www.cia.gov/library/publications/the-world-factbook/geos/br.html> (visited 6 March 2011). According to the World Factbook, the GDP is the 'value of all final goods and services produced within a nation in a given year' and the GDP at purchasing power parity is 'the sum value of all goods and services produced in the country valued at prices prevailing in the United States. This is the measure most economists prefer when looking at per-capita welfare and when comparing living conditions or use of resources across countries'. For detailed information about Brazil's economic growth, see Instituto Brasileiro de Geografia e Estatística (IBGE) at <http://www.ibge.gov.br>.

[19] Luiz Pinguelli Rosa quotes the last part of Lula's speech at the 2010 annual meeting with the Brazilian Forum on Climate Change: '...we're all in this together and only the solidarity and international cooperation will enable us to overcome the [climate] challenges' (author's free translation from original in Portuguese). See Luiz Pinguelli Rosa, 'Reunião Anual com Presidente da República', available at <http://www.forumclima.org.br/index.php/eventos/reunioes/153-reuniao-anual-com-presidente-da-republi ca> (visited 12 December 2010).

[20] Johnson, 'Brazil and the Politics', *supra* note 6, at 178–79.

[21] See *ibid*. at 189 and 199–200. The Brazilian proposal argued that historic emissions should be taken into consideration because, despite the fact that annual emissions of non-Annex I countries are estimated to be equal to Annex I countries by 2037, the impact in temperature increase will only be equal in 2162. See Brazilian proposal, *supra* note 4, at 23.

[22] Eduardo Viola, *supra* note 17 at 40 and 43.

proactive role in the climate negotiations, but now focusing on a second commitment period of the KP. The first commitment period expires in 2012 and, therefore, the debate on the future of the KP gained strength during COP13 in Bali (2007) with Brazil working to strengthen the regime under the UNFCCC and the KP, as well as actively participating in the discussions on emissions from deforestation.[23]

During the COP15 in 2009, Brazil was also a key player in the climate negotiations, not only because of its voluntary emission reduction target and offer to financially support developing countries, but also due to its involvement in the design of the Copenhagen Accord.[24] It is worth stressing that despite having voluntary emission reduction targets, Brazil still advocates the use of the principle of common but differentiated responsibilities,[25] firmly supporting the maxim that industrialized countries are historically responsible for the concentration of greenhouse gases (GHGs) in the atmosphere, and that developing countries must receive financial aid to implement mitigation actions.

At the moment, the future of the Kyoto Protocol is uncertain and it seems unlikely that a new legally-binding agreement will be reached before the first commitment period expires in 2012. However, the outcome of the Ad Hoc Working Group on long-term Cooperation Action (AWG-LCA) takes note of the Nationally Appropriate Mitigation Actions (NAMAs) to be implemented by non-Annex I Parties (mainly developing countries) and formally acknowledges the pledges submitted to the Copenhagen Accord.[26] Additionally, the outcome of the Ad Hoc Working Group on further commitments for Annex I Parties under the Kyoto Protocol (AWG-KP) took note of the quantified economy-wide emission reduction targets to be implemented by Annex I Parties and clearly stated that the Conference of the Parties agrees that 'emissions trading and the project-based mechanisms under the Kyoto Protocol shall continue to be available to Annex I Parties as means to meet their quantified emission limitation and reduction objectives'.[27]

As pointed out by Aldy and Stavins, the KP has been referred to as a 'first step' in addressing the problems caused by climate change and has been considered the first step in shaping the architecture of international climate policy. The challenge, now-

[23] See Everton Vieira Vargas, 'A mudança do Clima na perspective do Brasil', *Revista Interesse Nacional*, Ano 1 (2008), available at <http://interessenacional.com> (visited 6 March 2011).

[24] Decision 2/CP.15 'Copenhagen Accord', in Report of the Conference of the Parties on its 15th sess., UN Doc. FCCC/CP/2009/11/Add.1 (2010), Addendum.

[25] On this principle, see Tuula Kolari, 'The Principle of Common But Differentiated Responsibility in Multilateral Environmental Agreements' in Tuula Kolari and Ed Couzens (eds), *International Environmental Law-making and Diplomacy Review 2007*, University of Joensuu – UNEP Course Series 7 (University of Joensuu, 2008) 21–54.

[26] See Art. 49 of Draft decision -/CP.16. The AWG-LCA was established in 2007 during the COP13 to work on further negotiations under the UNFCCC.

[27] See Arts 3 and 6(b) of Draft decision -/CMP.6. Article 36 of the AWG-LCA outcome also takes note of the reduction targets to be implemented by Annex I Parties. The AWG-KP was established in 2005 to negotiate on further commitments of developed countries under the KP and beyond 2012.

adays, according to the authors, 'lies in deciding on the next step, in terms of both climate-related goals and the design of policies to implement those goals'.[28] This scenario drives the attention to countries and their national policies and strategies to approach the problem and, consequently, to the actors involved in this process.

3 Actors in Brazil's climate governance: roles and responsibilities[29]

At the federal level, there are two commissions to support the government with the implementation of the UNFCCC and the KP, namely the Interministerial Commission on Global Climate Change[30] and the Brazilian Forum on Climate Change.[31] The former is composed of representatives of ten ministries and is responsible for the coordination of governmental actions in the field of climate change, advising the government on proposals for public policies and legal instruments related to mitigation and adaptation. The latter is composed of ministers, politicians (such as governors of states, mayors, and the president of the Chamber of Deputies), researchers, members of non-governmental organizations (NGOs), and the private sector and seeks to promote dialogue between government and society in climate change issues.

The Interministerial Commission provides data to the government in order to set the country's official position in the negotiations of the UNFCCC. The Commission can, however, request assistance from, or establish partnerships with, public agencies, private entities, and representatives of civil society, aiming to develop strategies to deal with climate change. The Commission is also involved in the carbon market as the country's Designed National Authority in charge of the Clean Development Mechanism (CDM) activities and has among its tasks[32] to establish additional criteria, analyze, and approve CDM projects.

In general terms, the CDM is a project-based mechanism mentioned in Art. 12 of the Kyoto Protocol that 'allows emission-reduction projects in developing countries to earn certified emission reduction (CER) credits, each equivalent to one tonne of CO_2. These CERs can be traded and sold, and used by industrialized countries to meet a part of their emission reduction targets under the Kyoto Protocol. [33] As it can be seen, the CDM is a flexible mechanism that was designed with two main objectives: to assist industrialized countries in achieving their GHG emission reduction

[28] Joseph E. Aldy and Robert Stavins, 'Architectures for an International Global Climate Change Agreement: Lessons for the International Policy Community', in Aldy and Stavins (eds), *Architectures for Agreement: Addressing Global Climate Change in the Post-Kyoto World* (Cambridge University Press, 2007) 350–367 at 350–351.

[29] On this topic see Natascha Trennepohl, 'Climate Change in Brazil: the Impacts of Different Actors on the Creation of the National Policy', *Nova Acta Leopoldina* 112, Nr, 384, 275–280.

[30] See 'Comissao Interministerial de Mudanca Global do Clima (CIMG)' at <http://www.mct.gov.br>.

[31] See 'Forum Brasileiro de Mudancas Climaticas at <http://www.forumclima.org.br/>.

[32] See Art. 3 of Decree of 7 July, 1999.

[33] See UNFCCC, 'About CDM', available at <http://cdm.unfccc.int> (visited 26 February 2011).

targets and to promote sustainable development in the host countries, which in this case are developing countries. The CDM promotes finance flow from industrialized countries to developing countries and it is, actually, the only mechanism in the KP scheme that provides for the participation of developing countries in the carbon market.

The other commission, the Brazilian Forum on Climate Change, has more participation from society and works to increase debate and to promote the development of CDM projects. The Forum must among its functions: encourage State Forums on Climate Change,[34] hold public consultations in different regions of the country, and organize working groups to discuss specific topics on CDM, energy, deforestation, and vulnerability.

Since the CDM receives attention from the business sector, with companies looking for international funding and opportunities to participate in the carbon market, these players influence political decisions. Nevertheless, many executives may not know how to approach the risks and opportunities associated with climate change because of the complexity of the topic. It is clear, though, that by knowing and calculating the risks and opportunities, companies have better chances to make wise investments and stay in the market.[35] Therefore, due to the demand for information and expert advice, it is becoming more common to find in Brazil organizations offering consultancy services on greenhouse gas emissions or facilitating the commerce of Certified Emission Reductions (CERs)[36] and investments in the carbon market. To illustrate this tendency in Brazil, two initiatives can be mentioned, namely the Businesses for the Climate (EPC)[37] and the Brazilian Market of Emission Reductions (Mercado Brasileiro de Redução de Emissões, or MBRE for short).

Businesses for the Climate is a national platform launched in October 2009 by the Center for Sustainability Studies at Fundação Getúlio Vargas (GVces)[38] with the objective of bringing together entrepreneurs to discuss practical solutions to a low carbon economy and its legal framework in Brazil.[39] The platform was created to provide technical and scientific support to companies, hence focusing on training workshops and thematic roundtables to discuss topics like agribusiness, energy, forestry, industry, services, and transportation. Moreover, the intention is to connect

[34] State Forums on Climate Change have been created in several states in Brazil to promote the dialogue between government and society. See 'Fóruns Estaduais', available at <http://www.forumclima.org.br> (visited 27 February 2011).

[35] Kimberly Packard and Forest Reinhardt, 'What Every Executive Needs to Know About Global Warming', 78 *Harvard Business Review* (2000) 129–135 at 130.

[36] CERs are credits generated from GHG emission reductions in CDM projects and can be traded in the carbon market. See *supra* note 33.

[37] See 'Empresas Pelo Clima', available at <http://www.empresaspeloclima.com.br/> (visited 18 February 2011).

[38] For more information, see <http://www.ces.fgvsp.br/> (visited 17 February 2011).

[39] Lucas Frasão, 'Empresas querem definir regulação para o clima', *O Estado de São Paulo*, São Paulo, 28 August 2009 at H9.

with, and enable, experts and business representatives to give advice during the decision-making process.

A previous business initiative was the establishment in 2004 of the Brazilian Market of Emission Reductions (MBRE), a partnership between the Ministry of Development, Industry and Foreign Trade and the two Brazilian Stock Exchanges (BM&F Bovespa and BVRJ) to facilitate the commerce of CERs and, consequently, to stimulate the development of CDM projects in Brazil. The MBRE is composed of 'institutions, regulations, project registration systems and a business center, all undergoing consolidation in Brazil via BM&FBOVESPA'.[40] The MBRE has had a database of registered projects and investors since 2005 through which foreign investors interested in acquiring carbon credits can either search for projects that match their interests or disclose their intentions of purchase on the database and receive a notification when a new project that fits their expectations is registered. The credits can also be acquired through online auctions held by the São Paulo Stock Exchange – BM&F Bovespa.

To illustrate the activities of the MBRE, in September 2007 the first online auction of carbon credits held by the BM&F Bovespa sold approximately 808 tons of CERs and raised 13 million euros (€16.20 per tonne). The CERs were owned by the city of Sao Paulo from the capture of methane gas in one landfill.[41] In September 2008, the second auction sold 713 tons of CERs from two landfills also owned by the city of Sao Paulo. This time, the winning bid reached the amount of €19.20 per tonne, totaling just over 13 million euros.[42]

Besides the aforementioned actions, there is also interaction between business initiatives and NGOs in Brazil. The Center for Sustainability Studies at Fundação Getúlio Vargas, which coordinates the Businesses for the Climate initiative, for example, supports the Climate Observatory, a network of non-governmental organizations dealing with the climate change agenda. The Climate Observatory has among its goals three key elements: to monitor the development of public policies related to GHG emissions; to monitor and influence international negotiations and the Brazilian government position; and to promote dialogue between different actors, such as civil society, the Brazilian Forum on Climate Change, the media, government officials, and other social actors.[43]

Among the NGOs that are more engaged with discussions on climate change, the Brazilian Forum of NGOs and Social Movements for the Environment and Develop-

[40] See BM&F Bovespa at <http://www.bmfbovespa.com.br> (visited 18 February 2011).
[41] Ricardo Leopoldo. 'Banco holandês paga R$ 34 milhões de reais por crédito de carbono'. *Estadão*, São Paulo, 26 September, 2007.
[42] Plantão, 'Leilão de créditos de carbono rende R$ 37 milhões para Prefeitura', *O Globo*, São Paulo, 25 September, 2008.
[43] See Observatório do Clima at <http://www.oc.org.br> (visited 12 December 2010).

ment (FBOMS)[44] has several members that participate in government commissions.[45] Furthermore, the FBOMS has 13 working groups developing activities in diverse areas, such as energy, environmental education, forest, sustainable tourism, climate, and so forth. The FBOMS was engaged in the discussions about international climate negotiations that preceded the COP15.[46]

Concerning the carbon market, the FBOMS is listed by the Interministerial Commission on Global Climate Change as one of the institutions that shall receive an invitation to comment on a CDM project before it is approved. In other words, before approving a CDM Project, the Commission requires that the project proponents send invitations to certain institutions asking for comments on their project. The comments are then incorporated into the documentation and submitted with the CDM project proposal for the Commission's approval.[47]

There is a certain level of interaction between the actors that are involved in the development of the climate policy in Brazil. In October 2009, for example, during a meeting to discuss Brazil's position to be presented in Copenhagen, the Executive Secretary of the Brazilian Forum on Climate Change gave the President a document[48] with a compilation of opinions and comments from members and individuals that had participated in several events organized by the Forum. This document suggested measures that should be adopted as the country's strategy at the COP15.

Similarly, representatives of Brazilian entrepreneurs handed the Minister of Environment an Open Letter on Climate Change signed by 22 companies with their voluntary commitments to reduce greenhouse gas emissions. The letter contained suggestions for the government's position at the COP15 with the entrepreneurs arguing that it is extremely necessary to have a delimited system with clear rules and obligations in order to invest in green technology.[49] Additionally, several Brazilian entrepreneurs joined the Corporate Leaders Group on Climate Change and together with other international companies signed a document demanding an ambitious, robust, and fair agreement to tackle climate change. The document was handed to the rep-

[44] See Forum Brasileiro de ONGs e Movimentos Sociais para o Meio Ambiente e o Desenvolvimento at <http://www.fboms.org.br/> (visited 12 December 2010). The FBOMS has 608 members (as of December 2010).

[45] For instance, the FBOMS has members in the previously mentioned Brazilian Forum on Climate Change. See Fórum Brasileiro de ONGs e Movimentos Sociais para o Meio Ambiente e o Desenvolvimento at <http://www.fboms.org.br> (visited 12 December 2010).

[46] See 'Sociedade civil e governos debatem posições para as negociações sobre mudanças climáticas', available at <http://www.fboms.org.br> (visited 27 February 2010).

[47] See Art. 3(II) of the Resolution 1 of 11 September, 2003 amended by Resolution 7 of 5 March, 2008.

[48] The document presents suggestions from different organizations and institutions, such as state and local forums and commissions, NGOs, entrepreneurs, representatives from the industrial and electricity sectors, and local governments. For more information see FBMC, 'Diálogos Setoriais: contribuições à construção da posição brasileira', Fórum Brasileiro de Mudanças Climáticas at <http://www.forumclima.org.br> (visited 12 November 2009).

[49] See Fabricio Angelo, 'E hora de tomar atitudes', available at <http://www1.ethos.org.br> (visited 12 December 2010).

resentatives of governments at the United Nations meeting in New York in September 2009.[50]

There were also some NGOs which presented their suggestions to the Brazilian government concerning the country's climate policy. A manifesto signed by several NGOs was sent to the Ministry of Environment, highlighting shortcomings of the National Plan on Climate Change, and influenced changes to the final version of the Plan, short before its presentation at COP14 in Poznań.[51] A further example of the engagement of Brazilian NGOs in the discussion of the climate policy in Brazil is the suggestions presented by the Climate Observatory to the final text of one bill related to the National Policy on Climate Change.[52]

As it can be seen from the recent involvement of Brazilian NGOs with climate change topics,[53] they are active and try to discuss, and participate in, the decision-making process. There has been a noticeable increase in their involvement, calling for more responsibilities from the federal government, and for the establishment of concrete emission reduction targets for the country.

Apparently in response to the expectations of civil society, not only in Brazil, but also worldwide, concerning the adoption of GHG emissions targets, the Brazilian government announced during COP15 its voluntary target to reduce GHG emissions by 2020.

4 Main features of Brazil's national policy on climate change

As mentioned before, law 12.187 of 2009 sets Brazil's emissions reduction target and establishes principles, objectives, and instruments of the National Policy on Climate Change (PNMC). Some principles were directly mentioned in the legal text[54] and shall be observed during the implementation of the PNMC such as the 'precaution-

[50] ICLEI, 'Em documento internacional, empresários brasileiros pedem acordo climático que favoreça economia de baixo carbono', *International Council for Local Environmental Initiatives (ICLEI)*, São Paulo 21.10.09, available at <http://www.iclei.org> (visited 30 October 2009).

[51] Observatório do Clima, *supra* note 43.

[52] *Ibid*.

[53] According to Juliana Russar, most of Brazilian NGOs began to pay more attention to climate change discussions after the implementation of the Kyoto Protocol in 2005 and the publication of the Fourth Assessment Report of the IPCC in 2007. See Juliana Russar, *Panorama de atores e iniciativas no Brasil sobre mudanças do clima* (Vitae Civilis, 2008) at 27.

[54] Art. 3 of law 12,187 of 2009.

ary principle',[55] the 'preventive principle',[56] the 'citizen participation principle',[57] the 'sustainable development principle',[58] and the 'principle of common but differentiated responsibilities'.

Article 3 of law 12.187 of 2009 adds that the measures adopted shall consider the different socio-economic contexts and distribute the financial burden across economic sectors and populations in an equitable and balanced way. Sustainable development is considered a central point in the measures to address climate change, seen as an important objective to be achieved. Consistent with this idea, during the statement at the high-level ministerial segment of COP16, the Brazilian Minister for the Environment, Izabella Teixeira, reiterated the country's commitment to promote sustainable development and argued that economic growth, social justice and environmental protection can be a development strategy, making reference to Brazil's economic growth and the decrease in poverty and in deforestation rates in the last year.[59]

Article 7 of the National Policy refers to five institutional instruments to support its goals, which are:

I the Interministerial Committee on Climate Change, created to guide the development, the implementation, the monitoring and the evaluation of the National Plan on Climate Change[60];

[55] The principle 15 of the Rio Declaration on Environment and Development (UN Declaration on Environment and Development, Rio de Janeiro, 14 June 1992, UN Doc. A/CONF.151/5/Rev.1 (1992), 31 *International Legal Materials* (1992) 876.) stresses that 'in order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation'. Considering Brazil's legislation, this principle is expressly stated in several decrees, such as Decree 5.591 of 2005, Decree 5.472 of 2005, Decree 5.377 of 2005 and so forth.

[56] 'The preventive principle requires action to be taken at an early stage and, if possible, before damage has actually occurred' and, moreover, 'the preventive approach has been endorsed, directly or indirectly, by the 1972 Stockholm Declaration [principles 6, 7, 15, 18, and 24], the 1978 UNEP Draft Principles [principle 1] and the 1982 World Charter for Nature'. See Philippe Sands, *Principles of International Environmental Law* (Cambridge University Press, 2003) at 246–247.

[57] Art. 225 of Brazil's Federal Constitution clearly states that everyone has the right to live in an ecologically balanced environment, but also has the duty to defend and preserve it for present and future generations. The importance of public participation in environmental issues was stressed during the Earth Summit in 1992, being considered one of the key instruments for achieving the goals of the Agenda 21 (Agenda 21, UN Conference on Environment and Development, Rio de Janeiro, 13 June 1992, UN Doc. A/CONF.151/26/Rev.1 (1992)). See Natascha Trennepohl, *Manual de Direito Ambiental* (Impetus, 2010) at 16.

[58] Philippe Sands states that 'the term "sustainable development" is generally considered to have been coined by the 1987 Brundtland Report, which defined it as "the development that meets the needs of the present without compromising the ability of future generations to meet their own needs"' and that 'there can be little doubt that the concept of "sustainable development" has entered the corpus of international customary law, requiring different streams of international law to be treated in an integrated manner'. See Philippe Sands, *supra* note 56, at 253–254.

[59] Statement of Ms. Izabella Teixeira, Minister for the Environment of Brazil to the General Debate of COP-16, available at <http://unfccc.int/statements/items/5777.php> (visited 13 December 2010).

[60] The Committee was established by Decree 6.263 of 21 November 2007.

II the Interministerial Commission on Global Climate Change, previously mentioned as Brazil's Designated National Authority;
III the Brazilian Forum on Climate Change, also previously mentioned;
IV the Brazilian Network of Research on Global Climate Change (called Rede CLIMA for short), created to produce and disseminate knowledge and technology related to climate change issues, as well as to produce data to support Brazilian diplomacy in international negotiations;[61] and
V the Meteorology, Climatology and Hydrology Activity Coordination Commission, created to coordinate, monitor and contribute to the evaluation of activities in these fields.

In addition, Art. 6 of law 12.187 of 2009 lists eighteen instruments that can be used to implement the policy goals, including the National Plan on Climate Change; the National Fund on Climate Change; action plans designed to prevent and control deforestation; resolutions of the Interministerial Commission on Global Climate Change; fiscal measures; allocation of specific federal sums; financial and economic mechanisms already listed in the UNFCCC and in the Kyoto Protocol; the establishment of preferential criteria in public calls for tenders, namely public-private partnerships, authorizations, permits, and concessions to explore public services, for proposals that provide GHG emissions reduction and offer the best options for saving energy, water, and natural resources; the use of inventories, assessment and any other surveys on GHG emissions; as well as the establishment of environmental standards and verifiable targets for reducing anthropogenic emissions of GHGs.

One of these instruments, namely the National Fund on Climate Change[62] (Fundo Nacional sobre Mudança do Clima or FNMC), is expected to play an important role in financing mitigation and adaptation measures. Law 12.114 of 2009 states that revenue for this new fund shall come from various sources, such as contributions from national and international organizations, loans from financial institutions, allocations in the annual federal budget, and designated sums in agreements or contracts signed with governmental bodies. It is also mentioned that up to 60 per cent of the amount received by the Ministry of Environment from oil exploitation shall be sent to the climate fund.[63] It should not be forgotten that Brazil has discovered large quantities of deepwater oil reserves (estimated at more than 30 billion barrels) and intends to explore them in the next few years.[64] In attempting to estimate the amount of money that would be received by the climate fund, the former Minister

[61] For more information see 'Rede CLIMA' at <http://www.ccst.inpe.br/redeclima/> (visited 18 February 2011).
[62] The FNMC was established by law 12,114 of 2009 and is regulated by Decree 7,343 of 2010.
[63] Previously, in cases of large volumes of oil production or high profitability, contracts of exploitation could establish an additional payment to the government, of which 10 per cent would be sent to the Ministry of Environment to be used in the recovery of environmental damages caused by the oil industry. However, the PNMC included projects to prevent GHG emissions, as well as mitigation and adaptation measures, in the list of activities for which this allocation can be used.
[64] Juan Forero, 'Brazil Girds for Massive Offshore Oil Extraction: State-run Petrobras is Poised to Become a Major Global Player', *Washington Post*, 7 December 2009.

of Environment said that the initial sum of public money to be sent to the FNMC may reach an average of one billion Brazilian reais per year (approximately 560 million dollars).[65] So far, the Fund has two hundred million Brazilian reais (approximately 114 million dollars) for investments in 2011.[66] However, the FNMC is not the only source of funding for mitigation and adaptation measures.

Due to the close connection between Brazilian GHG emissions and deforestation,[67] the Amazon Fund[68] is also an important financial source. Donations made to the Amazon Fund might be used in preventing, monitoring, and implementing other initiatives against deforestation of Brazilian forests. The fund has received 110 million dollars from the Norwegian government and annual donations from this government are expected until 2015. Additionally, during COP16, the German Development Bank (KfW) signed a contract with the Fund's manager (the Brazilian Development Bank – BNDES) to donate 18 million euros (approximately 30 million dollars).[69] At the time of writing, there are six projects receiving ongoing resources from the Amazon Fund, mostly in activities to support the conservation and the sustainable use of the forest and the biodiversity.[70]

In order to achieve the reduction target indicated in the National Policy and a low-carbon economy in the country, a sectoral approach has been chosen. Thus, sectoral plans, currently under elaboration by the government and expected to be discussed with the society and interested sectors through public consultation meetings,[71] shall indicate initiatives related to energy, agriculture, transport, mining, healthcare services, the chemical industry, the construction industry, the paper and pulp industry, and so forth. Decree 7.390 of 2010 provided the first five sectoral plans, focused on avoiding deforestation in the Amazon region and in the Cerrado Lands; expanding

[65] See Sistema de Proteção da Amazônia (SIPAM), 'Projetos Aprovados Pelo Fundo Amazônia vão Recuperar Áreas Degradadas', at <http://www.sipam.gov.br> (visited 30 June 2010).

[66] Portal Brasil, 'Fundo Clima e Fundo Amazônia', at <http://www.brasil.gov.br> (visited 13 December 2010).

[67] According to Brazil's Second Communication to the UNFCCC, CO2 emissions in 2005 in the country reached the amount of 1.6Gt, of which 77 per cent came from land use change and forest. See Brasília Ministério da Ciência e Tecnologia, *Segunda Comunicação Nacional do Brasil à Convenção-Quadro das Nações Unidas sobre Mudança do Clima* (2010) at 15.

[68] The Amazon Fund was established in 2008, aiming to raise funds to support projects focused on prevention and avoidance of deforestation in the Amazon region. See 'Fundo Amazonia', at <http://www.fundoamazonia.gov.br> (visited 25 February 2011).

[69] BNDS, 'BNDES e banco alemão KFW assinam contrato de US$ 30.6 milhões para o Fundo Amazônia', available at <http://www.fundoamazonia.gov.br> (visited 12 December 2010).

[70] As of December 2010. See Fundo Amazonia, 'Carteira de Projetos', available at <http://www.fundo amazonia.gov.br> (visited 12 December 2010).

[71] See para. 1 of Art. 4 of Decree 7.390 of 2010. It can be added that during the annual meeting of the FBMC with the Brazilian President in October 2010, the representative of the Climate Observatory and the FBOMS stressed the importance of the participation of civil society in the elaboration process of the sectoral plans, arguing that some working groups were more open to receiving suggestions than others. For more information, see Luiz Pinguelli Rosa, 'Reunião Anual', *supra* note 19.

investments in the energy sector; and focused on reducing emissions from agriculture and steel plants.[72]

The use of the sectoral targets as parameters for the Brazilian Market for Emissions Reduction (MBRE) is also mentioned in Decree 7.390 of 2010. Actually, law 12.187 of 2009 stressed the importance of the carbon market in the country and stated that the National Policy on Climate Change shall encourage the development of the MBRE.[73] However, the aforementioned law simply refers to the need for developing the carbon market in the country (article 4) and that the MBRE shall be operated in 'commodities, futures and stock exchanges, and in over-the-counter trading companies' (Art. 9).

5 The current situation of Brazil's carbon market

At the core of what is popularly known as the carbon market are the three mechanisms created by the KP to support Parties in achieving their commitments, namely the CDM, Joint Implementation (JI),[74] and Emissions Trading.[75]

There is a bridge between the certificates traded in the European market and those from CDM projects.[76] According to Franck Lecocq and Karan Capoor, the carbon market 'encompasses both the *generation of emission reductions (ERs)* through *project-based transactions* where a buyer purchases ERs from a project that produces measurable reductions in greenhouse gases (GHG), and *trading of GHG emissions allowances* allocated under existing (or upcoming) cap-and-trade regimes such as the European Emissions Trading Scheme (EU ETS)'.[77] To give an idea of the financial flow in the carbon market,[78] in 2009 the transactions of this market reached the amount of 143 billion US dollars, with a growth of 6 per cent compared to 2008.[79]

[72] Art. 3 of Decree 7.390 of 2010 lists the first five sectoral plans, which are Action Plan for Prevention and Control of Deforestation in the Amazon (PPCDAm); Action Plan for Prevention and Control of Deforestation in the Cerrado (PPCerrado); Ten-year Energy Expansion Plan (PDE); Low-Carbon Agriculture Plan; and Plan for Reducing Emissions from Steel.

[73] See Art. 4 of law 12.187 of 2009.

[74] The Joint Implementation (JI) mechanism works similarly to the CDM, but in these projects both parties involved have commitments under the KP. For more information see UNFCCC, 'Joint Implementation', available at <http://unfccc.int> (visited 28 February 2011).

[75] Emission Trading is commonly referred as a cap-and-trade system. See *supra* note 14 for an explanation on how a cap-and-trade system works. See UNFCCC, 'The Mechanisms under the Kyoto Protocol: Emissions Trading, the Clean Development Mechanism and Joint Implementation', available at <http://unfccc.int> (visited 28 February 2011).

[76] OECD/IEA, *Dealing with Climate Change: Policies and Measures in IEA Member Countries* (OECD/International Energy Agency, 2001), available at <http://www.iea.org> (visited 17 January 2011).

[77] Franck Lecocq and Karan Capoor, *State and Trends of the Carbon Market 2005* (The World Bank, 2005), available at <http://wbcarbonfinance.org/docs/CarbonMarketStudy2005.pdf> (visited 11 March 2011) at 3.

[78] The whole carbon market includes the transactions of project-based mechanisms (primary CDM, JI, and voluntary market), secondary CDM, and allowances markets (EU ETS, New South Wales, Chicago Climate Exchange, RGGI, AAUs).

[79] Alexandre Kossoy and Philippe Ambrosi, *State and Trends of the Carbon Market 2010* (The World Bank,

Brazil is deeply interested in the trade of CERs. Considering its actual participation in the carbon market, the country is responsible for 5 per cent of the expected emission reductions of the planet[80] and ranks third in the number of registered CDM project activities by host party: 187 projects in total,[81] which represent 6.5 per cent of the current CDM projects approved in the Executive Board.[82] In fact, the Clean Development Mechanism was developed from a Brazilian proposal and the country was the first one to have a project approved. However, Brazil originally proposed the creation of a fund to finance projects in developing countries to tackle climate change. Such projects would have been financed by industrialized countries that had not achieved their emission reduction goals.[83] It can be added that Brazilian CERs have a good 'reputation' in the market and are in general more expensive when compared to Indian and Chinese CERs.[84]

Regarding the CDM projects hosted by Brazil and organized by investor parties at the Executive Board until February 2011, Switzerland and the United Kingdom lead the ranking, followed by the Netherlands and Japan. In this scenario, only a few projects do not have an international participant and several projects have more than one country involved.[85]

Moreover, the key buyers of Brazilian CERs have been companies from the United Kingdom, the Netherlands, and Japan.[86] In 2004, a Memorandum of Understanding was signed between Brazil and the Netherlands aiming to develop CDM projects through the financial support from the Netherlands CDM Fund, which could explain the immense involvement of the Netherlands in Brazil's carbon market.[87]

Considering the current CDM projects in Brazil by type of GHG, 67 per cent reduce CO_2 emissions and 51 per cent of all projects are related to renewable energy.[88] It is

2010), available at <http://siteresources.worldbank.org/INTCARBONFINANCE/Resources/State_and_Trends_of_the_Carbon_Market_2010_low_res.pdf> (visited 11 March 2011) at 1.

80 As of January 2011, Ministério da Ciência e Tecnologia, 'Current Status of the Project Activities under the Clean Development Mechanism (CDM) in Brazil and the World', available at <http://www.mct.gov.br> (visited 28 February 2011).

81 As of 8 March 2011. China ranks first and has 43 per cent of the registered project activities, followed by India with 21 per cent. See Registration at <http://cdm.unfccc.int> (visited 8 March 2011).

82 The CDM Executive Board supervises the operation of CDM projects and is responsible for developing procedures, adopting new methodologies, issuing CERs, maintaining the CDM registry and managing information of projects. For more information see <http://cdm.unfccc.int> (visited 25 February 2011).

83 Sebastian Oberthür and Hermann Ott, *Das Kyoto-Protokoll: Internationale Klimapolitik für das 21. Jahrhundert* (Opladen: Leske + Budrich, 2000) at 222.

84 GTZ, *CDM/JI Initiative – Country Study Brazil: A CDM Market Overview* (Deutsche Gesellschaft für Technische Zusammenarbeit - GTZ, 2008).

85 See UNFCCC, 'Clean Development Mechanism', available at <http://cdm.unfccc.int> (visited 28 February 2011).

86 GTZ, CDM/JI Initiative, *supra* note 84.

87 European Commission, *Brazil Country Strategy Paper 2007–2013*, available at <http://ec.europa.eu> (visited 12 November 2009).

88 See 'Current Status of the Project Activities under the Clean Development Mechanism (CDM) in Brazil and the World', *supra* note 80.

worth mentioning that Brazil is known for its clean energy matrix, having 89 per cent of its electricity generated by renewable sources, of which 77 per cent by hydroelectric plans. Additionally, 45 per cent of Brazil energy supply in 2007 was produced by renewable sources, an impressive number specially if compared to the world average (12.9 per cent).[89]

In the international discussions about GHG emissions and CDM, Brazil is already considered an important global player and regional leader, due to the amount of GHGs emitted by the country and the number of ongoing CDM projects, capable of becoming a strategic partner of the EU.[90] In the national scenario, the next step is the implementation of the National Policy and the development of the domestic carbon market (the MBRE) since the country formalized its Copenhagen Accord commitment of reducing GHG emissions by 2020. In this case, lessons learnt from other emissions trading schemes can be used as an example during the process of structuring a national system.

6 Design elements of a trading scheme

Every emission trading scheme needs to have some basic elements to correctly work and reduce emissions of GHGs. These basic elements include a cap that limits GHG emissions, a difference in the abatement costs to motivate participants to trade, a reliable monitoring system to assure the environmental integrity of the system, a structure to promote enforcement, and provisions to protect the local environment.[91]

In addition to what was set by the Kyoto Protocol, there are European Community directives regulating the carbon market in Europe such as Directive 2003/87/EC[92] and Directive 2004/101/EC of the European Parliament and of the Council. The former creates the scheme for GHG emission allowance trading within the Community known as the European Union Emissions Trading Scheme (EU ETS) and established to avoid distortions of competition and to preserve the integrity of internal markets.[93] The latter deals with the use of CERs as a further measure to achieve the internal emissions reduction goal of each Member State. It is worth pointing out

[89] Interministerial Committee on Climate Change, 'National Plan on Climate Change: Executive Summary' (Brasilia, 2008) at 10.

[90] Communication from the Commission to the Council and the European Parliament, 'Towards an EU-Brazil Strategic Partnership' (30 May 2007).

[91] UNEP and UNCTAD, 'An Emerging Market for the Environment: A Guide to Emissions Trading', available at <http://www.unep.fr/energy/information/publications/risoe/pdf/EmissionsTrading-Feb03.pdf> (visited 28 February 2011).

[92] Amended by Directive 2004/101/EC of 27 October 2004, Directive 2008/101/EC of 19 November 2008, Regulation (EC) No 219/2009 of 11 March 2009, and Directive 2009/29/EC of April 2009.

[93] See preamble 7 of the Directive 2003/87/EC, also called EU ETS Directive.

that each Member State has a limit for the amount of CERs they can use in their domestic policy.[94]

Moreover, the EU ETS Directive provides only the bases for trading and details like contractual and tax law remain the responsibility of the Member States.[95] At the European level, Member States have to publish National Allocation Plans indicating how many allowances will be issued in a certain period and how they will be distributed amongst installations.

Thus, to better understand this environmental policy, it is worth studying a National Allocation Plan (NAP) to see how and to whom the allowances were allocated in the first (from 2005 to 2007) and in the second phases (2008–2012) of the EU ETS.[96] From the EU members, Germany's National Allocation Plan was chosen as an example, in order to stress the lessons learnt since the beginning of the trading scheme.

The first key point in setting an emission trading scheme is the allocation of allowances because 'it ensures the effectiveness of emissions trading as an environmental policy instrument'.[97] An accurate inventory or data collection of emissions is essential. If some allowances are allocated through auctioning, the revenues can be used to support mitigation and adaptation measures. However, during the first period, also called the learning-phase, the German government decided to allocate free of charge 100 per cent of its allowances.[98]

The German NAP for the first phase (NAP I) had to consider the country's reduction target in the second phase of the EU ETS (2008–2012), which corresponds to the first KP period. Therefore, the NAP I had to consider that Germany must reduce its GHG emissions by 21 per cent compared to 1990 levels by 2012.

Concerning its structure, the NAP I was divided into a Macroplan, which defined the national emissions budget and the amount of allowances to be allocated, and a Microplan, which defined the methods and rules of allocation.[99] It can be high-

[94] Bruno Sabbag, *O protocolo de Quioto e seus créditos de Carbono* (LTr, 2008).

[95] Matthieu Wemaere and Charlotte Streck, 'Legal Ownership and Nature of Kyoto Units and EU Allowances', in David Freestone and Charlotte Streck (eds), *Legal Aspects of Implementing the Kyoto Protocol Mechanisms* (Oxford University Press, 2005) 35–53 at 49.

[96] The first phase of the EU ETS is also referred as the 'learning phase' and the second phase corresponds to the first commitment period of the KP. For further information on the EU ETS, see the European Commission at <http://ec.europa.eu>.

[97] Simon Marr, 'Implementing the European Emissions Trading Directive in Germany', in Freestone and Streck (eds), *Legal Aspects of Implementing the Kyoto Protocol Mechanisms* (Oxford University Press, 2005) 431–444 at 435.

[98] See BMU, 'National Allocation Plan for the Federal Republic of Germany (2005–2007)', available at <http://www.bmu.de> (visited 22 October 2010).

[99] See *ibid*.

lighted that the NAP I divided the reduction target per sector and listed the installations in a separate annex.

An important step taken during the elaboration of the National Allocation Plan that can certainly be seen as a good example of governance was the dialogue with several sectors of society, including environmental groups, policy-makers, researchers, business groups and so forth. The integration between federal and local authorities is also a fundamental part of the process. Another example is the description of installations subject to emissions trading divided into classes as it appears in the NAP I.[100]

Concerning the compliance with the rules established by the EU ETS and the NAP I, a fine to be paid for each tonne of CO_2 that was emitted beyond that permitted was set to discourage transgressions, especially because the fine was higher than the value of a carbon unit (tonne of CO_2) in the market. The NAP I set a fine of €40 per excess tonne of CO_2 emitted in the first phase and a fine of €100 per excess tonne emitted in the second phase. Besides the fine, it was also necessary to reduce the amount of emissions that were exceeded in the next year.[101]

It is worth adding that banking and borrowing allowances were permitted within the first phase. Only banking is allowed between phase II and any subsequent periods.[102] The importance of having accurate estimations of GHG emissions and this banking system becomes evident when one thinks of the price crash of carbon units (end of 2007).[103] If emissions are not correctly estimated and there is an overallocation of units in the market, the environmental integrity of the scheme can be questioned. However, another crash is unlikely to happen, even after the recent economic downturn, because of the banking system between periods.[104] Thus, the establishing of guidelines for the monitoring and reporting of GHG emissions is fundamental in any ETS to avoid overallocation of units.

Nowadays, the EU ETS is considered the flagship of EU climate policy and can certainly constitute 'a role model and testing ground for the development of other national, regional, and international GHG emissions trading schemes worldwide'.[105] Furthermore, Pohlmann adds that the establishment of the EU ETS was motivated

[100] See *ibid*.
[101] See *ibid*.
[102] Markus Pohlmann, 'The European Union Emissions Trading Scheme', in David Freestone and Charlotte Streck (eds), *Legal Aspects of Carbon Trading* (Oxford University Press, 2009) 337–366 at 351.
[103] According to the World Bank, the price of the European Union Allowances (EUAs), which are carbon credits traded in the EU ETS, went from a peak of over € 30 in April 2006 to under € 1 in early 2007. See Karan Capoor and Philippe Ambrosi, 'State and Trends of the Carbon Market 2007' (World Bank, 2007), available at <http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:21319781~pagePK:64257043~piPK:437376~theSitePK:4607,00.html> (visited 11 March 2011)s at 12.
[104] Markus Pohlmann, 'The European Union Emissions', *supra* note 102, at 354.
[105] *Ibid*. at 339.

by the Kyoto Protocol, but the scheme is independent and projected to last even if a new international agreement is not reached.[106]

7 Conclusion

The future of the Kyoto Protocol is still uncertain. Consequently, it is not clear yet what will happen with market-based instruments such as the Clean Development Mechanism neither with the existing carbon markets. Moreover, it is unlikely that a new legally binding agreement will be reached at the international level before the KP first commitment period expires in 2012. However, the outcomes achieved in the COP16 from the negotiations held at the AWG-LCA and the AWG-KP formally acknowledge the pledges of emission reductions submitted to the Copenhagen Accord by both developed and developing countries.

Brazil has been a key player in the climate negotiations, not only as an important emerging economy, but also as a facilitator of the dialogue between north and south interests. The country has recently undergone a deep change in its attitude toward GHG emissions, culminating in the presentation of its reduction targets during the COP15.

Despite the fact that Brazil ratified the Kyoto Protocol and strongly supports a second commitment period, the country does not have binding targets set by the Protocol. Moreover, the government emphasizes the fact that the commitments made to the international community through its submission to the Copenhagen Accord are voluntary.

Nevertheless, Brazil's emission reduction target was included in the law that established the main framework of the National Policy on Climate Change and now it is expressly mentioned in a national law (Law 12.187 of 2009). The process that led to the design of the National Policy and that changed Brazil's position from not accepting commitments to presenting voluntary pledges had the involvement of several actors and sectors of the society.

It is true, though, that some challenges need to be overcome before the National Policy can be completely implemented and Brazil's carbon market shifts from trading CERs in the EU ETS to developing a national platform adequate to respond to the commitments made through its submission to the Copenhagen Accord and law 12.187 of 2009.

In this sense, and considering the co mplexity of structuring a carbon market, lessons learnt during the development of other trading schemes, like the EU ETS, may be

[106] *Ibid.*

useful for policy-makers who are, or might be, considering setting this kind of scheme in their countries. In this scenario, important steps can be listed as examples and guide new frameworks, like the division of targets per sector, the clear rules for banking, borrowing, and non-compliance, as well as the development of guidelines for the monitoring and reporting of GHG emissions in order to avoid overallocation.

Part IV

The Interplay between Climate Change and Biodiversity

International Law Relating to Climate Change and Marine Issues

Ed Couzens[1]

1 Introduction

Our understanding of the possible effects of changing climates on aspects of the environment is increasing as more and more research is done in numerous different areas. Increasingly, research is illuminating such effects not only in respect of terrestrial environments but also in respect of marine environments, and showing how the oceans are not an immense, infinite resource scarcely affected by the doings of humankind. Rather, the marine environment is extremely limited and is directly affected – to its detriment – by anthropogenic activities.

International governance of the marine environment is, however, uncoordinated, unwieldy, and arguably ineffective.[2] Certainly, with the oceans struggling to deal with the cumulative effect of the multiple threats they face,[3] and with present international legal instruments apparently inadequate for dealing with these, the 'new' dangers posed by climate change are not likely in the short term to be dealt with through any international convention text of global scope. As such, the international environmental lawyer or diplomat might do well to seek as much assistance as possible from obligations to be found in scattered instruments.

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2 See, for instance, Louis J. Kotzé, 'Fragmentation of International Environmental Law: An Oceans Governance Case Study' in Ed Couzens and Tuula Honkonen (eds), *International Environmental Law-making and Diplomacy Review 2008*, University of Joensuu–UNEP Course Series 8 (University of Joensuu, 2009) 11–30; and Michael Kidd, 'International Fisheries: An Overview of the International Legal Response' in Ed Couzens and Tuula Honkonen (eds), *International Environmental Law-making and Diplomacy Review 2008*, University of Joensuu–UNEP Course Series 8 (University of Joensuu, 2009) 31–38.

3 See Part 3 of this paper.

2 The freedom of the high seas

In 1608, Hugo de Groot ('Grotius') wrote a pamphlet entitled *De Mare Liberum*, in which he described the oceans as being:

> … that expanse of water which antiquity describes as the immense, the infinite, bounded only by the heavens, parent of all things; the ocean which the ancients believed was perpetually supplied with water not only by fountains, rivers, and seas, but by the clouds, and by the very stars of heaven themselves; the ocean which, although surrounding this earth, the home of the human race, with the ebb and flow of its tides, can be neither seized nor inclosed; nay, which rather possesses the earth than is by it possessed.[4]

Although primarily an argument made to entrench freedom of rights of navigation, this suggestion so influenced legal ideas over the centuries since it was made that it appears to have been only in relatively recent years that the world generally has been able to move away from it – and probably it has not moved away altogether.

Entrenching the idea of freedom of the high seas was the arbitral decision delivered in 1893 in the *Bering Sea Fur Seals Arbitration*.[5] In this matter the United States argued that it had a right to protect, while on the high seas, fur seals which returned periodically and seasonally to the territory of the United States. The tribunal held (with two arbitrators dissenting) that the US had no right of property or protection in the fur seals beyond a three mile limit (which at the time was considered to be the limit of a state's territorial sea) and that it could not therefore exploit or conserve the seals exclusively.

Birnie and Boyle emphasize that '[t]he importance of this decision to the development of the law concerning conservation of marine living resources cannot be overstressed' since, according to these writers, the decision:

> laid the twin foundations for subsequent developments over the next century' in the sense that, firstly, 'it confirmed that the law was based on high seas freedom of fishing and that no distinction was to be made in this respect between fisheries and marine mammals despite the very different characteristics of the latter, which the tribunal had examined.[6]

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[4] See, for instance, Anthony D'Amato and John L. Hargrove, *Environment and the Law of the Sea: A Report of the Working Group on Ocean Environment* (United Nations Juridical Yearbook, 1974) at 1.

[5] See 'Award of the Tribunal of Arbitration constituted under the Treaty concluded at Washington, the 29th of February 1892, between the United States of America and Her Majesty the Queen of the United Kingdom of great Britain and Ireland', in Tuomas Kuokkanen (ed.), *Seminal Cases of International Environmental Law* (Edita, 1999) 13–21; and *Reports of International Arbitral Awards*, Vol XXVIII 263–276 (award of 15 August 1893), available at <http://untreaty.un.org/cod/riaa/cases/vol_XXVIII/263-276.pdf> (visited 29 August 2011).

[6] Patricia Birnie and Alan Boyle, *International Law and the Environment* (2nd ed., Oxford University Press, 2002) at 649–50.

Given this history of legal freedom to act as one pleased on the high seas, and the fervour with which states have exercised this 'right' over the centuries, it is little wonder that from a 21st Century perspective the marine environment is in desperate trouble. In the next section of the present paper various of the problems faced by the marine environment are canvassed – together with possible links to changing climates.

3 Problems faced in the marine environment

3.1 General problems

The object of the present paper is not to attempt to establish the particular degree to which the world's marine environments are in trouble – this would be almost impossible to do given the extent to which environments differ and to which problems may be different in different locations. Nor is this intended to be a scientific paper. The aim in this Part of the paper is merely to establish that there is cause for serious concern. What follow are a number of the problems which policy-makers and scientists have identified as issues of concern, arranged roughly alphabetically and without an attempt to order them according to levels of seriousness.

3.1.1 Acidification of the oceans

Much, perhaps one-third, of the carbon dioxide which is emitted into the atmosphere through anthropogenic means is 'neutralized' through absorption into the oceans.[7] Unfortunately, this is not a 'free service' – the trade-off is that the chemical balance of the ocean is affected, as the pH level decreases.[8]

As well as direct damage, it appears that acidification has numerous poorly understood side-effects, such as reducing the biocalcification of calcareous phytoplankton. It has been explained, in this regard, that calcium carbonate begins dissolving as pH balances decline, and that ocean acidification could therefore have harmful effects on the abundance of coccolithophores (abundant single-celled algae which use calcium to form their exterior scales and which have a vital ecological role, producing much of the planet's oxygen, sequestering huge quantities of carbon, and acting as a food source for many oceanic animals).[9] Increasing scientific research is showing, further, that there may be many unforeseen (and even unforeseeable) effects. As an example of this, recent research from a team at James Cook University in Queensland, Australia has apparently demonstrated that an effect on young clownfish raised in water

[7] See 'What is ocean acidification?', available at <http://www.ocean-acidification.net/FAQacidity.html> (visited 28 August 2011).

[8] *Ibid*.

[9] 'Acid test for the seas', NOVA: Science in the News (Australian Academy of Science), January 2008, available at <http://www.science.org.au/nova/106/106key.htm> (visited 7 October 2011).

that has been deliberately acidified is that they may find it more difficult to perceive predators.[10]

3.1.2 Alien invasive species

When organisms are transported, either deliberately or accidentally, from one environment to another, it often happens that they find the new environment to be suitable to them and they thrive. Often, however, the success of the transported organisms or species in the new environment comes at the expense of organisms or species in that environment, which may be poorly equipped to co-exist with the new arrival and may find themselves out-competed or predated upon. Invasive alien species are most likely to find new homes, and consequently have their greatest impacts, in the warmer coastal areas which contain most life.

3.1.3 Coral bleaching

When coral reefs become exposed to heat, it seems, they die and leave stark white remnants of their former colourful selves – with rising sea temperatures appearing to be one of the major causes of this phenomenon.[11]

Bleaching occurs when the corals 'are subjected to repeated and/or sustained stresses which exceed their tolerances'; and 'when this occurs, the symbiotic algae living in the coral tissue are ejected … [t]he corals lose their colour and their white, calcerous skeleton shines through the transparent tissue'.[12] This is what is described as 'bleaching'. Some levels of recovery do appear possible, but this is erratic and sometimes does not occur – even where recovery does occur, reefs appear to be left 'impoverished'.[13]

Some estimates are that already at least 25 per cent of the world's coral reefs have been either lost or severely damaged. The threats to them include pollutants from land-based activities; physical damage, especially from trawling; removal of vegetation, especially mangrove swamps, which affects their ecosystems; overfishing, which affects reef fish populations and eco-balances; and physical damage from increasing human visitors.[14] The threat to the world's marine environments of losing such critical ecosystems can hardly be overstated.

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[10] Stephanie Rogers, 'Ocean acidification causes fatal attraction among fish', 24 November 2009, available at <http://www.mnn.com/earth-matters/climate-weather/stories/ocean-acidification-causes-fatal-attraction-among-fish> (visited 7 October 2011).

[11] Christian Nellemann, Stefan Hain and Jackie Alder (eds), *In Dead Water: Merging of Climate Change with Pollution, Over-Harvest, and Infestations in the World's Fishing Grounds* (UNEP, 2008), available at <http://www.unep.org/pdf/InDeadWater_LR.pdf> (visited 29 August 2011) at 28–29.

[12] *Ibid*.

[13] *Ibid*.

[14] See, generally, Franklin Moore and Barbara Best, 'Coral Reef Crisis: Causes and Consequences', undated, available at <http://www.aaas.org/international/africa/coralreefs/ch1.shtml> (visited 28 August 2011).

3.1.4 Eutrophication

Oversupplies of nutrients to marine environments, often due to excessive run-off of fertilizers or sewage, can cause excessive algal growth – paradoxically, this over-proliferation of plant material can lead to the creation of hypoxic areas, which are maritime 'dead zones' where the water has been starved of oxygen.

3.1.5 Habitat destruction

The fragmentation of habitats for numerous marine species results from habitat destruction (especially where this results from damage to coral reefs and to sea beds from bottom-trawling).

3.1.6 Increased human coastal development

The majority of the world's major cities, which are the recipients annually of multiple new immigrants, are located either on major watercourses or on coastlines. Numerous pollution problems originate from land-based sources – such as discharge, dumping, eutrophication, run-off, sediment deposits, and sewage discharges.[15] Coastal developments themselves will be affected by sea-level rise, causing numerous and often unforeseeable human settlement and migration issues.[16]

Degradation of the marine environment can result, per Agenda 21,[17] the 'Global Blueprint for Sustainable Development', from a wide range of activities on land. These activities include agriculture, construction of coastal infrastructure, forestry, human settlements, industry, land use, tourism, and urban development, all of which can affect the marine environment.[18] According to Agenda 21, coastal erosion and siltation are issues of particular concern.[19]

3.1.7 Melting of glacial and polar ice and sea level rise

Rising sea levels are one of the most significant expected results of climate change, with consequent impacts on coastal dunes, coral reefs, fish stocks, human settlements and so forth. The melting of ice from glaciers and in polar regions appears to be both significant and occurring at an accelerating rate.[20] There are numerous other reasons for changes in sea level, of course, including increased extraction of groundwater and seepage into acquifiers; circulation changes in both surface water and deep water and storm surges; subsidence in deltas and river basins; and the fact that warming of water causes it to expand.[21]

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15 Nellemann et al., *In Dead Water, supra* note 11, at 42–45.

16 *Ibid*.

17 See *infra*, Part 4.2.3, Agenda 21 (UN Conference on Environment and Development, Rio de Janeiro, 13 June 1992, UN Doc. A/CONF.151/26/Rev.1 (1992), available at <http://www.un.org/esa/dsd/agenda21/>), 'Programme Areas', 'Integrated Management and Sustainable Development of Coastal and Marine Areas, Including Exclusive Economic Zones', 'Activities', section 17.10.

18 *Ibid*.

19 *Ibid*.

20 Nellemann et al., *In Dead Water, supra* note 11, at 32–33.

21 *Ibid*.

3.1.8 Overfishing

Fish are concentrated in only 10–15 per cent (in which half of the world's catch is caught) of the oceans – and the damage has been done. Probably at least 80 per cent of the world's primary catch species are now exploited beyond their harvesting capacity.[22] Incredible amounts of non-target species are discarded as 'bycatch' and there is serious consequent damage to these species not targeted as well as to species such as including the damage done to sea-bird and turtle populations.

3.1.9 Pollution

Generally, the major threats to the marine environment from pollution (in all its forms from raw sewage to heavy metals to acoustic pollution) are identified in Chapter 17 of Agenda 21.[23] It is there explained that land-based sources contribute 70 per cent of marine pollution, and maritime transport and dumping-at-sea activities each contribute 10 per cent. It is explained that the pollutants which pose the greatest threats to the marine environment are, in different degrees of importance in different national or regional situations, litter and plastics, metals, nutrients, oil/hydrocarbons, polycyclic aromatic hydrocarbons (PAHs), radionuclides, sediments, sewage, and synthetic organic compounds. It is explained further that many of the contaminants originating from land-based sources are particularly damaging to the marine environment as they are characterized by bioaccumulation in the food chain, persistence, and toxicity.[24] Marine pollution, per Agenda 21, is caused also by shipping and sea-based activities, with approximately 600 000 tonnes of oil entering the oceans each year as a result of all of accidents, illegal discharges, and normal shipping.[25]

3.1.10 Sea temperature changes

As partially canvassed under other sub-headings, changes in sea temperature can have many effects. Glacier and polar ice melts will increase; for various reasons, sea levels will rise; alien invasive species are likely to be encouraged by warmer waters; and coral bleaching increases. Possibly the most ill-understood effects are likely to result from changes to thermohaline circulation – continental shelf 'flushing' and consequent necessary nutrient recycling. Climate change may, it seems, have impacts on these necessary renewal processes.

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[22] There is a great amount of literature available on the depletion of the world's fish stocks. See, inter alia, Richard Ellis, *The Empty Ocean* (Island Press/Shearwater Books, 2003); Ocean 2012 (an initiative coordinated by the Pew Environment Group), available at <http://www.ocean12.eu>; *Fish Dependence – 2011 Update: The increasing reliance of the EU on fish from elsewhere* (Ocean2012/Pew Environment Group, 2011), available at <http://assets.ocean2012.eu/publication_documents/documents/104/original/2011_Fish_Dependence_UPDATE.pdf> (both visited 29 August 2011); Daniel Pauly and Jay MacLean, *In a Perfect Ocean: The State of Fisheries and Ecosystems in the North Atlantic Ocean* (Island Press, 2003); Royal Swedish Academy of Agriculture and Forestry, *Fisheries, Sustainability and Development: Fifty-two authors on coexistence and development of fisheries and aquaculture in developing and developed countries* (Royal Swedish Academy of Agriculture and Forestry, 2009); Nellemann et al., *In Dead Water, supra* note 11; Colin S. Woodard, *Ocean's End: travels Through Endangered Seas* (Basic Books, 2000).

[23] Heading 'B. Marine environmental Protection', 'Basis for action', section 17.18.

[24] *Ibid.*

[25] *Ibid.*, section 17.20.

3.2 Conclusion

Of course, it will probably always be possible to find commentators who do not agree that the picture is as gloomy as it might seem, or who argue that not all of the problems which appear serious are in fact so. Lomborg, for instance, has written that 'the oceans are so incredibly big that our impact on them has been astoundingly insignificant'[26] – and then goes on to argue, amongst other things, that oil is a natural substance which tends mostly to evaporate and causes less damage than is often thought;[27] that the picture in respect of pollution of coastal waters 'is one of rapid improvement';[28] that while hypoxia and eutrophication may be localized problems, the problems they cause are outweighed by the benefits to humankind of increased food production through fertilizer use;[29] and that growing fish in fish farms will compensate for wild fish not available for capture because of over-fishing.[30]

One can only wish that Lomborg was correct! Unfortunately, there really is not a lot to be said in support of his arguments – especially in respect of his points about oil and how fast it dissipates,[31] pollution of coastal waters,[32] and aquaculture.[33]

In the final analysis, 'the problem' is not that each one of these problems exists – it is the potential cumulative impacts of these various causes that provide the most frightening possible consequences, where the impact of the combined whole may prove greater than is apparent from consideration of all of the different components separately. Although many of the individual dangers to the marine environment are not caused, but rather are exacerbated, by the effects of climate change, and they cannot be remedied by remedying climate change alone, finding solutions will be impossible unless climate change is considered as an integral part.

[26] Bjørn Lomborg, *The Skeptical Environmentalist: Measuring the Real State of the World* (Cambridge University Press, 2001) 189.
[27] *Ibid*. at 191–194.
[28] *Ibid*. at 194–195.
[29] *Ibid*. at 195–201.
[30] *Ibid*. at 106–108.
[31] Original oil from the famous *Torrey Canyon* spill in 1967 can apparently still be seen on the coastline of Cornwall. See, for instance, Patrick Barkham, 'Oil spills: Legacy of the Torrey Canyon', *Guardian* of 24 June 2010, available at <http://www.guardian.co.uk/environment/2010/jun/24/torrey-canyon-oil-spill-deepwater-bp> (visited 28 August 2011).
[32] Where he really only gives a glib example or two of European beaches.
[33] Where he simply gives gross tonnage figures and ignores any of the problems associated with aquaculture, such as the extent to which wild caught fish are needed to feed farmed fish in an inefficient and wasteful cycle; and the extent to which escapes and the spread of disease appear to be an unavoidable aspect of fish farming.

4 Finding appropriate international law

4.1 The absence of dedicated international provisions

At present, unfortunately, there is no international convention which deals directly with climate change issues in the context of marine issues. However, 'needs must' and – at least until there is such a convention – the international environmental lawyer or negotiator seeking to protect the marine environment might consider making use of those general provisions which could be brought to bear on the issue-area.

What follows in this section of this paper is a consideration of various sections, found in various international conventions, which might be used to combat negative climate change-related effects in the marine context. These have been considered under the general heading of international instruments in the form of 'soft law instruments' and 'hard law instruments'. These two headings might also have been termed, respectively, 'declarations', which obviously provide for general obligation; followed by instruments which provide for 'specific duties'. Regional instruments have been considered at the end of the second category.

4.2 Soft law instruments

4.2.1 Declaration of the United Nations Conference on the Human Environment, 1972

Although clearly soft law, the 'Stockholm Declaration'[34] has played an important role in the development of international environmental law as many multilateral environmental agreements have built upon its achievements. In particular, the ten-year cycle of major environmental summits being held in the third year of each decade[35] began with this Conference.

Arguably, though, only one of the Declaration's 26 principles appears to have become firmly entrenched[36] – this being Principle 21,[37] which may even more unfortunately have achieved this status more for its non-environmental aspect than for its

[34] Declaration of the United Nations Conference on the Human Environment (UNCHE), Stockholm, 16 June 1972, UN Doc. A/CONF.48/14/Rev.1 (1973), 11 *International Legal Materials* (1972) 1416.

[35] The UNCHE in 1972; the World Charter for Nature in 1982 (UNGA Res. 37/7); UN Conference on Environment and Development (UNCED) in 1992 (see <http://www.un.org/geninfo/bp/enviro.html>); the World Summit on Sustainable Development (WSSD) in 2002 (see <http://www.un.org/events/wssd/>); and the Earth Summit (Rio +20) in 2012 (see <http://www.uncsd2012.org/rio20/>).

[36] See Daniel Bodansky's paper in the present volume of the *Review*, under Part 2.3 in that paper.

[37] Principle 21 reads:

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

being useful for environmental protection. In other words, it may be the aspect of entrenched sovereign rights which pleases states.[38] Nevertheless, its ongoing repetition in different international instruments[39] remains significant as the Principle clearly provides that states have a 'responsibility' to prevent 'activities within their jurisdiction[s]' from damaging 'areas beyond the limits of national jurisdiction'. As many marine areas will be situated beyond national limits, this Principle might be useful to an argument that states have general duties to protect such areas.

Further, although not as entrenched a principle, it should not be forgotten that the Stockholm Declaration contains a principle directly pertinent to marine protection. Principle 7 read as follows:

> States shall take all possible steps to prevent pollution of the seas by substances that are liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea.

4.2.2 UN General Assembly Resolution 37/7: World Charter for Nature, 1982

The World Charter for Nature is perhaps a more interesting document than it is often given credit for being – although clearly 'soft law', the General Assembly does appear to have made an effort to give its principles peremptory force.[40] In this regard, Principle 14 records that '[t]he principles set forth in the present Charter shall be reflected in the law and practice of each State, as well as at the international level' – the use of the peremptory word 'shall' being somewhat unusual in international environmental instruments. Birnie, Boyle and Redgwell record that 'this phraseology alone does not render this Charter binding'; but do also point out that 'the distinction between "hard" and "soft" law becomes blurred as states begin to act on these recommendations or incorporate them in treaties'.[41]

Birnie, Boyle and Redgwell go on to argue that '[t]he Charter was clearly intended by the UN majority to be a contribution to the creation of new binding

[38] It might be possible to draw a useful lesson from this: that coupling a limiting provision (the entrenching of state sovereignty) to general environmental protection might make it easier to persuade states to agree to a clause providing for environmental protection, even though such latter clauses might have the effect of limiting a state's sovereignty.

[39] For instance, Rio Declaration (UN Declaration on Environment and Development, Rio de Janeiro, 14 June 1992, UN Doc. A/CONF.151/5/Rev.1 (1992), 31 *International Legal Materials* (1992) 876); the Biodiversity Convention (Convention on Biological Diversity, Rio de Janeiro, 5 June 1992, in force 29 December 1993, 31 *International Legal Materials* (1992) 822, <http://www.biodiv.org>) and the Preamble of the Climate Change Convention (United Nations Framework Convention on Climate Change, New York, 9 May 1992, in force 21 March 1994, 31 *International Legal Materials* (1992) 849, <http://unfccc.int>).

[40] Patricia Birnie; Alan Boyle and Catherine Redgwell, *International Law and the Environment* (3rd ed., Oxford University Press, 2009) 69.

[41] *Ibid*.

international law on conservation and, if systematically applied and elaborated, its rules could be transformed into customary international law'.[42]

Part I of the World Charter is headed 'General Principles' and contains only five articles. The first two record that '[n]ature shall be respected and its essential processes shall not be impaired';[43] and that '[t]he genetic viability on the earth shall not be compromised', with the 'population levels of all life forms, wild and domesticated', being at 'least sufficient for their survival, and to this end necessary habitat shall be safeguarded'.[44] The next two principles are interesting in that they both give specific mention to the marine environment. According to Principle 3, '[a]ll areas of the earth, both land and sea, shall be subject to these principles of conservation; special protection shall be given to unique areas, to representative samples of all the different types of ecosystems and to the habitat of rare or endangered species'.[45] According to Principle 4, '[e]cosystems and organisms, as well as the land, marine and atmospheric resources that are utilized by man, shall be managed to achieve and maintain optimum sustainable productivity, but not in such a way as to endanger the integrity of those other ecosystems or species with which they co-exist'.[46]

4.2.3 Rio Declaration on Environment and Development, 1992

Principle 2 of the Rio Declaration, one of the documents which emanated from the United Nations Conference on Environment and Development (UNCED), repeats Principle 21 of the Stockholm Declaration, providing an example of how repetition can serve to strengthen a principle. The Rio Declaration, however, clearly slots into the sequence of soft law instruments; but Birnie et al. describe it as having 'much greater legal significance than its 1972 predecessor'[47] – in fact, they describe it as 'constitut[ing] at present the most significant universally endorsed statement of general rights and obligations of states affecting the environment'.[48] In their view, the value of the Declaration is 'evidential' in that it 'tells us what states believe the law to be in certain cases, or in others what they would like it to become or how they want it to develop'.[49]

No one of the Principles contained in the Rio Declaration mentions the marine environment specifically, but Principle 2 does refer, repeating Principle 21 of the Stockholm Declaration, to the 'responsibility' not to 'cause damage to the environment … of areas beyond the limits of national jurisdiction'.[50] Further, Principle 15

[42] *Ibid*. at 605.
[43] Art. 1.
[44] Art. 2.
[45] Art. 3.
[46] Art. 4.
[47] See Birnie, et al., *International Law and the Environment, supra* note 40, at 52.
[48] *Ibid*. at 112.
[49] *Ibid*.
[50] Principle 2.

contains the clearest exposition in a major international instrument of the precautionary principle – albeit without using the word 'principle' in the text of the principle. Instead, Principle 15 reads:

> [i]n order to protect the environment, the *precautionary approach* (own emphasis) shall be widely applied by [s]tates according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.[51]

Fitzmaurice depicts this formulation of the principle as being 'weak' and non-controversial[52] – the corollary being that found in the World Charter for Nature of 1982, which states that when 'potential adverse effects are not fully understood, the activities should not proceed'.[53] The cynical observer might argue that this says something about the nature of international environmental law, that the stronger formulation is to be found in the weaker instrument – and vice versa. This does not bode well for the international environmental lawyer hoping to find obligations which might be useful for combating the adverse effects of climate change in the marine environment. Still, whether weak or not, the Rio Declaration is often cited, has had an important influence and it will be interesting to see how it is built upon in future instruments.

Whatever the current status of the precautionary principle in international environmental law, even given its more usual formulation as an 'approach' there can be little doubt that the concept is developing and – and that it provides a very persuasive rationale for humankind to proceed with great caution in interacting with the marine environment. In respect of climate change, it is even arguable that the entire regime for controlling emissions of greenhouse gases is based upon a precautionary approach – given the difficulty of providing firm evidence for the negative effects of these.

4.2.3 Agenda 21, 1992

Another document to emanate from the UNCED in 1992 was the lengthy global blueprint for implementation of sustainable development, Agenda 21. While obviously soft law, being a set of suggested considerations and methods which states might adopt in taking measures for environmental protection and sustainable development, Agenda 21 remains important as an attempt to translate 'theory' into 'prac-

[51] Principle 15.

[52] Malgosia Fitzmaurice, *Contemporary Issues in International Environmental Law* (Edward Elgar, 2009) 8.

[53] *Ibid*. at 9. According to Principle 11 of the World Charter for Nature:

> Activities which might have an impact on nature shall be controlled, and the best available technologies that minimize significant risks to nature or other adverse effects shall be used; in particular: … (a) … (b) Activities which are likely to pose a significant risk to nature shall be preceded by an exhaustive examination; their proponents shall demonstrate that expected benefits outweigh potential damage to nature, and where potential adverse effects are not fully understood, the activities should not proceed; …

tice'. Chapter 17 of Agenda 21 is headed: 'Protection of the Oceans, all Kinds of Seas, Including Enclosed and Semi-enclosed Seas, and Coastal Areas and the Protection, Rational Use and Development of their Living Resources'.

Agenda 21 describes the marine environment, 'including the oceans and all seas and adjacent coastal areas', as forming 'an integrated whole that is an essential component of the global life-support system and a positive asset that presents opportunities for sustainable development'.[54] According to Agenda 21, '[i]nternational law, as reflected in the provisions of the United Nations Convention on the Law of the Sea … sets forth rights and obligations of States and provides the international basis upon which to pursue the protection and sustainable development of the marine and coastal environment and its resources'.[55]

Chapter 17 of Agenda 21 is far too lengthy for consideration in this paper, but it is worth pointing out that under the sub-heading 'International and regional cooperation and coordination', it is stated that:

> [t]he role of international cooperation and coordination on a bilateral basis and, where applicable, within a subregional, interregional, regional or global framework, is to support and supplement national efforts of coastal States to promote integrated management and sustainable development of coastal and marine areas.[56]

Clearly, such international cooperation would require coordination of international legal instruments.

Further, in a different chapter of Agenda 21, under the chapter heading 'International Legal Instruments and Mechanisms',[57] it is stated under the sub-heading 'Basis for Action' that there is a recognition that 'the following vital aspects of the universal, multilateral and bilateral treaty-making process should be taken into account':

> (a) [t]he further development of international law on sustainable development, giving special attention to the delicate balance between environmental and developmental concerns;
> (b) [t]he need to clarify and strengthen the relationship between existing international instruments or agreements in the field of environment and relevant

[54] *Ibid*., 'Introduction'.
[55] *Ibid*.
[56] *Ibid*., 'Programme Areas', 'Integrated Management and Sustainable Development of Coastal and Marine Areas, Including Exclusive Economic Zones', 'Activities', '17.10. (C) International and regional cooperation and coordination'.
[57] Chapter 39.

> social and economic agreements or instruments, taking into account the special needs of developing countries; …[58]

This is important in the situation the world faces in respect of the marine environment generally – potentially catastrophic and widespread environmental collapse, no single dedicated convention, and numerous conventions which might be able to play a role in enhancing protection.

4.2.4 Johannesburg Declaration on Sustainable Development, 2002

The next major Declaration in the series which began with the Stockholm Declaration is the Johannesburg Declaration,[59] which was agreed to at the World Summit on Sustainable Development (WSSD) in 2002. This Declaration does not contain an article dedicated to the marine environment, but it is mentioned in Article 13, under the heading 'The challenges we face':

> [t]he global environment continues to suffer. Loss of biodiversity continues, fish stocks continue to be depleted, desertification claims more and more fertile land, the adverse effects of climate change are already evident, natural disasters are more frequent and more devastating, and developing countries more vulnerable, and air, water and marine pollution continue to rob millions of a decent life.

At present it is not possible to say that the Johannesburg Declaration takes the process forward in any significant way – as Birnie et al. write, 'the WSSD … added little by way of new policies and principles. Nonetheless, … [its] value lies in the further recognition of the contribution which conservation of biological diversity can make to the sustainable development process, and to poverty eradication in particular'.[60]

Accompanying the Declaration was a Plan of Implementation,[61] which is intended to:

> build on the achievements made since the United Nations Conference on Environment and Development and expedite the realization of the remaining goals. To this end, we [the Parties] commit ourselves to undertaking concrete actions and measures at all levels and to enhancing international cooperation, … These efforts will also promote the integration of the three components of sustainable development – economic development, social development and environmental protection – as interdependent and mutually reinforcing pillars.

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[58] *Ibid*.

[59] Johannesburg Declaration on Sustainable Development 'From our origins to the future', Johannesburg, South Africa, 4 September 2011, available at <http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/POI_PD.htm>.

[60] Birnie et al., *International Law and the Environment, supra* note 40, at 611.

[61] See Plan of Implementation of the World Summit on Sustainable Development, UN Doc. A/CONF.199/20 (2002).

The Plan does contain paragraphs[62] which declare that 'oceans, seas, islands and coastal areas form an integrated and essential component of the Earth's ecosystem and are critical for global food security and for sustaining economic prosperity and the well-being of many national economies, particularly in developing countries'.[63] The Plan then states that '[e]nsuring the sustainable development of the oceans requires effective coordination and cooperation, including at the global and regional levels, between relevant bodies, and actions at all levels to' take certain actions, including inviting states to ratify or accede to and implement the United Nations Convention on the Law of the Sea of 1982, 'which provides the overall legal framework for ocean activities';[64] and to promote the implementation of chapter 17 of Agenda 21.[65]

There are a number of sensible suggestions contained in the Plan for using international legal instruments in a cooperative fashion, such as by encouraging states to 'establish an effective, transparent and regular inter-agency coordination mechanism on ocean and coastal issues within the United Nations system';[66] to 'promote integrated, multidisciplinary and multisectoral coastal and ocean management at the national level and encourage and assist coastal [s]tates in developing ocean policies and mechanisms on integrated coastal management';[67] and to '[s]trengthen regional cooperation and coordination between the relevant regional organizations and programmes, the regional seas programmes of the United Nations Environment Programme, regional fisheries management organizations and other regional science, health and development organizations'.[68]

According to Chambers, however, the Plan of Implementation is 'disappointing' in that it 'offers very few changes from the status quo and certainly nothing imaginative for a future vision of effective institutional arrangements'.[69] Further, he suggests that while the Plan raises 'important priorities', it 'proposes no new concrete actions'.[70] Unfortunately, the Plan is – as its soft law nature implies – long on aspiration and short on firm commitment. Something of its unrealistic nature can perhaps be seen in the suggestion that, '[t]o achieve sustainable fisheries, the following actions are required at all levels:[71] [m]aintain or restore stocks to levels that can produce the maximum sustainable yield with the aim of achieving these goals for depleted stocks on an urgent basis and where possible not later than 2015 …'.[72] This goal always was

[62] *Ibid*. paras 30–34.
[63] *Ibid*. para. 30.
[64] *Ibid*. para. 30(a).
[65] *Ibid*. para. 30(b). See *infra*, Part 4.2.3, on the provisions of Agenda 21.
[66] *Ibid*. para. 30(c).
[67] *Ibid*. para. 30(e).
[68] *Ibid*. para. 30(f).
[69] W. Bradnee Chambers, *Interlinkages and the Effectiveness of Multilateral Environmental Agreements* (United Nations University Press, 2008) at 38.
[70] *Ibid*.
[71] Plan of Implementation of the World Summit on Sustainable Development, *supra* note 61, at para. 31.
[72] *Ibid*. para. 31(a).

unrealistic and, at the time of writing in 2011, it is clear that there is no chance whatsoever of the goal being met. Quite simply, so little has been done that it is as though nothing has been done – while there may be the occasional regional or local success story, overall the world's fisheries remain in deep trouble.[73]

Ironically, the greatest long-term contribution which the Plan makes may lie in its failure and the lessons which can be learned from this – doubtless, this will be a topic for discussion at the next in the series of decade-cycled environment-related summits: Rio+20 in 2012.[74]

4.3 Firm obligations in multilateral environmental agreements

Turning from consideration of soft law instruments which might be useful in combating climate change-related negative effects on the marine environment, this paper now considers examples of firm obligations which might be used to the same purpose.

4.3.1 MARPOL, 1973/78

The International Convention for the Prevention of Pollution from Ships[75] was adopted in 1973 by Parties 'conscious' of the need to preserve the human environment in general and the marine environment in particular; and 'recognizing' that deliberate, negligent or accidental release of oil and other harmful substances[76] from ships constitutes a serious source of pollution; and 'desiring' to achieve the complete elimination of intentional pollution of the marine environment by oil and other harmful substances and the minimization of accidental discharge of such substances.[77]

The Convention of 1973 and the Protocol of 1978, known combined as 'MARPOL 73/78', operate in practice through six Annexes. Parties are required to adopt Annexes I and II, but a State Party may declare that it does not accept one or all of the other Annexes. For purposes of the present discussion it is worth drawing attention to Annex VI, which was introduced by the Protocol of 1997 and which provides regulations concerning air pollution from ships.[78]

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[73] See the discussion on overfishing in Part 3 supra and the general readings cited there.

[74] Twenty years after UNCED, the United Nations 'Earth Summit' will be held in Rio in 2012. See the official website at <http://www.earthsummit2012.org/>.

[75] International Convention for the Prevention of Pollution from Ships, 1973, first signed 2 November 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78), adopted 17 February 1978. The combined instrument entered into force on 2 October 1983, 12 *International Legal Materials* (1973) 1319, <http://www.imo.org>. Amended by the Protocol of 1997 to amend the International Convention for the Prevention of Pollution from Ships of 2 November 1973, as modified by the Protocol of 17 February 1978, London, 26 September 1997.

[76] Meaning 'any substances which, if introduced into the sea, are liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea, and includes any substance subject to control by the present': 'Definitions'.

[77] Preamble.

[78] 'Regulations for the Prevention of Air Pollution from Ships', 26 September 1997, into force 19 May 2005.

In 2008 the MARPOL Environment Protection Committee adopted amendments to Annex VI, committing Parties to the:

> progressive reduction in sulphur oxide (SOx) emissions from ships, with the global sulphur cap reduced initially to 3.50% (from the current 4.50%), effective from 1 January 2012; then progressively to 0.50%, effective from 1 January 2020, subject to a feasibility review to be completed no later than 2018.[79]

It is further intended that the limits applicable in Sulphur Emission Control Areas will from 1 July 2010 be reduced from the current 1.50 per cent to 1.00 per cent; and then be further reduced to 0.10 per cent, effective from 1 January 2015.[80] Progressive reductions in nitrogen oxide (NOx) emissions from marine engines were also agreed to, with the most restrictive controls being on engines installed on ships constructed on or after 1 January 2016, and where those ships operate in Emission Control Areas.

After adoption of the amendments to MARPOL Annex VI, International Maritime Organization[81] Secretary-General Efthimios Mitropoulos was quoted as saying that the amendments represented 'a monumental decision in IMO's history, a decision that proves … that the Organization is … capable of dealing with all items on its agenda, [and] an organization that sets global standards in a global environment'.[82] The revised measures, according to the IMO, 'are expected to have a significant beneficial impact on the atmospheric environment and on human health, particularly that of people living in port cities and coastal communities'.

4.3.2 Convention on Long-range Transboundary Air Pollution, 1979

While this Convention[83] was originally created because of concerns over the damaging effects of acid rain,[84] the effects of which are far more visible in terrestrial environments, marine environments may also be affected. In fact, it has even been suggested that acid rain might have a disproportionate impact on coastal waters; and that the impact of nitrogen and sulphur compounds from the atmosphere alters

[79] Marine Environment Protection Committee (MEPC), 58th session, 6–10 October 2008, available at <http://www.imo.org/environment/mainframe.asp?topic_id=233> (visited 28 August 2011). The revised Annex VI entered into force on 1 July 2010, under the tacit acceptance amendment procedure.

[80] *Ibid*.

[81] See <http://www.imo.org>.

[82] See Marine Environment Protection Committee (MEPC), 58th session, *supra* note 79; and 'IMO environment meeting adopts revised regulations on ship emissions', available at <http://www.worldshipping.org/pdf/imo_release_on_annexvi.pdf> (visited 28 August 2011).

[83] Convention on Long-Range Transboundary Air Pollution, Geneva, November 13 1979, in force 16 March 1983, 18 *International Legal Materials* (1979) 1442, <http://www.unece.org/env/lrtap/>.

[84] 'Acid rain', per the United States Environment Protection Agency, is 'a broad term referring to a mixture of wet and dry deposition (deposited material) from the atmosphere containing higher than normal amounts of nitric and sulfuric acids', and which can affect both animals and plants when deposited. See <http://www.epa.gov/acidrain/what/> (visited 26 August 2011).

marine water chemistry, with increased acidity and lower pH reducing the oceans' capacity to absorb carbon.[85]

The Convention is a regional convention, but now has 51 parties[86] including Canada and the United States, the entire European Community and the Russian Federation,[87] and therefore spans the entire northern half of the globe.

The usefulness of the general exhortation which provides that '[t]he Contracting Parties, taking due account of the facts and problems involved, are determined to protect man and his environment against air pollution and shall endeavour to limit and, as far as possible, gradually reduce and prevent air pollution including long-range transboundary pollution',[88] is obviously limited by the vague nature of the word 'endeavour' which follows the directive word 'shall'.

However, there are a number of provisions in the Convention which might be useful, such as that '[t]he Contracting Parties … shall … develop without undue delay policies and strategies which shall serve as a means of combating the discharge of air pollutants …';[89] and that '… each Contracting Party undertakes to develop the best policies and strategies including air quality management systems …'.[90]

In pursuance of its mandate, the Convention's Parties have adopted eight protocols. The most recent of these, the 1999 Gothenburg protocol,[91] was signed by 31 Parties, of which 26 have ratified, and entered into force on 17 may 2005.[92] The aim of the Protocol is to cut emissions of four pollutants (ammonia, nitrogen oxides, sulphur dioxide, and volatile organic compounds) by means of setting country-by-country emission ceilings which were intended to be achieved by the year 2010.[93] Different requirements are imposed for different countries, assigned according to cost-effectiveness, with the object being to achieve the environmental targets at the lowest overall cost for Europe as a whole.[94] The Protocol is likely to be revised again. The importance of this lies in the fact that it shows that it is possible for states to adapt

[85] Woods Hole Oceanographic Institution, 'News Release: Acid Rain Has a Disproportionate Impact on Coastal Waters', 7 September 2007, available at <http://www.whoi.edu/page.do?pid=7545&tid=282&cid=31286&ct=162> (visited 27 August 2011).

[86] Including, somewhat bizarrely, the Holy See as a signatory Party.

[87] See 'Status of ratification as of 1 March 2011', available at <http://live.unece.org/env/lrtap/status/lrtap_st.html> (visited 27 August 2011).

[88] Art. 2 ('Fundamental Principles').

[89] Art. 3 ('Fundamental Principles').

[90] Art. 6 ('Air Quality Management').

[91] Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution to Abate Acidification, Eutrophication and Ground-Level Ozone, Gothenburg, 30 November 1999, into force 17 May 2005, available at <http://live.unece.org/fileadmin/DAM/env/lrtap/full%20text/1999%20Multi.E.Amended.2005.pdf> (visited 29 August 2011).

[92] See 'Status of ratification', available at <http://live.unece.org/env/lrtap/status/99multi_st.html> (visited 27 August 2011).

[93] UNECE, 'The 1999 Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone', available at <http://live.unece.org/env/lrtap/multi_h1.html> (visited 27 August 2011).

[94] *Ibid*.

to a new challenge, climate change, within the context of a convention which was not created initially for that purpose.

4.3.3 Convention on Migratory Species, 1979

The Convention on Migratory Species (CMS)[95] categorizes species of wild animals in much the same way the Convention on Endangered Species of Wild Fauna and Flora (CITES),[96] 1973, does – but takes a different approach to the latter convention, as the CMS relies on voluntary subscription to its 'obligations' by way of Agreements between Parties. CITES is prescriptive in creating categories of species which are then the subjects of strict prohibitions or restrictions on trade – the CMS is far more encouraging of states to act of their own initiative. This difference in approach is inevitable as CITES has only extremely limited jurisdiction within national territories, while the CMS attempts to encourage states to take steps within their borders.

The Preamble records that the Parties are:

> CONCERNED particularly with those species of wild animals that migrate across or outside national jurisdictional boundaries; RECOGNIZ[E] that the States are and must be the protectors of the migratory species of wild animals that live within or pass through their national jurisdictional boundaries; [and are] CONVINCED that conservation and effective management of migratory species of wild animals require the concerted action of all States within the national jurisdictional boundaries of which such species spend any part of their life cycle; …

The migratory requirements of marine species are understood far less well than are those of terrestrial species, and it is important that whatever can be done to prevent disruption to migratory cycles be done. Much of what needs to be done will require actions to be taken within national jurisdictions, rather than in areas of open access.

The major obligation[97] in the text is that Parties, acknowledging the importance of conserving migratory species 'and of Range States agreeing to take action to this end whenever possible and appropriate', agree to 'paying special attention to migratory species the conservation status of which is unfavourable', and agree to 'taking individually or in co-operation appropriate and necessary steps to conserve such species and their habitat'.[98]

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[95] Convention on the Conservation of Migratory Species of Wild Animals, Bonn, 23 June 1979, in force 1 November 1983, 19 *International Legal Materials* (1980) 15, <http://www.cms.int>. Further on the Convention, see Aline Kühl and Elizabeth Maruma Mrema, 'Impacts of Climate Change on Biodiversity, with a Focus on Migratory Species', in the present *Review*.

[96] Convention on International Trade in Endangered Species of Wild Fauna and Flora, Washington DC, 3 March 1973, in force 1 July 1975, 993 *United Nations Treaty Series* 243, <http://www.cites.org>.

[97] Art. II ('Fundamental Principles').

[98] Art. II.1.

Climate change is not specifically mentioned in the text. However, there are a number of places where the obligations the Parties have taken on, even where exhortatory rather than mandatory, will require that the effects of climate change be considered. In this regard, for instance, the Parties 'acknowledge the need to take action to avoid any migratory species becoming endangered';[99] and, 'in particular', 'should promote, co-operate in and support research relating to migratory species'.[100] Where such research indicates migratory species to be endangered, these species ought to be listed;[101] and steps to conserve those species and, importantly, the habitats in which they live should be taken.[102]

4.3.4 Convention on the Conservation of European Wildlife and Natural Habitats, 1979

The Convention on the Conservation of European Wildlife and Natural Habitats,[103] known as the Bern Convention, is intended to ensure cooperation between European states with the objective of ensuring conservation of wildlife in Europe. The Convention provides[104] that '[e]ach Contracting Party shall take steps to promote national policies for the conservation of wild flora, wild fauna and natural habitats, with particular attention to endangered and vulnerable species, especially endemic ones, and endangered habitats', and that '[e]ach Contracting Party undertakes, in its planning and development policies and in its measures against pollution, to have regard to the conservation of wild flora and Fauna'.[105] Taking measures against pollution, therefore, would require consideration of the effects of such pollution on the environment – including the marine environment.

Further, there is an obligation on each Party to 'take appropriate and necessary legislative and administrative measures to ensure the conservation of the habitats of the wild flora and fauna species, … and the conservation of endangered natural habitats'.[106] The Convention is of relevance to marine environments, taking (as it does) particular note of marine turtles, island biodiversity and migratory species issues. Recent measures adopted, in respect of climate change and marine environments, under the Convention are discussed later in this paper.[107]

[99] Art. II.2.
[100] Art. II.3(a).
[101] Art. III ('Endangered Migratory Species: Appendix I').
[102] Arts III.4 and III.5.
[103] Convention on the Conservation of European Wildlife and Natural Habitats, Bern, 19 September 1979, into force 1 June 1982, <http://conventions.coe.int/Treaty/Commun/QueVoulezVous.asp?NT=104&CM=1&DF=29/08/2011&CL=ENG> (visited 29 August 2011).
[104] Art. 3.
[105] *Ibid*.
[106] Art. 4.
[107] See *infra* under Part 5: Conclusion; and specifically at footnote 190.

4.3.5 UN Convention on the Law of the Sea, 1982

One of the most ambitious of all international Conventions, the United Nations Convention on the Law of the Sea (UNCLOS)[108] contains, unfortunately, no actual requirement to protect the high seas – although such a requirement might arguably be read into the Convention if many of its Articles are not to become nugatory.

Nevertheless, there are a number of obligations to be found in the Convention which might be used to combat activities with negative climate change-related implications for the marine environment, including the high seas. For instance, Art. 145 is headed 'Protection of the marine environment' and states that '[n]ecessary measures shall be taken in accordance with this Convention with respect to activities in the Area to ensure effective protection for the marine environment from harmful effects which may arise from such activities'.[109] The word 'Area' can be taken to indicate the high seas.

Further, Art. 212, headed 'Pollution from or through the atmosphere', provides that '[s]tates shall adopt laws and regulations to prevent, reduce and control pollution of the marine environment from or through the atmosphere, applicable to the air space under their sovereignty and to vessels flying their flag or vessels or aircraft of their registry, …'.[110] While the tenor of this Article could be taken to imply that it envisages pollution of the atmosphere from airplanes and seagoing vessels, pollution entering the atmosphere from land-based sources can clearly not be excluded.

4.3.6 Agreement for the Implementation of the Provisions of the UNCLOS of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, 1995

This Agreement[111] falls under the UNCLOS and represents an effort to manage and protect fish species of a particular nature. The Preamble records that the Parties are: [d]etermined to ensure the long-term conservation and sustainable use of straddling fish stocks and highly migratory fish stocks' and are '[c]onscious of the need to avoid adverse impacts on the marine environment, preserve biodiversity, [and] maintain the integrity of marine ecosystems'.

Specific obligations in the text of the Agreement include that '[i]n order to conserve and manage straddling fish stocks and highly migratory fish stocks, coastal [s]tates

[108] United Nations Convention on the Law of the Sea (UNCLOS), Montego Bay, 10 December 1982, in force 16 November 1994, 21 *International Legal Materials* (1982) 1261.

[109] Art. 145 ('Protection of the marine environment').

[110] Art. 212 ('Pollution from or through the atmosphere'). Article 222 provides for enforcement of Art. 212.

[111] Agreement for the Implementation of the Provisions of the UN Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, New York, 4 August 1995, in force 11 December 2001, 34 *International Legal Materials* (1995) 1542, <http://www.un.org/Depts/los/convention_agreements/texts/fish_stocks_agreement/CONF164_37.htm> (visited 2 February 2009).

and [s]tates fishing on the high seas shall …[112] apply the precautionary approach';[113] 'assess the impacts of fishing, other human activities and environmental factors on target stocks and species belonging to the same ecosystem or associated with or dependent upon the target stocks';[114] 'protect biodiversity in the marine environment';[115] and 'promote and conduct scientific research and develop appropriate technologies in support of fishery conservation and management'.[116] All of these selected obligations have direct and obvious relevance for preventing or managing negative climate change-related impacts on fisheries. A further obligation of relevance is that '[s]tates shall cooperate, either directly or through competent international organizations, to strengthen scientific research capacity in the field of fisheries and promote scientific research related to the conservation and management of straddling fish stocks and highly migratory fish stocks for the benefit of all'.[117]

It is worth noting also the obligation[118] that '[s]tates shall apply the precautionary approach widely to conservation, management and exploitation of straddling fish stocks and highly migratory fish stocks in order to protect the living marine resources and preserve the marine environment';[119] and that,

> in implementing the precautionary approach, [s]tates shall: … take into account, inter alia, uncertainties relating to the size and productivity of the stocks, reference points, stock condition in relation to such reference points, levels and distribution of fishing mortality and the impact of fishing activities on non-target and associated or dependent species, as well as existing and predicted oceanic, environmental and socio-economic conditions; …[120]

It is the final words here ('existing and predicted oceanic, environmental and socio-economic conditions') which are relevant to the present discussion.

[112] Art. 5 ('General principles').
[113] Art. 5(c). The precautionary approach is to be applied in accordance with Article 6.
[114] Art. 5(d).
[115] Art. 5(g).
[116] Art. 5(k).
[117] Art. 14(3).
[118] In Art. 6 ('Application of the precautionary approach').
[119] Art. 6(1).
[120] Art. 6(2)(c).

4.3.7 Convention on Environmental Impact Assessment in a Transboundary Context, 1991

This regional Convention[121] currently has 45 Parties, including the European Union.[122] Although regional, it is a globally influential Convention – and its application has arguably led, as noted on its website, to disputes between its Parties being 'rare'.[123]

The Convention on Environmental Impact Assessment in a Transboundary Context, often known as the 'Espoo Convention', provides[124] that its Parties 'shall, either individually or jointly, take all appropriate and effective measures to prevent, reduce and control significant adverse transboundary environmental impact from proposed activities'.[125] The Convention then further provides that '[t]he Party of origin shall ensure that in accordance with the provisions of this Convention an environmental impact assessment is undertaken prior to a decision to authorize or undertake a proposed activity [] that is likely to cause a significant transboundary impact'.[126] As many, if not most, anthropogenically induced climate change-related impacts on the marine environment will have a transboundary aspect to them, these obligations – albeit general in nature – are of obvious importance.

4.3.8 Protocol on Environmental Protection to the Antarctic Treaty, 1991

The Antarctic Treaty, 1959,[127] was not originally an 'environmental' Convention, at least in the modern sense, representing rather a political compromise in the face of competing territorial and access claims[128] – however, it can also be seen as being 'inherently environmentally protective' in its promotion of scientific investigation;[129] and in its prohibition of nuclear explosions and disposal of radioactive waste.[130]

Obviously, so sensitive an environment as the Antarctic[131] was worthy of greater protection than such indirect cover – and this was provided in 1991 with the Protocol on Environmental Protection to the Antarctic Treaty.[132]

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[121] Convention on Environmental Impact Assessment in a Transboundary Context, Espoo, 25 February 1991, in force 10 September 1997, 30 *International Legal Materials* (1991) 802.

[122] UNECE, 'Parties to Espoo Convention take stock of 20 years of transboundary environmental impact assessment in UNECE region', available at <http://www.unece.org/press/pr2011/11env_p24e.htm> (visited 27 August 2011).

[123] *Ibid*.

[124] Art. 2 ('General Provisions').

[125] Art. 2(1).

[126] Art. 2(3).

[127] Antarctic Treaty, Washington, 1 December 1959, in force 23 June 1961, 19 *International Legal Materials* (1980) 860.

[128] This compromise is reflected in Art. IV, which is protective of territorial and other access claims.

[129] Art. II.

[130] Art. V.

[131] For a discussion of the Antarctic environment, see Ewan McIvor, 'Looking South: Antarctic Environmental Governance' in Ed Couzens and Tuula Honkonen (eds), *International Environmental Law-making and Diplomacy Review 2008*, University of Joensuu–UNEP Course Series 8 (University of Joensuu, 2009) 139–152.

[132] Protocol on Environmental Protection to the Antarctic Treaty, Madrid, 4 October 1991, in force 14 January 1998, 30 *International Legal Materials* (1991) 1461.

Generally, the Parties to the Protocol 'commit themselves to the comprehensive protection of the Antarctic environment and dependent and associated ecosystems'.[133] It is then provided[134] that '[t]he protection of the Antarctic environment and dependent and associated ecosystems … shall be fundamental considerations in the planning and conduct of all activities in the Antarctic Treaty area'.[135] In order to achieve this end[136] it is provided that 'activities in the Antarctic Treaty area shall be planned and conducted so as to avoid'[137] 'adverse effects on climate or weather patterns';[138] 'significant adverse effects on air or water quality';[139] and 'significant changes in the atmospheric, terrestrial (including aquatic), glacial or marine environments'.[140] All of these obligations are important, all concern environmental changes, and all provide useful arguments in favour of mitigating against dangerous anthropogenic climate change.

A further set of obligations of relevance to the present discussion can be found in the Article dealing with impact assessment,[141] which provides that:

> [e]ach Contracting Party, as far as possible and as appropriate, shall[142] [i]ntroduce appropriate measures requiring environmental impact assessment of its proposed projects that are likely to have significant adverse effects of biological diversity with a view to avoiding or minimizing such effects and, where appropriate, allow for public participation in such procedures;[143]

and shall '[i]ntroduce appropriate arrangements to ensure that the environmental consequences of its programmes and policies that are likely to have significant adverse impacts on biological diversity are duly taken into account'.[144]

Finally, of relevance is an obligation[145] resting on the Contracting Parties to (the word used is the obligatory 'shall') implement the Convention 'with respect to the marine environment consistently with the rights and obligations of States under the law of the sea'.[146]

[133] Art. 2 ('Objective and Designation').
[134] Art. 3 ('Environmental Principles').
[135] Art. 3(1).
[136] Art. 3(2).
[137] Art. 3(2)(b).
[138] Art. 3(2)(b)(i).
[139] Art. 3(2)(b)(ii).
[140] Art. 3(2)(b)(iii).
[141] Art. 14 ('Impact Assessment and Minimizing Adverse Impacts').
[142] Art. 14(1).
[143] Art. 14(1)(a).
[144] Art. 14(1)(b).
[145] In Art. 22 ('Relationship with Other International Conventions').
[146] Art. 22(2).

4.3.9 Convention on Biological Diversity, 1992

The Convention on Biological Diversity represents an ambitious, and arguably far-sighted, attempt to shift the approach taken in most multilateral environmental treaties away from a species- or issue-oriented focus to a holistic consideration of ecosystems and habitats. Twenty years after it came into existence, however, it must be said that it has not yet been embraced wholeheartedly enough to be seen as having achieved its aim.

The Preamble is worth considering, in that the Parties express themselves as being:

> [c]onscious of the intrinsic value of biological diversity and of the ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic values of biological diversity and its components, … Conscious also of the importance of biological diversity for evolution and for maintaining life sustaining systems of the biosphere, … Concerned that biological diversity is being significantly reduced by certain human activities, … Noting also that where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat, … Determined to conserve and sustainable use biological diversity for the benefit of present and future generations, …[147]

Many of the themes present here have relevance for efforts to prevent dangerous climate change-related impacts on the marine environment, the biological relationships within which are very poorly understood. Although not itself providing direct obligations, the Preamble is relevant as a guide to interpretation of the binding obligations within the main text of the Convention.

It is worth pointing out that Principle 21[148] of the Stockholm Declaration makes another appearance[149] in the Convention on Biological Diversity. The continued repetition in important conventions of the dualistic principle that states have the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies, but at the same time bear a responsibility to ensure that activities within their jurisdiction or control do not cause damage to other states' environments or of areas beyond the limits of national jurisdiction, brings the principle ever closer to firm general acceptance. As time goes by, international environmental law develops, and the importance of environmental protection becomes more widely accepted, it may be hoped that the aspect of protection of areas beyond national jurisdiction will become more pronounced. This will doubtless be to the benefit of marine environment protection.

[147] Preamble.
[148] See *supra* under Parts 4.2.1 and 4.2.3.
[149] Art. 3 ('Principle').

Finally in respect of the Convention on Biological Diversity, it is worth noting that the jurisdictional scope of the Convention is such that its provisions are to apply[150] '[i]n the case of components of biological diversity, in areas within the limits of its national jurisdiction';[151] and, '[i]n the case of processes and activities, regardless of where their effects occur, carried out under its jurisdiction or control, within the area of its national jurisdiction or beyond the limits of national jurisdiction'.[152]

4.3.10 United Nations Framework Convention on Climate Change, 1992

The United Nations Framework Convention on Climate Change does not contain any provisions which specifically provide for protection of the marine environment. However, there is an important indirect reference to the need for this in the Preamble, where the Parties express themselves as being '[*a*]*ware* of the role and importance in terrestrial and marine ecosystems of sinks and reservoirs of greenhouse gases'.[153] In the Convention, 'sink' is defined as meaning 'any process or activity which removes a greenhouse gas, an aerosol or a precursor of a greenhouse gas from the atmosphere';[154] and 'reservoir' as meaning 'a component or components of the climate system where a greenhouse gas or a precursor of a greenhouse gas is stored'.[155]

The Convention then provides that:

> [a]ll Parties, taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances, shall[156] … [p]romote sustainable management, and promote and cooperate in the conservation and enhancement, as appropriate, of sinks and reservoirs of all greenhouse gases[157] … including biomass, forests and oceans as well as other terrestrial, coastal and marine ecosystems; ….[158]

There are many reasons why the marine environment is worthy of protection, to prevent or repair damage through the effect of climate change, but it is important also to note this one – that healthy oceans have significant potential to act as carbon reservoirs and sinks.

[150] 'Subject to the rights of other [s]tates, and except as otherwise expressly provided for in this Convention … in relation to each Contracting Party'. Article 4 ('Jurisdictional Scope').
[151] Art. 4(a).
[152] Art. 4(b).
[153] Preamble.
[154] Art. 1 ('Definitions').
[155] *Ibid*.
[156] Art. 4 ('Commitments').
[157] Where these gases are 'not controlled by the Montreal Protocol'.
[158] Art. 4(d).

4.4 Regional instruments

Increasingly, states are turning from the difficulties of negotiating global scale conventions toward the creation of regional instruments which mirror many aspects and techniques in their larger cousins; but which contain significant advantages such as greater levels of expertise, increased levels of interest, and the flexibility of smaller size.

The effects of climate change on marine environments need to be addressed both globally and regionally if mitigation efforts are to be successful.

While a number of regional conventions have already been discussed, such as the Espoo Convention[159] and the LRTAP Convention,[160] these were regional conventions with potential global scope. There are also international legal instruments which are specifically regional in scope.

4.4.1 Regional Agreement on Climate Change (Central America), 1993

The Regional Agreement on Climate Change[161] was entered into in 1993 by Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama. It provides that its Parties 'must protect the climate system to benefit present and future generations on the basis of equity and in conformity with their responsibilities and their capacities to ensure that food production is not threatened and to enable the economic development of the States to continue'.[162]

4.4.2 Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin, 1995

This regional convention, the Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin,[163] was entered into by Cambodia, Laos, Thailand, and Vietnam – and China and Burma have since become 'partners'. The Agreement provides that one of its objectives is '[t]o protect the environment, natural resources, aquatic life and conditions, and ecological balance of the Mekong River Basin from pollution or other harmful effects resulting from any development plans and uses of water and related resources in the Basin'.[164]

The Mekong River empties into the South China Sea, and the further obligation[165] '[t]o make every effort to avoid, minimize and mitigate harmful effects that might

[159] *Supra* Part 4.3.6.
[160] *Supra* Part 4.3.2.
[161] Regional Agreement on Climate Change, Guatemala City, 29 October 1993.
[162] Art. 1 ('Objective').
[163] Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin, Chiang Rai, 5 April 1995, into force 5 April 1995, <http://www.mrcmekong.org>.
[164] Chapter III ('Objectives and Principles of Cooperation'). Article 3 ('Protection of the environment and ecological balance').
[165] Art. 7 ('Prevention and cessation of harmful effects').

occur to the environment, especially the water quantity and quality, the aquatic (ecosystem) conditions, and ecological balance of the river system' could well be used, given political will, to combat actual or potential effects on the marine environment from climate change.

4.4.3 Inter-American Convention for the Protection and Conservation of Sea Turtles, 1996

The objective of the Inter-American Convention for the Protection and Conservation of Sea Turtles[166] is to 'promote the protection, conservation and recovery of sea turtle populations and of the habitats on which they depend, based on the best available scientific evidence, taking into account the environmental, socioeconomic and cultural characteristics of the Parties'.[167] In order to achieve this objective, each Party is required[168] (the imperative word 'shall' being used) to 'take appropriate and necessary measures, in accordance with international law and on the basis of the best available scientific evidence, for the protection, conservation and recovery of sea turtle populations and their habitats'.[169] Such measures are required to include,[170] '[t]o the extent practicable, the restriction of human activities that could seriously affect sea turtles, especially during the periods of reproduction, nesting and migration'.[171] To afford this required level of protection without taking into account the potential effects of climate change on marine environments would be nonsensical.

The Convention currently has 15 Parties.[172] The Convention provides an interesting example of how a regional convention might be used to achieve an object which would be more difficult to achieve through a global convention. The United States has not ratified the UNCLOS, but has ratified the Inter-American Convention for the Protection and Conservation of Sea Turtles – in which latter convention the Parties '[*r*]*ecogniz*[*e*] the rights and duties of [s]tates established in international law, as reflected in the [UNCLOS], relating to the conservation and management of living marine resources'.[173]

4.4.4 Conclusion

These three examples of regional conventions provide examples of how states might be more willing to risk yielding sovereignty, in respect of climate change-related international legal instruments, in the regional rather than the global context. States arguably feel that they have both more control and more direct interest in a regional context.

[166] Inter-American Convention for the Protection and Conservation of Sea Turtles, Caracas, 1 December 1996, into force 2 May 2001, <http://www.iacseaturtle.org/>.
[167] Art. II ('Objective').
[168] Art. IV ('Measures').
[169] Art. IV.1.
[170] Art. IV.2.
[171] Art. IV.2(c).
[172] See 'About the Convention', <http://www.iacseaturtle.org/English/home.asp> (visited 28 August 2011).
[173] Preamble.

For the international environmental lawyer or diplomat wishing to see greater protection provided to the marine environment, in the climate change context, it might well be worth pursuing initiatives at regional rather than global levels.

5 Conclusion

The world faces unprecedented environmental challenges at the beginning of the 21st Century, with it becoming ever more apparent that the major cross-cutting issue is how to deal with the impacts of global-scale climate change. International environmental law provides one of the most important instruments we have for responding appropriately to the challenges posed by climate change – and international legal instruments relating to the marine environment need to be at the core of these responses. The marine environment is not something that can be separated from terrestrial, or any other, environments – all are linked.

Unfortunately, there is currently no dedicated international environmental legal instrument dealing specifically with the marine environment and climate change. Given that the opportunities which have arisen to include protection of the marine environment in other global climate change-related Conventions have not been taken, it seems unlikely that the world can expect such a specific instrument to be put in place soon.

Nevertheless, protection of the marine environment is needed urgently – and the argument which this paper has tried to make is that there are already sufficient provisions within extant multilateral environmental agreements, some of these provisions being 'soft' in nature and others being arguably 'harder', for protective actions to be considered to be authorized. In other words, duties exist which ought to compel states bound by them to afford the marine environment greater protection than is presently offered; and opportunities exist for states to compel others to take greater protective measures, where states feel that others are not complying sufficiently with their duties.

Some guidance for how the health of coastal and marine ecosystems might be promoted and improved, through integrated management, conservation and sustainable use of coastal and marine resources and ecosystems,[174] is provided by the UNEP Programme for the Development and Periodic Review of Environmental Law for the First Decade of the Twenty-First Century (the 'Montevideo Programme III')[175] of

[174] Art. 11 ('Coastal and marine ecosystems').

[175] UNEP Programme for the Development and Periodic Review of Environmental Law for the First Decade of the Twenty-First Century, available at <http://www.unep.org/dec/docs/Development%20and%20Periodic%20Review%20of%20Environmental%20Law.pdf> and UNEP, 'Montevideo Programme', available at <http://www.unep.org/law/About_prog/montevideo_prog.asp> (both visited 28 August 2011). The Programme builds on the Montevideo I, 1982, and Montevideo II, 1993, programmes.

2001. This long-term guidance strategy is intended to '[p]romote the effective implementation of international instruments and domestic laws and policies for the integrated management, conservation and sustainable use of coastal and marine resources and ecosystems'.[176]

Specific recommended actions include the promotion of 'respect for and effective implementation of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities,[177] the Straddling Stocks Agreement,[178] and other international instruments relating to protection and sustainable use of coastal and marine resources and ecosystems.[179] Further recommended actions include assisting 'governments and relevant international bodies in the implementation and further development of regional seas conventions, protocols and related action plans';[180] '[c]ollaborat[ing] with relevant international bodies on legal issues relating to the enhancement of the conservation and sustainable management of marine resources, including fisheries';[181] '[s]tudy[ing] and, as appropriate, promot[ing] land use planning and the creation of marine protected areas for the integrated management, conservation and sustainable use of coastal ecosystems';[182] '[e]xplor[ing] the means in law and practice, including through regional seas conventions, for improving the protection of coral reefs, wetlands, mangroves and other coastal and marine ecosystems';[183] and '[c]ollaborat[ing] with relevant international bodies in further integrating environmental considerations into rules relating to navigational safety'.[184]

Clearly, this list of recommendations for enhancing international environmental law would, if followed by states wishing to protect the marine environment, provide at least a basic blueprint for making effectual the aspirations of the legal instruments cited in the present paper. One of seven new 'elements' identified in 2007 as being 'challenges' which need to be met under environmental law is, indeed, climate change.[185] The recommendations are sensible, and could be used as a basic guide for taking action.

Ultimately, a multi-disciplinary and multi-medium approach is going to be needed if the marine environment is to be saved. As Agenda 21 puts it, a 'precautionary and anticipatory rather than a reactive approach is necessary to prevent the degradation of the marine environment' and this approach will require:

[176] Art. 11 ('Coastal and marine ecosystems').
[177] See <http://www.gpa.unep.org/>.
[178] See *supra* Part 4.3.6.
[179] 11(a). A number of such instruments have been canvassed in the present paper.
[180] 11(b).
[181] 11(c).
[182] 11(d).
[183] 11(e).
[184] 11(f).
[185] See UNEP, 'Montevideo Programme', *supra* note 175. The other six elements are: poverty; access to drinking water and sanitation; ecosystem protection; environmental emergencies and natural disasters; new technologies; and synergies among multilateral environmental agreements (MEAs).

> inter alia, the adoption of precautionary measures, environmental impact assessments, clean production techniques, recycling, waste audits and minimization, construction and/or improvement of sewage treatment facilities, quality management criteria for the proper handling of hazardous substances, and a comprehensive approach to damaging impacts from air, land and water ... Any management framework must include the improvement of coastal human settlements and the integrated management and development of coastal areas.[186]

An appropriate place and role in such a multi-disciplinary approach needs to be found for international environmental agreements.

Of course, the world does not stand still while authors of papers speculate on what actions might be taken, and it is possible to find examples of recent actions taken under specific conventions to integrate climate change concerns into the work done under such conventions. At its 26th meeting in November 2009, for instance, the Standing Committee of the Bern Convention[187] set up a Group of Experts on Biodiversity and Climate Change to 'exchange information and review the effects of climate change in the biological diversity covered by the Convention, and to provide guidance to Parties in developing adaptation and management policies'.[188] The aim of the Group is to 'present to the Standing Committee specific proposals, guidance and/or Recommendations to help Parties address the challenges of climate change in the implementation of the Convention and its objectives'.[189] To date, there have been seven recommendations[190] made to Parties which have concerned climate change – some of these even preceding the formation of the Group of Experts.[191]

As an example, according to Recommendation 135 (2008), Contracting Parties to the Convention and Observer States are, respectively, recommended and invited to 'increase efforts to improve understanding of the linkages between biodiversity and climate change'; 'make full use of the large potential for synergies and co-benefits between biodiversity conservation and climate change mitigation and adaptation, including ecosystem-based approaches'; 'ensure that biodiversity considerations, in-

[186] See *supra* Part 4.2.3, Agenda 21, 'Programme Areas', 'Integrated Management and Sustainable Development of Coastal and Marine Areas, Including Exclusive Economic Zones', 'Activities', 17.21.

[187] See *supra* Part 4.3.4.

[188] See Council of Europe, 'Bern Convention: Group of Experts on Biodiversity and Climate change', available at <http://www.coe.int/t/dg4/cultureheritage/nature/bern/climatechange/default_EN.asp> (visited 28 August 2011).

[189] *Ibid*.

[190] These being: Recommendation 122 (2006) on the 'conservation of biological diversity in the context of climate change'; Recommendation 135 (2008) on 'addressing the impacts of climate change on biodiversity'; Recommendation 142 (2009) on 'interpreting the CBD definition of invasive alien species to take into account climate change'; Recommendation 143 (2009) on 'further guidance for Parties on biodiversity and climate change'; Recommendation 145 (2010) on 'guidance for Parties on biodiversity and climate change in mountain regions'; Recommendation 146 (2010) on 'guidance for Parties on biodiversity and climate change in European islands'; and Recommendation 147 (2010) on 'guidance for Parties on wildland fires, biodiversity and climate change'.

[191] See *supra* note 188.

cluding potential negative impacts, are taken fully into account in climate change adaptation and mitigation policies and measures'; 'develop climate change adaptation activities for biodiversity'; and 'continue to engage in the development and application of further guidance to implement the Convention'.[192]

As a further example of recent work undertaken in bringing climate change concerns into the work of a body concerned with the protection of the marine environment, in May 2010 the 33rd Meeting of the Parties to the Antarctic Treaty[193] endorsed a set of proposed measures to be forwarded to the United Nations Framework Convention on Climate Change[194] for that body to make use of in its global negotiations.[195] A further example of increasing integration of climate change concerns into mainstream thinking, and of increasing connections with general environmental legal instruments, can be seen in that, at its 65th session in September 2010, the United Nations General Assembly convened as a high-level meeting and discussed the importance of biodiversity, its role in sustainable development and its role in the fight against climate change, as a contribution to 2010's being the 'International Year of Biodiversity'.[196]

An important step toward combining protection of biodiversity, including the marine environment, with efforts to address climate change has been taken in the creation of the Intergovernmental Science-policy Platform on Biodiversity and Ecosystem Services (IPBES).[197] According to the IPBES website, the initiative is intended to be 'an interface between the scientific community and policy makers that aims to build capacity for and strengthen the use of science in policy making'; and it has been created in recognition of the lack of an 'ongoing global mechanism recognized by both the scientific and policy communities that brings information together and synthesizes and analyses it for decision making in a range of policy fora such as the global environmental conventions and development policy dialogues'.[198] It is intended that IPBES will be 'the mechanism that addresses the gaps in the science policy interface on biodiversity and ecosystem services'.[199] According to the United

[192] Council of Europe, Recommendation No. 135 (2008) of the Standing Committee, adopted on 27 November 2008, on addressing the impacts of climate change on biodiversity, available at <https://wcd.coe.int/wcd/ViewDoc.jsp?Ref=Rec(2008)135&Language=lanEnglish&Ver=original&Site=DG4-Nature&BackColorInternet=a3b811&BackColorIntranet=a3b811&BackColorLogged=EDF4B3> (visited 28 August 2011).

[193] See *supra* note 127.

[194] See *supra* Part 4.3.10.

[195] See 'Antarctic Treaty Governments Progress on Climate Change and Marine Protected Areas' (15 May 2010), available at <http://en.mercopress.com/2010/05/15/antarctic-treaty-governments-progress-on-climate-change-and-marine-protected> (visited 28 August 2011).

[196] See 'High-level meeting of the General Assembly as a contribution to the International Year of Biodiversity (22 September 2010)', available at <http://www.un.org/en/ga/65/meetings/biodiversity.shtml> (visited 28 August 2011).

[197] See 'About IPBES', available at <http://ipbes.net/about-ipbes.html> (visited 8 October 2011).

[198] *Ibid*.

[199] *Ibid*.

Nations Environment Programme (UNEP),[200] a meeting of government representatives in Nairobi in October 2009 had given 'strong support' for the idea that 'an intergovernmental panel, similar to the one that has catalyzed political action on the issue of climate change,[201] is now needed to galvanize a step change in respect to the management of biodiversity and ecosystems'.[202] It remains to be seen how similar IPBES will be to the IPPC, and what linkages – formal or informal – there are between the two.[203]

This paper sought to give a brief overview of problems facing the marine environment; then to scan various possible obligations, both general and specific in nature, to be found in both global and regional legal instruments, which might be used in international legal efforts to enhance protection of the marine environment. Ultimately, there seems no realistic prospect of the world gaining a dedicated global treaty protective of the marine environment in the near future. Given this, the effort was made – instead – to explain what legal obligations are extant in existing instruments; and to make the argument that these might be used toward increased marine environment protection.

[200] See <http://www.unep.org>.

[201] This being the Intergovernmental Panel on Climate Change (IPPC), established by the World Meteorological Organization (WMO) and UNEP; see <http://www.ipcc.ch/>.

[202] UNEP, 'Support for New Panel for Biodiversity and Ecosystem Services Gathers Momentum', 9 October 2009, available at <http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=599&ArticleID=6340&l=en> (visited 8 October 2011).

[203] The first session of the IPBES plenary took place from 3 to 7 October 2011, in Nairobi. While apparently successful in terms of the parties (apparently, there were 366 delegates present, with these representing 112 countries, two observers, five Intergovernmental organizations, 33 non-governmental organizations, three conventions and ten UN bodies and specialized agencies) and reaching agreement on many procedural issues, many matters were not decided. One aspect which vexed the parties in particular was the question of whether the IPBES platform has already been formally established by the UN General Assembly or not. The question was not decided and has been left open for the second plenary session. Further, there is currently uncertainty over the extent to which the UN Development Programme (UNDP – see <http://www.undp.org>), the UN Educational, Scientific and Cultural Organization (UNESCO – see <http://www.unesco.org>), UNEP, and the UN Food and Agriculture Organization (FAO – see <http://www.fao.org>), will each be involved in co-hosting and administering the platform. See, generally, IISD Reporting Services 'First Session of the Plenary Meeting on the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)' available at <http://www.iisd.ca/ipbes/sop1/> (visited 14 October 2011).

Forests' Contribution to Sustainable Development and the Role of REDD+ as a Catalyst for a Green Economy Transformation

Niklas Hagelberg[1]

1 Introduction

The contribution of forests to development – ranging through construction material, food, culture and energy – is undeniable, but has often been side-lined in development decision-making. On the other hand, human economic development continues to have impacts upon the quality and extent of forest cover, both positively and negatively. Human expansion has partly caused the extensive decline in forests, which today remains at almost half of their original cover 8 000 years ago.[2] Additionally, most remaining forests are disturbed, possess less biodiversity, and have a lower level of ecosystem functioning when compared to natural forest.[3]

Even though forests today still cover some 31 per cent of the global land area, the reduction of forest cover continues –, totalling approximately 13 million hectares[4] per year. Globally, however, forest cover is at the same time regaining by about 5 million hectares per year. This growth is attributable to secondary forest being regenerated through reforestation, mainly in Asia.[5]

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2 World Resource Institute (WRI), *The Last Frontier Forests: Ecosystems and Economies on the Edge* (WRI, 1997) 8.

3 *Ibid*.

4 One hectare being equal to 10 000 square metres; or to 2.471 acres (one acre being equal to 4046.86 square metres).

5 Food and Agriculture Organization of the United Nations (FAO), *State of the World's Forests* (FAO, 2011), available at <http://www.fao.org/forestry/sofo/en/> (visited 10 April 2011) at 3.

It appears that the decline in forest cover and quality contributes up to 17 per cent of annual human induced greenhouse gas (GHG) emissions.[6] Due to this large share of GHG emissions, forests have moved upwards on the political agenda. Under the United Nations Framework Convention on Climate Change (UNFCCC)[7] negotiations, the initiative of Reducing Emissions from Deforestation and Forest Degradation and Enhancement of Forest Carbon Stocks (REDD+)[8] has gained support amongst many countries.[9]

It is estimated that the value of the ecosystem services[10] and goods lost annually due to deforestation and forest degradation is in the range of US$ 3.7 trillion[11] – almost 10 times the estimated value of the trade in forest products at US$ 468 billion.[12] Moreover, many people are heavily dependent on forests for their livelihoods. Around 350 million people live in or around forests, and some 1.6 billion people across the world depend to some extent on forests for their livelihoods.[13]

These numbers alone demonstrate the important contribution of forests to our economies. They also portray the gaps between current management of forests, and the magnitude of change needed to maintain the contributions by forests to sustainable development and to realize the potential contributions to a green economy. However, the concept of REDD+ holds great promise for transforming the ways in which forests are managed; and for increasing market income from forests while substantially decreasing forest decline.[14]

This paper considers the ways forests may contribute to sustainable development; and the role which REDD+ might play in helping such contributions to be realized.

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6 IPCC, *Fourth Assessment Report, Climate Change 2007. Synthesis Report: Summary for Policymakers* (IPCC, 2007), available at <http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf> (visited 10 April 2011) at 5.

7 United Nations Framework Convention on Climate Change, New York, 9 May 1992, in force 21 March 1994, 31 *International Legal Materials* (1992) 849, <http://unfccc.int>.

8 REDD+ is an acronym used under the UNFCCC which in full stands for 'reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries'.

9 Report of the Conference of the Parties on its 16th session, held in Cancun from 29 November to 10 December 2010, Addendum Part Two: Action taken by the Conference of the Parties at its 16th session (2010) at 4, 5, and 13–19.

10 On ecosystem services, see Leila Suvantola, 'Ecosystem Services and Climate Change', in the present *Review*.

11 UNEP, *Annual Report 2010* (UNEP, 2011), available at <http://www.unep.org/annualreport/2010/> (visited 10 April 2011).

12 UNEP, *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication* (UNEP, 2011), available at <http://www.unep.org/greeneconomy> (visited 10 April 2011) at 160–162.

13 World Bank, *Forests Sourcebook – Practical Guidance for Sustaining Forests in Development Cooperation* (World Bank, 2008), available at <http://siteresources.worldbank.org/EXTFORSOUBOOK/Resources/completeforestsourcebookapril2008.pdf> (visited 10 April 2011) at 1, 3, 15 and 16.

14 The Economics of Ecosystems and Biodiversity (TEEB), *The Economics of Ecosystem Services and Biodiversity: Mainstreaming the Economics of Nature: A Synthesis of the Approach, Conclusions and Recommendations* of *TEEB* (TEEB, 2010) at 17.

2 Reducing Emissions from Deforestation and Forest Degradation and Enhancement of Forest Carbon Stocks (REDD+)

The importance of including forest carbon in the efforts to combat climate change has been recognized by scientists. Estimates for forest carbon stocks range between 335 and 365 billion tonnes of carbon; and an additional 787 billion tonnes in the top one metre layer of soils.[15] This is more than all carbon present in the atmosphere.[16] Additionally, forests have been estimated to sequester an estimated 4.5 Gt of carbon annually,[17] which is in the range of 14 per cent of the carbon proliferated by human activities.

Whilst reducing emissions from deforestation and forest degradation was formally included in the 13th Conference of Parties (COP) of the United Nations Framework Convention on Climate Change (UNFCCC COP13) meeting decisions in 2007, the international community had already recognized in the 1997 Kyoto Protocol[18] the importance of forests in combating climate change by including forests as a carbon source or sink in national carbon accounting.[19]

During 2008 and 2009, the Subsidiary Body on Technical Advice contemplated the issue of forest carbon, but no new COP decisions were made. In Cancun, at the COP16 (2010), further text was approved on REDD+. It focused on developing country parties, as a way to 'find effective ways to reduce the human pressure on forests that results in greenhouse gas emissions, including actions to address drivers of deforestation'.[20] The decision also encouraged developing country parties to contribute to mitigation actions in the forest sector by undertaking REDD+ activities (reference as above).[21]

The parties comprising the COP16 also recognized the importance of contributing to sustainable development, and avoiding adverse social and economic impacts.[22] Specifically, an outcome of COP16 was a request to countries to develop national strategies or action plans, forest reference emission levels and/or forest reference levels, national monitoring systems and systems for providing information on how

[15] Millennium Ecosystem Assessment, 'Chapter 21: Forests and woodland systems', in *Millennium Ecosystem Assessment: Ecosystems and Well-being: Current State and Trends* (Island Press, 2005), available at <http://www.maweb.org/documents/document.290.aspx.pdf> (visited 11 April 2011) 585–621 at 604–605.

[16] Report of the Conference of the Parties on its 16th session, *supra* note 9.

[17] S. L. Lewis et al., 'Increasing Carbon Storage in Intact African Tropical Forests', 457 *Nature* (2009) 1003–1006.

[18] Kyoto Protocol to the United Nations Framework Convention on Climate Change, Kyoto, 11 December 1997, in force 16 February 2005, 37 *International Legal Materials* (1998) 22.

[19] Vivian Holloway and Esteban Giandomenico, *Carbon Planet White Paper – The History of REDD Policy* (Carbon Planet. 2009), available at <http://www.carbonplanet.com/white_papers> (visited 12 April 2011) at 5.

[20] Report of the Conference of the Parties on its 16th session, *supra* note 9.

[21] *Ibid*.

[22] *Ibid*.

safeguards, such as transparency, respect for the knowledge and rights of indigenous peoples and consistency with conservation objectives, are being addressed.[23]

The 2008 *Eliasch Review* estimated the cost of halving deforestation rates, while simultaneously implementing related reforms and step-changes in the way forests are managed and utilized, at between US$17–33 billion per annum. The net benefits of halving deforestation have been estimated at US$3.7 trillion over the long term (net present value).[24] However, these estimates do not account for the value of other ecosystem services such as water. Realizing the opportunity for forest mitigation also includes costs from foregone profits that would have been made if business had proceeded as usual. These include, for example, the reduction in timber trade and agricultural product sales, as well as costs associated with implementing REDD+, such as establishing and monitoring carbons stocks and administrative expenses.[25]

In May 2010, approximately US$4 billion was committed to start REDD+ activities and raise the capacity of developing countries to implement and manage REDD+.[26] To support countries in building capacity while designing and implementing REDD+ activities, various programmes have been realigned or established. The main multilateral programmes are:

- the Global Environment Facility (GEF5);[27]
- the Forest Carbon Partnership (FCPF);[28]
- the Forest Investment Programme (FIP);[29] and
- the UN-REDD Programme.[30]

In its programme strategy, the UN-REDD Programme has defined work areas which align with the COP16 request above. These include:

- monitoring, reporting, verification and monitoring;
- national REDD+ governance;
- engagement of indigenous peoples, local communities and other relevant stakeholders;
- ensuring multiple benefits of forests and REDD+;

[23] *Ibid*.
[24] Johan Eliasch, *Eliasch Review – Climate Change: Financing Global Fore*sts (UK Office of Climate Change, 2008), available at <http://www.official-documents.gov.uk/document/other/9780108507632/9780108507632.pdf> (visited 12 April 2011).
[25] *Ibid*.
[26] Markku Simula, *Financing Flows and Needs to Implement the Non-legally Binding Instrument on All Types of Forests* (2008), available at <http://www.un.org/esa/forests/pdf/aheg/finance/AGF_Financing_Study.pdf> (visited 12 April 2011) at 6, 7 and 44.
[27] <http://www.thegef.org>.
[28] <http://www.forestcarbonpartnership.org>.
[29] <http://www.climatefundsupdate.org/listing/forest-investment-program>.
[30] <http://www.un-redd.org>.

- transparent, equitable and accountable management of REDD+ payments; and
- REDD+ as a catalyst for transformations to a Green Economy.[31]

The sixth work area, 'REDD+ as a catalyst for transformation to a Green economy', explores the shift, or improvement of land and forest resources use, to one that lowers carbon emissions. In conjunction, this change should deliver other benefits, such as sustainable livelihoods, food security and other economic and ecological benefits.[32] The work area recognizes that the UNFCCC COP17 decisions[33] emphasized 'the importance of contributing to sustainable development'.[34] It also respond to the Cancun agreement, by supporting countries in instituting a 'paradigm shift towards building a low-carbon society that offers substantial opportunities and ensures continued high growth and sustainable development, based on innovative technologies and more sustainable production and consumption and lifestyles, while ensuring a just transition of the workforce that creates decent work and quality jobs'.[35]

The first directive of the work area is to make the case for the catalytic role of REDD+ in a forest-based Green Economy transformation.[36] The following section will explore the elements of this case.

3 Sustainable development and the role of REDD+ in realizing the Green Economy contributions of forests

The contribution of the forest industry to the global economy has been well recorded, and is estimated at approximately US$468 billion (adding 1 per cent of global gross value added). Formal employment in forestry, wood processing, pulp and paper, and the furniture industry is estimated at 18 million persons. Forests provide substantial employment, especially for the rural poor. The total employment estimates, including informal jobs, range from 119 million to 1.42 billion. What is not captured in these values is the economic value of services and goods that forests provide.[37]

[31] UN-REDD Programme Draft: Support to National REDD+ Action Global Programme Framework Document 2011–2015 for the sixth UN-REDD Policy Board meeting, UN Doc. UNREDD/PB6/2011/IV/2 (2011), available at <http://www.unredd.net/index.php?option=com_docman&task=doc_download&gid=4805&Itemid=53> (visited 12 April 2011) at 53 and 55.

[32] *Ibid*.

[33] See Report of the Conference of the Parties on its 16th session, *supra* note 9.

[34] 'The Cancun Agreements: Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention', Decision 1/CP.16, in Report of the Conference of the Parties on its 16th session, *supra* note 9, at Part D, preamble.

[35] *Ibid*. at para 10.

[36] UN-REDD Programme Draft, *supra* note 31, at 53 and 55.

[37] UNEP, *Towards a Green* Economy, *supra* note 12, at 160–162.

Only in the last decade have the economics of forest ecosystem services, goods and biodiversity gained significant traction in political discussion, starting with the economic valuation conducted by Costanza and the latest edition of *The Economics of Ecosystems and Biodiversity* (TEEB) reports. The economic value of forests services and goods has been estimated globally by Costanza et al at US$4.7 trillion per year,[38] while TEEB has estimated the value of ecosystem services and goods lost due to deforestation at between US$2.5 and 4.5 trillion.[39]

The contribution of the value of forest ecosystem services and goods has started to be incorporated into national decision-making. For example, many of the largest cities in the world manage surrounding forests for the water services they provide. In Tokyo, Japan, the Metropolitan Government Bureau of Waterworks manages the forests in the upper reaches of the Tama River to increase the capacity of recharging water resources, thereby preventing reservoir sedimentation and increasing the water purification processing of forests.[40]

At the national level, Costa Rica provides an example of active government intervention which results in both economic growth and a dramatic increase in forest cover. In 1995, the forest cover was down to 22.4 per cent; but by 2010, it had recovered to 51 per cent.[41] The recovery of the forest cover was a result of targeted interactions. In the mid-1990s, Costa Rica put in place a series of policies and incentive mechanisms, such as tax incentives and payment for ecosystem services, for land-owners who conserved and increased forests.[42]

India has recently approved a national mission for a Green India. This initiative strives to increase the forest/tree cover on five million hectares of forested and non-forested land, and improve the quality of forest cover on another five million hectares. Green India focuses on improving the delivery of ecosystem services, including biodiversity, carbon sequestration and hydrological services. It also aims at increasing forest-based incomes for three million forest-dependent families.[43]

The two examples above demonstrate that the contributions of forest services and goods to our economies and other sectors are both relevant and increasingly acknowledged. Furthermore, the priority which governments are placing on conserving for-

[38] R. Costanza, R. d'Arge, R. de groot et al. (1997). 'The Value of the World's Ecosystem Services and Natural Capital', 387 *Nature* (1997) 253–260 at 253–260.

[39] UNEP, *Annual Report 2010*, *supra* note 11.

[40] Nigel Dudley and Sue Stolton, 'The Role of Forest Protected Areas in Supplying Water to the World's Biggest Cities' in Ted Tryzna (ed.), *The Urban Imperative* (California Institute of Public Affairs, 2005) 27–33.

[41] See FAO, *State of the World's Forests* (FAO, 1997); and FAO, *State of the World's Forests*, *supra* note 5.

[42] UNEP/Grid Arendal, *Vital Forest Graphics – Stopping the Downswing?* (UNEP, 2008), available at <http://www.grida.no/files/publications/vital_forest_graphics.pdf> (visited 17 April 2011) at 13 and 56.

[43] Ministry of Environment and Forests, Government of India, *National Mission for a Green India* (2010), available at <http://moef.nic.in/downloads/public-information/GIM-Report-PMCCC.pdf> (visited 17 June 2011).

ests and increasing their area is now recognized as providing potential business opportunities, especially in terms of carbon credits.[44]

The potential role which forests can play in boosting our economies goes even further. Forests could play a positive role in economic stabilization efforts, particularly through job creation and the rebuilding of a natural capital base. For each annual outlay of US$1 million in forest management (including agroforestry), 500 to 1 000 jobs could be generated in developing countries. In addition, the total targeted public investment in forestry could generate about 10 million new jobs around the world.[45]

Small- and middle-sized enterprises are often considered to be an effective way of increasing employment. In the forest sector, 80–90 per cent of enterprises are considered to be of small or medium size. They already provide over 50 per cent of forest sector employment in many countries.[46] As much of the employment in the forest sector is still informal and the illegal trade in forest products is valued at US$15 billion per year, governments also forego income from royalties and taxes.[47] However, this income source could be reinvested into the forest sector, providing further income as well as regularized and valued jobs.

The internal rate of returns on restoration of ecosystem services ranges from 7 to 79 per cent, providing for a good public and private investment.[48] The Loess Plateau in China, roughly an area the size of France and home to more than 50 million people, is a good example of the socio-economic returns off ecosystem restoration. In a region that was poverty stricken, the plateau had been heavily degraded due to unsustainable farming practices and over-exploitation of the forest resources. A 10-year restoration investment of more than US$520 million was able to rejuvenate the land, resulting in, firstly, a doubling of the income of the people living within the restoration area; and, secondly, the lifting of 2.5 million people out of poverty. The employment rates increased and employment opportunities for women increased significantly. During the second project period, the annual per capita grain output increased from 365kg to 591kg. The sediment loads to the Yellow River decreased by 100 mil-

[44] TEEB, *The Economics of Ecosystems and Biodiversity for Local and Regional Policy Makers* (2010), available at <http://www.teebweb.org/ForLocalandRegionalPolicy/LocalandRegionalPolicyMakersChapterDrafts/tabid/29433/Default.aspx> (visited 5 September 2011) at 24 and 93.

[45] C. T. S Nair and Rebecca Rutt, Creating Forestry Jobs to Boost the Economy and Build a Green Future (FAO, 2009), available at <http://www.fao.org/docrep/012/i1025e/i1025e02.htm> (visited 10 March 2011).

[46] A. Molnar et al., *Community-based Forest Enterprises in Tropical Forest Countries: Status and Potential*. (International Tropical Timber Organisation, Rights and Resources Initiative and Forest Trends, 2007), available at <http://www.ibcperu.org/doc/isis/7405.pdf> (visited 24 April 2011) at 8.

[47] See European Forest Institute, 'What is FLEGT?', available at <http://www.efi.int/portal/projects/flegt/what_is_flegt_/> (visited 24 April 2011).

[48] Christian Nellemann and Emily Corcroran (eds), Dead Planet, Living Planet – Biodiversity and Ecosystem Restoration for Sustainable Development. A Rapid Response Assessment (UNEP and GRID-Arendal, 2010), available at <http://www.grida.no/files/publications/dead-planet/RRAecosystems_screen.pdf> (visited 24 April 2011) at 74.

lion tons per year, thereby reducing the risks of flooding and, consequently, the cost of dam maintenance and damage repair.[49]

Two project level examples provide similarly good evidence as to the high potential socio-economic returns on investments in restoration and conservation of forests. The restoration of natural mangrove forests in Vietnam for US$1.1 million resulted in an annual saving of US$7.3 million in sea dyke maintenance. During a subsequent typhoon, the area apparently suffered significantly less damage than did neighboring provinces.[50] In Indonesia, a valuation study of the Leuser National Park estimated that conservation and selective use would provide a higher long-term return (US$9.1–9.5 billion) for the region, compared to more consumptive usage, including continued deforestation (US$7 billion).[51]

Beyond the traditional forest sector and improvements in the management of the multifunctionality of forests, there are contributions and opportunities which, due to association with other sectors, might be less well known to governments and the private sector.

Where energy is concerned, in some countries wood and fibre account for the majority of the energy consumed by people and industry. In Africa, for instance, it is common that more than 80 per cent of energy is forest based, mainly in the form of fuel wood and charcoal.[52] It has been estimated that the annual trade in non-timber forest products (NTFPs) might be worth as much as US$11 billion; and the international trade in wildlife products, for instance medicinal plants, at US$15 billion.[53] It appears that global sales of pharmaceuticals based on material from natural origins is worth US$75 billion per year.[54] As more than 50 per cent of terrestrial biodiversity can be found in forests, it is likely that forests will continue to play a role in pharmaceutical and chemical industries. The variety of species found in forests also provides a base for finding sustainable solutions in the agriculture, construction, energy and health sectors through biomimicry or biomimetics.[55] Finally, the rate of growth in global tourism is enormous. In 2009, 880 million international tourists were recorded, as compared to 533 million in 1995.[56] Forty percent of these journeys were directed towards a developing country[57] with tourists paying for experienc-

[49] World Bank, *Implementation Completion Report* (IDA-26160), Report no. 25701 (2003).
[50] TEEB, *The Economics of Ecosystems* , *supra* note 44, at 99.
[51] TEEB, *The Economics of Ecosystem Services*, *supra* note 14.
[52] Millennium Ecosystem Assessment, 'Chapter 21: Forests and woodland systems', *supra* note 15.
[53] Dilys Roe et al., *Making a Killing or Making a Living?, Wildlife Trade, Trade Controls and Rural Livelihoods* (IIED, 2002), available at <http://pubs.iied.org/pdfs/9156IIED.pdf> (visited 25 April 2011) at 5.
[54] David Kaimowitz, *Forests and Human Health: Some Vital Connections* (Swedish CGIAR, 2005).
[55] For more information, see <http://www.biomimicryinstitute.org>.
[56] United Nations World Tourism Organisation (UNWTO), *Tourism Highlights: 2010 Edition*, available at <http://www.unwto.org/facts/eng/pdf/highlights/UNWTO_Highlights10_en_HR.pdf> (visited 24 April 2011) at 4.
[57] Jonathan Mitchell and Caroline Ashley, *Tourism and Poverty Reduction: Pathways to Prosperity* (Earthscan, 2010) 1.

ing biodiversity, landscapes and wildlife. In 2007, US$295 billion were spent in developing countries – almost three times the amount of official development aid to these countries.[58]

4 REDD+ as a catalyst for change?

4.1 Introduction

As demonstrated above, forests already contribute significantly to sustainable development and hold great potential to support transformation towards a low-carbon development path.

As there are many forces that lead to deforestation, poor management of forest resources and low efficiency in processing of forest goods, the question needs to be asked: from where would substantial investment to change the current consumptive paradigm originate? The annual bilateral and multilateral financial flows to forests are estimated at about US$1.9 billion. The official development aid (ODA) to forests includes about US$700 million for forest conservation. The contributions to forest investments by non-governmental organizations (NGOs), philanthropic organizations and the private sector are poorly known; but foreign-direct investments in the wood and paper industries were estimated at nearly US$18 billion in 2005.[59]

The estimated cost for halving deforestation ranges between US$17 and 33 billion per year, of which upfront capacity-building costs would be in the range of US$4 billion over a period of five years, while the rest is the ongoing cost for reduction of deforestation and forest degradation.[60] The estimate includes forest protection costs from adopting, implementing and administering policies that reduce forest emissions.

Finance through REDD+ holds the promise of raising funds in the range of these estimates, while catalyzing change in the way forests are managed and utilized. The current donor pledges for REDD+ are also in the range of the upfront capacity-building estimates by Eliasch.[61] How any future REDD+ investments above those currently pledged will then be invested or distributed to stakeholders remains open. The perceived lesson learned from early activities indicates that there has to be strong benefit-sharing at the community level as a prerequisite for successful REDD+ implementation.[62]

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58 *Ibid*.
59 Simula, *Financing Flows and Needs*, *supra* note 26, at 6, 7 and 44.
60 Eliasch, *Eliasch Review*, *supra* note 24.
61 See *ibid*.
62 World Bank, *Harvesting Knowledge on REDD-plus: Early Lessons from the FCPF Initiative and Beyond* (World Bank, 2010), available at <http://www.forestcarbonpartnership.org/fcp/sites/forestcarbonpartner-

While investments in the upfront capacity-building, forest protection costs and benefit-sharing with communities are key, it is important to explore how these investments can have a knock-on effect, simultaneously supporting a transformation towards a low carbon Green Economy.

The REDD+ strategy of the United States provides a good example of pledged REDD+ investments with the clear objectives of being part of low-carbon development paths. This strategy supports host countries' development of REDD+ schemes, in particular those being developed as part of economy-wide, low-emissions development strategies (LEDS). It will support developing countries in their efforts to seek climate-friendly development opportunities across the entire cross-sectoral economy, ensuring that REDD+ strategies seek a truly fundamental shift in the development path of the forest sector toward a low-emissions future.[63]

This paper now turns to identify, and briefly discuss, four areas which, it is argued, are needed for REDD+ to have a catalytic contribution to a Green Economy, delivering the 'step changes' called for by the *Eliasch Review*.[64]

4.2 Area 1: Strengthening of the knowledge base

The objective of strengthening the knowledge base is to set the foundation for effectively dealing with the multifunctionality of forests, and the consequences of inaction (or business-as-usual). Furthermore, highlighting the opportunities for, and benefits of, improved management of forests' economic, social and environmental outcomes.

This step includes assessment of the economic value of forest ecosystems services and goods, climate change impacts on forest resilience (permanence of the emission reductions), and the influences emanating from developments in other sectors, including those from macro policies and programmes that have an effect on forests.

4.3 Area 2: Scenario analysis and policy options

The objective of the analysis of scenario and policy options is to support participatory decision-making regarding agreement on future forest sector development options, and the related pros and cons. This will include scenario development and exploration of options for addressing the drivers of deforestation and forest degradation, including options for overcoming governance barriers, and finance options for pub-

ship.org/files/Documents/PDF/Oct2010/FCPF%20Harvesting%20Knowledge%20Nov%2019%202010-revised.pdf> (visited 25 April 2011) 3–6 and 20.

[63] US Agency for International Development, Strategic Choices for United States Fast Start Financing for REDD+ (2010), available at <http://www.usaid.gov/our_work/environment/climate/docs/UnitedStates REDD+Strategy.pdf> (visited 25 April 2011).

[64] See Eliasch, *Eliasch Review*, *supra* note 24.

lic forest services and goods, including potential REDD+ financing. The analysis of options will emphasize the socio-economic opportunities presented by forests.

While scenarios can be powerful for organizing and communicating large amount of information and different perspectives, scenario building will require extensive cross-sectoral stakeholder processes and capacity-building to help policymakers and stakeholders to think big.

4.4 Area 3: Creation of enabling conditions

The objective is to support the employment of enabling policy reforms, regulatory changes and implementation.

Certain enabling conditions have been highlighted in the United Nations Environment Programme's (UNEP) 2011 Green Economy Report[65] as key conditions that make sectors attractive for investors and business. These are:

- public investment and spending;
- market-based instruments;
- subsidy reform;
- regulatory frameworks; and
- international frameworks.

These enabling conditions will promote public investments and spending in greening the forest sector, while decreasing spending in areas that deplete forest assets. Changes in investments are driven by a strong regulatory framework and enforcement thereof, including capacity-building. In order to prevent trade in forest products to move to countries with weaker regulatory frameworks, an international governance system is also needed.

Setting in place enabling conditions will require focus across many sectors as to find synergies but also to prevent counter-productive measures in other sectors. A cross-sectoral review of enabling conditions necessitates the participation of many ministries including, planning and financial ministries.

4.5 Area 4: Financing and investments

The objective is to catalyze growth in private Green Economy investments in forests. A combination of private sector and public financing and investments are envisioned. The multilateral sources such as the World Bank[66] and regional banks, the Forest

[65] UNEP, *Towards a Green Economy*, *supra* note12, at 160–162.
[66] See <http://www.worldbank.org>.

Investment Program,[67] the Global Environment Facility,[68] and the new mechanisms under the REDD+ initiative are envisioned as facilitating and lowering the entry risks for the private sector.

As an example, investments in efficiency gains in the processing of forest goods could translate into tangible and measurable changes in the demand for forest raw materials and in a clear transfer of environmentally-sound technologies to developing countries. As forest goods can be carbon neutral, if harvested sustainably, they provide a significant opportunity for improved national energy supply.

Coupled with the notion that forest management and harvesting of forest goods is labour intensive, efficiency gains could provide a five-fold win-win situation due, firstly, to improved resource efficiency; secondly, to enhanced business opportunities through new market demand created by a low-carbon development trajectory (or replacement of carbon-intensive products in, for instance, energy and construction sectors); thirdly, to biodiversity conservation; fourthly, to climate change mitigation; and, fifthly, to the generation of decent jobs.

5 Conclusions

Today, forests already contribute to sustainable development, both through the services they provide to various economic sectors and the products people use in their daily lives. This contribution is substantial and in the range of trillions of US dollars. Beyond climate change and the United Nations Framework Convention on Climate Change, improving forest management is key to achieving the objectives of the two other Rio conventions, the Convention on Biological Diversity (CBD)[69] and United Nations Convention on Combating Desertification (UNCCD).[70] Furthermore, the links to livelihoods, job opportunities, tenure, water and energy, and so forth, call for cross-ministerial collaboration in national planning and policy-setting and in preparation for international negotiations.

REDD+ financing and the political attention forests have gained due to the climate change debate present an unprecedented opportunity to not only change deforestation and forest degradation rates, but to drive investment in forest-based natural capital while protecting biodiversity and creating decent and respected jobs.

[67] See <http://www.climateinvestmentfunds.org/cif/node/5>.
[68] See <http://www.thegef.org/>.
[69] Convention on Biological Diversity, Rio de Janeiro, 5 June 1992, in force 29 December 1993, 31 *International Legal Materials* (1992) 822, <http://www.biodiv.org>.
[70] UN Convention to Combat Desertification in Countries Experiencing Serious Drought and or Desertification, Particularly in Africa, Paris, 17 June 1994, in force 26 December 1996, 33 *International Legal Materials* (1994) 1309, <http://www.unccd.int>.

While REDD+ holds a promise to improve forest management and mitigate climate change, the final success of REDD+ and its impact on sustainable development remains to be seen. Without knowledge and focused cross-sectoral action on realizing the Green Economy opportunities that forests can provide, there is a danger that REDD+ will fail or at best only contribute to climate change mitigation and not to national development goals, or the paradigm shift called for by the UNFCCC COP16 agreements.

The Joint Liason Group between CBD, UNFCCC and UNCCD is a welcomed start where forests should play a prominent role in the discussions. Further engagement with other multilateral agreements and processes, such as the Group of Twenty (G20), should be encouraged and actively promoted by forest-related ministries and individual public sector officials.

Impacts of Climate Change on Biodiversity, with a Focus on Migratory Species[1]

Aline Kühl[2] and Elizabeth Maruma Mrema[3]

1 Introduction

1.1 Background

There is growing evidence that climate change will become one of the primary causes of loss of biological diversity within the 21st century. More than one-fifth of plant and animal species are likely to be exposed to an increased risk of extinction as a result of global warming of only 2–3 degrees Celsius above pre-industrial levels.[4] It is evident that fauna and flora have already been significantly affected by recent climate change;[5] amongst these being numerous migratory species, many of which are already suffering declines as a result of climatic changes.[6]

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[1] This paper is based on the CMS Scientific Council document 'Climate Change: A Primary Threat for Migratory Species', UN Doc. UNEP/CMS/ScC16/Doc.8 (2010) and on a lecture given by Elizabeth Maruma Mrema on the University of Eastern Finland – UNEP Course on International Environmental Law-making and Diplomacy on 20 August 2010. The views expressed are the authors' own and do not necessarily reflect the position of UNEP/CMS Secretariat.

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[4] A. Fischlin et al., 'Ecosystems, their properties, goods, and services', in M L. Parry, O. F. Canziani, J. P. Palutikof, P. J. van der Linden and C.E. Hanson (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) 211–272.

[5] G. R. Walther et al., 'Ecological Responses to Recent Climate Change', 416 *Nature* (2002) 389–395; Camille Parmesan and Gary Yohe, 'A Globally Coherent Fingerprint of Climate Change Impacts across Natural Systems, 421 *Nature* (2003) 37–42; Camille Parmesan, 'Ecological and Evolutionary Responses to Recent Climate Change', 37 *Annual Review of Ecology, Evolution and System*atics (2006) 637–669.

[6] R. A. Robinson et al., *Climate Change and Migratory Species*, British Trust for Ornithology Research Report 414 (2005); C. Both, S. Bouwhuis, C. M. Lessells and M. E. Visser, 'Climate Change and Population Declines in a Long Distance Migratory Bird', 441 *Nature* (2006) 81–83; A. P. Møller, D. Rubolini and

The process of animal migration is linked closely to climatic conditions. Heedless of national borders, migrants move between environments to take advantage of different habitats and seasonally overabundant resources at different times of the year and during different parts of their life cycles. Many of their movements are directly driven by climatic cues, such as temperature or wind direction. Evolutionary selection pressure has been strong for animals to arrive at the optimal time at key sites, such as those for breeding, moulting, stop-overs or wintering. As climates change, so these spatial-temporal optima are likely to shift. Those shifts already being observed are outlined in the following sections of this paper. Species persistence will depend on how well and how fast they are able to adapt in already heavily fragmented and anthropologically influenced ecosystems.

1.2 Changes in the timing of migration

Migratory species are particularly vulnerable to climate change due to their complex life cycles, which often involves them crossing multiple biomes. Distinct responses to climate change have been observed in migratory populations, especially where birds are concerned. Temporal changes, specifically the advancement of spring migration, have been particularly frequently encountered in the northern hemisphere. In response to recent increase in spring temperatures, many migratory birds have been arriving earlier to breed.[7] Similar observations have been made for fish.[8] Being unable to arrive at the optimal time due to climate change has been linked to declines in breeding success.[9] It is worth noting that relatively few data are currently available for the southern hemisphere. In contrast to elsewhere, the majority of birds studied here have delayed rather than brought forward their arrival and breeding dates.[10] Further research is urgently needed to assess the impact this change in behavior is having on the status of bird populations in the southern hemisphere.

1.3 Changes in migration routes

Migration routes have significantly changed across the globe in response to climate change. Species have frequently adapted their migration distance and direction, lead-

A. Lehikoinen, 'Populations of Migratory Bird Species That Did Not Show a Phonological Response to Climate Change are Declining', 105 *Proceedings of National Academy of Science* (USA) (2008) 195–200.

7 P. Gienapp, C. Teplitsky, J. S. Alho, J. A. Mills and J. Merilä, 'Climate Change and Evolution: Disentangling Environmental and Genetic Responses', 17 *Molecular Ecology* (2007) 167–178; Francisco Pulido and Peter Berthold, 'Micro-evolutionary Response to Climatic Change', in H. Caswell (series ed.), 35 *Advances in Ecological Research. Birds and Climate Change* (Elsevier, 2004) 151–183; Oscar Gordo, 'Why Are Bird Migration Dates Shifting? A Review of Weather and Climate Effects on Avian Migratory Phenology'. 35 *Climate Research* (2007) 37–58.

8 A. L. Perry, P. J. Low, J. R. Ellis and J. D. Reynolds, 'Climate Change and Distribution Shifts in Marine Fishes', 308 *Science* (2005) 1912–1915

9 Peter Dunn, 'Breeding Dates and Reproductive Performance', 35 *Advances in Ecological Research* (2004) 69–87; M. E. Visser, C. Both and M. M. Lambrechts, 'Global Climate Change Leads to Mistimed Avian Reproduction', 35 *Advances in Ecological Research* (2004) 89–110.

10 Christophe Barbraud and Henri Weimerskirch, 'Antarctic Birds Breed Later in Response to Climate Change', 106 *Proceedings of National Academy of Science* (USA) (2006) 6248–6250.

ing to a move of species away from some of their current range states to new countries, where they did not occur previously. Migration distances have been shown to shorten even to the extent of a complete switch to a non-migratory lifestyle; and to lengthen as well as to shorten.[11] The change of range states, which may sometimes result, may have profound implications for management structures, such as agreements[12] under the Convention on the Conservation of Migratory Species of Wild Animals (CMS).[13] In Denmark, for example, 35–40 per cent of bird species have been predicted to disappear in the next 80 years; but with a corresponding similar number of new bird species predicted to move to Denmark during this time.[14] Avian range shifts in the northern hemisphere have tended to move in a northerly direction; but with many exceptions in westerly, easterly and even southerly directions. It has been suggested that the ranges of migratory species may shift far more than those of non-migratory species.[15]

2 Factors influencing species vulnerability

Responses to climate change tend to be species-specific, making it difficult to identify individual policy interventions to reduce the impact of climate change on migratory species. Despite the urgent need it has not yet been possible to make general recommendations for taxonomic or geographically clustered groups of species.[16]

While it is often technically feasible to predict the preconditions for species survival in a habitat for the future, it is currently extremely challenging to predict how vegetation and associated animal communities might move between habitats in today's heavily anthropogenically altered and fragmented habitats.[17] There are, however, a number of factors which have been identified to correlate with high species vulnerability, which are briefly outlined below and in Table 1.[18] A more thorough assessment of these factors can be found elsewhere.[19]

[11] Cynthia Carey, 'The Impacts of Climate Change on the Annual Cycles of Birds', 364 *Philosophical Transactions of the Royal Society: Biological Sciences* (2009) 3321–3330.

[12] 'Agreements' in this paper refers generically to all forms of CMS instruments concluded under Article IV, including Memoranda of Understanding.

[13] Convention on the Conservation of Migratory Species of Wild Animals, Bonn, 23 June 1979, in force 1 November 1983, 1651 *United Nations Treaty Series* No. 28395.

[14] B. Huntley, R. E. Green, Y. C. Collingham and S. G. Willis, *A Climatic Atlas of European Breeding Birds* (Lynx Editions, 2008).

[15] J. T. Price and T. L. Root, 'Climate Change and Neotropical Migrants', 66 *The North American Wildlife and Natural Resources Conference* (2001) 371–379.

[16] Fischlin et al., 'Ecosystems, their properties', *supra* note 4.

[17] J. Faaborg et al., 'Recent Advances in Understanding Migration Systems of New World Land Birds, 80 *Ecological Monographs* (2010) 3–48.

[18] See the end of this paper.

[19] R. A. Robinson et al., *Climate Change and Migratory Species*, *supra* note 6; R. A. Robinson et al., 'Travelling through a Warming World: Climate Change and Migratory Species, 7 *Endangered Species Research* (2008) 87–99; W. Foden et al., 'Species Susceptibility to Climate Change Impacts', in J.-C. Vié, C. Hilton-Taylor and S. N. Stuart (eds), *The 2008 Review of the IUCN Red List of Threatened Species* (IUCN, 2008).

Long-distance migrants are thought to be more vulnerable than short-distance ones because – whilst away at their distant wintering grounds – they cannot predict when spring will start on their breeding grounds.[20] This 'mismatching' becomes particularly problematic when the climate at one critical site changes in different ways to that of another site within the migratory route of a species. There is good evidence that some declines in avian species are already resulting from such 'phenology mismatches'.[21] Mismatching of species' presence with food supplies, such as insects for birds or krill for cetaceans, is a further concern.[22] The more specialized the diet of a migratory species is, the more likely it is to be at risk.[23]

Species which will reach natural barriers such as the Arctic Ocean as a result of their shift in range are likely to be particularly threatened with extinction. Polar species and those dependent on high elevation habitats, such as the black-necked crane (*Grus nigricollis*, CMS Appendix I), are likely to be at high risk. An increase of only a 1 degree Celsius change in global temperatures has been estimated to reduce by more than 50 per cent the suitable habitat of birds breeding at high elevation.[24]

The sex determination process of many migratory reptiles (for example, marine turtles) is temperature dependent. There is a significant risk that these species will suffer from skewed sex ratios, and possible consequent demographic collapse, due to rapid climate change. However, the lack of critical data makes it difficult to assess how individual species will be affected.[25]

There are many other broader climate-related threats which will have considerable impacts on migratory populations, often even outweighing the vulnerability factors outlined below and elsewhere.[26] Changes in water regimes (for instance, drought and lower water tables) and wide-ranging habitat loss resulting from climate change have been identified as threats likely to affect the greatest number of terrestrial migratory species.[27] With such large-scale factors as habitat loss it is not a straightforward task to identify which geographic or taxonomic entity is likely to be hit hardest; detailed assessment and modelling being generally required.

[20] C. Both et al., 'Avian Population Consequences of Climate Change Are Most Severe for Long-distance Migrants in Seasonal Habitats', 277 *Proceedings of the Royal Society: Biological Sciences* (2010) 1259–1266.

[21] Tim Jones and Will Cresswell, 'The Phenology Mismatch Hypothesis: Are Declines of Migrant Birds Linked to Uneven Global Climate Change, 79 *Journal of Animal Ecol*ogy (2010) 98–108.

[22] Dunn, 'Breeding dates', *supra* note 9.

[23] Z. Vegvari, V. Bokony, Z. Barta, and G. Kovacs, G., 'Life History Predicts Advancement of Avian Spring Migration in Response to Climate Change', 16 *Global Change Biology* (2010) 1–11.

[24] N. L. Rodenhouse et al., 'Potential Effects of Climate Change on Birds of the Northeast, 13 *Mitigation and Adaptation Strategies for Global Change (*2008) 517–540.

[25] Nicola Jane Mitchell and F. J. Janzen, 'Temperature-Dependent Sex Determination and Contemporary Climate Change, 4 *Sexual Development* (2010) 129–140.

[26] See Table 1 at the end of this paper.

[27] R. A. Robinson et al., *Climate Change and Migratory Species*, *supra* note 6.

Fundamentally, the evolutionary potential of a species to adapt to contemporary climate change is critical to its survival. Those species whose migrations are dependent on endogenous clocks and are genetically less flexible to switch to a different photoperiod, for example, are likely to struggle most to adapt to climate change.[28] Recent evidence from migratory blackcaps (*Sylvia atricapilla*) suggests that microevolution is feasible for birds which migrate short to average distances; and that, by migrating shorter distances, these birds are able genetically to adapt at sufficient speed to climate change.[29] It has been demonstrated that, under intense selection pressure, birds can become resident and that this behavioural change is genetically controlled. Whether a species will persist and survive contemporary climate change will depend on their ecological and physiological traits, their evolutionary potential and in certain cases also on the efforts undertaken by humans to prevent their extinction. It is the last of these elements which multilateral environmental agreements, such as the CMS, can address.

3 Addressing climate change through multilateral environmental agreements (MEAs)

Climate change has only in the last decade become a priority within international governance structures, despite growing evidence of the great potential impact of climate change and the presence of a dedicated treaty in the form of the United Nations Framework Convention on Climate Change (UNFCCC),[30] which entered into force in 1994, and its 1997 Kyoto Protocol.[31] Initial emphasis in the 1990s was placed on mitigation, which has been defined, by the International Panel on Climate Change (IPCC), as '[t]echnological change and substitution that reduce resource inputs and emissions per unit of output … [a]lthough several social, economic and technological policies would produce an emission reduction, with respect to climate change, mitigation means implementing policies to reduce greenhouse gas emissions and enhance sinks'.[32]

It is noteworthy that mitigation efforts are particularly important for marine species such as whales and dolphins since ocean chemistry is directly dependent on atmospheric chemistry. Measuring from pre-industrial times until the 1990s, ocean acidity has increased by approximately 30 per cent (corresponding to a 0.1 decrease along

[28] Carey, 'The impacts of climate change', *supra* note 11.

[29] Francisco Pulido and Peter Berthold, 'Current Selection for Lower Migratory Activity Will Drive the Evolution of Residency in a Migratory Bird Population', 107 Proccedings of the National Academy of Sciences (USA) (2010) 7341–7346.

[30] United Nations Framework Convention on Climate Change, New York, 9 May 1992, in force 21 March 1994, 31 *International Legal Materials* (1992) 849, <http://unfccc.int>.

[31] Kyoto Protocol to the United Nations Framework Convention on Climate Change, Kyoto, 11 December 1997, in force 16 February 2005, 37 *International Legal Materials* (1998) 22.

[32] IPCC, 'Annex I: Glossary. Working Group III', available at <http://www.ipcc.ch/pdf/glossary/ar4-wg3.pdf> (visited 10 November 2010).

the pH scale)[33] and this is already affecting the physiology of krill, upon which many migratory cetaceans are critically dependent for food. Further, increasing acidification of oceans poses a risk to the maintenance of coral reefs, which play a key nursery role for the oceanic ecosystem and which provide vital habitats and food for migratory species such as turtles.[34]

Mitigation instruments, such as the Kyoto Protocol under the UNFCCC, took a long time to negotiate, but have eventually led to significant momentum being gained within the financial and industrial sectors. However, the continuation of, or extension of, a commitment period under the Kyoto Protocol beyond 2012 remains uncertain. Currently, the programme known as REDD+ ('Reducing Emissions from Deforestation and Degradation') is arguably the most promising biodiversity-relevant development under the UNFCCC, with the potential to create a vital financial mechanism for restoring and conserving forest habitat. It is envisaged as being a tool to enhance both climate change mitigation and adaptation, where adaptation has been defined 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, [for example,] anticipatory and reactive, private and public, and autonomous and planned. Examples are raising river or coastal dikes, the substitution of more temperature shock resistant plants for sensitive ones, etc.[35]

The devil remains, however, in the detail and negotiators need to pay the utmost attention to ensuring that, for example, now that the REDD+ decision was adopted at UNFCCC COP16 in Cancun,[36] appropriate reference levels are agreed and that the implementation focuses on restoring and maintaining 'functioning mature forests' and that plantations are much less eligible for REDD+ funding. Only unfragmented mature forests can provide a habitat for species such as forest elephants, gorillas and forest-dwelling birds. Gorillas and elephants in turn contribute to the forest's maintenance through many activities such as dispersing seeds and thus essentially continuously 'plant' new trees.

[33] Scott C. Doney, 'The Dangers of Ocean Acidification', 294 *Scientific American* (2006) 58–65.

[34] Secretariat to the Convention on Biological Diversity, Scientific Synthesis of the Impacts of Ocean Acidification on Marine Biodiversity, Technical Series No. 46 (2009).

[35] IPCC, 'Annex I: Glossary', *supra* note 32.

[36] Report of the Conference of the Parties on its 16th session, held in Cancun from 29 November to 10 December 2010, Addendum Part Two: Action taken by the Conference of the Parties at its 16th session, UN Doc. FCCC/CP/2010/7/Add.1 (2011).

It is important to note that most of the key biodiversity-related MEAs, such as Ramsar,[37] the World Heritage Convention,[38] CITES[39] and CMS do not contain specific provisions for climate change mitigation and adaptation despite the relevance of these two responses for species and other relevant issues covered by these instruments.[40] These MEAs, which were drafted and adopted during the 1970s,[41] were inherently reactive as they embodied an ad hoc and fragmented approach to species and/or habitats which were already endangered; and they were not drafted with the intention of minimizing the effect of climate change, or of improving species' adaptive capacity in responding to climate change. It is worth noting that at the time when these MEAs were negotiated the understanding of climate change and its impacts on ecosystems was not as well developed as it is today. Nevertheless, these treaties are today of fundamental importance in the climate change context because they place strong emphasis on restoring and maintaining ecosystem services.[42] It is interesting to note that even the Convention on Biological Diversity,[43] which was adopted in 1992 with a holistic outlook including the precautionary principle[44] and ecosystems management, did until 2000 not have any provisions for climate change adaptation or mitigation when there were specific calls for the CBD to address the interactions of biodiversity and climate change, not least in response to coral bleaching events.[45] However, only in 2004 was the first stand-alone decision on climate change and biodiversity adopted (decision VII/15).[46] While UNFCCC is exclusively aimed at climate change, it is silent on species conservation or biodiversity adaptation.[47] Given that biodiversity and climate change-related considerations are so closely intertwined, it is surprising that parties did not develop closer linkages at the time.

[37] Convention on Wetlands of International Importance especially as Waterfowl Habitat, Ramsar, 2 February 1971, in force 21 December 1975, 11 *International Legal Materials* (1972), 963, <http://www.ramsar.org>.

[38] Convention Concerning the Protection of the World Cultural and Natural Heritage, Paris, 16 November 1972, in force 17 December 1975, 11 *International Legal Materials* (1972) 1358, <http://whc.unesco.org>.

[39] Convention on International Trade in Endangered Species of Wild Fauna and Flora, Washington DC, 3 March 1973, in force 1 July 1975, 993 *United Nations Treaty Series* 243, <http://www.cites.org>.

[40] Arie Trouwborst, 'International Nature Conservation Law and the Adaptation of Biodiversity to Climate Change: a Mismatch?', 21 *Journal of Environmental Law* (2009) 12–19.

[41] Ramsar –1971, WHC – 1972, CITES – 1973, CMS –1979.

[42] On 'ecosystem services', see the paper by Leila Suvantola in the present *Review*.

[43] Convention on Biological Diversity, Rio de Janeiro, 5 June 1992, in force 29 December 1993, 31 *International Legal Materials* (1992) 822, <http://www.biodiv.org>.

[44] The 'principle' is not contained within the text, but in the Preamble (which must guide interpretation of the Convention's Articles) it is 'noted' that 'where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat'.

[45] An Cliquet, Chris Backes, Jim Harris and Peter Howsam, 'Adaptation to Climate Change – Legal Challenges for Protected Areas', 5 *Utrecht Law Review* (2009) 158–175 at 159.

[46] 'Biodiversity and Climate Change', Decision VII/15, UN Doc. UNEP/CBD/COP/DEC/VII/15 (2004).

[47] UNFCCC, Arts 3(3), 4(1)(b) and (e)-(f) refer to 'precautionary measures to mitigate adverse effects of climate change' as well as 'measure to facilitate adequate adaption to climate change'.

Nonetheless, parties to most of these treaties have in recent years given explicit attention to the effects and impacts of climate change on biodiversity. This is visible from a number of recent decisions and resolutions[48] which require parties to take actions and measures to mitigate climate change and to improve the ability of ecosystems to adapt to the effects of climate change. Parties to the CBD have given particular attention to improving the knowledge base for climate change policy by establishing, in 2008, an ad hoc technical experts group on biodiversity and climate change adaptation which has led to the preparation of guidance documents for its parties[49] and provided the content for decisions[50] addressing the impacts of climate change on biodiversity.

The positive impact which the Ramsar Convention has had on the preservation of wetlands provides a good case study to illustrate its impacts on climate change. Wetlands include floodplains, mangroves and peatlands and are vital for both climate change adaptation and mitigation. Firstly, wetlands make a vital contribution to adaptation by reducing the impact of increasing rainfall, storms, glacier melting and even sea level rise. Secondly, wetlands need to be maintained to avoid carbon contained within them from being released into the atmosphere. Peatlands deserve to receive particular attention in the climate change mitigation context because they are extremely rich in carbon; bogs, moors and even permafrost tundra having thick organic layers. Globally, these peatlands contain nearly 30 per cent of all land-based carbon (550 gigatonnes of carbon), which is equivalent to 75 per cent of all atmospheric carbon or double the carbon stock contained in the forest biomass of the world.[51] If these peatlands are drained, or otherwise destroyed, the carbon that has been stored here for thousands of years and which is normally covered by water would suddenly be exposed to the air; after which it would decompose and turn into

[48] 'Climate Change and Wetlands: Impacts, Adaptation and Mitigation', Ramsar Wetland Convention COP Resolution VIII.3 (2002); 'Climate Change and Wetlands', COP Resolution X.24 (2008). See also 'Biodiversity and Climate change', CBD COP Resolution IX/16 (2008); 'Climate Change and Migratory Species', CMS COP Resolution 8.13 (2005); and 'Climate Change Impacts on Migratory Species', COP Resolution 9.7 (2008). Equally, the CMS related Agreement on the Conservation of African-Eurasian Migratory Waterbirds Agreement (The Hague, 16 June 1995, in force 1 November 1999, <http://www.unep-aewa.org>) adopted 'The Effects of Climate Change on Migratory Waterbirds', a MOP Resolution 4.14 (2008). See also Resolution 4.14 (2010) on Climate Change under the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic area (ACCOBAMS) (Monaco, 24 November 1996, in force 1 June 2010, <http://www.accobams.org/>), concluded under the auspices of CMS.

[49] CBD Secretariat, *Interlinkages between Biological Diversity and Climate Change. Advice on the integration of biodiversity conservation into the implementation of the United Nations Framework Convention on Climate Change and its Kyoto Protocol*, CBD Technical Series No. 10 (SCBD, 2003), available at <http://www.cbd.int/doc/publications/cbd-ts-10.pdf>. See also CBD Secretariat, *Guidance for Promoting Synergies among Activities Addressing Biological Diversity, Desertification, Land Degradation and Climate Change*, CBD Technical series No. 25 (SCBD, 2006), as well as Technical Series Nos 41–43, and 45–46.

[50] 'Biodiversity and climate change', CBD COP Decision VII/15 (2004); 'Biodiversity and climate change: Guidance for promoting synergies among activities for biodiversity conservation, mitigating or adapting to climate change and combating land degradation', COP Decision VIII/30 (2006); and 'Biodiversity and climate change', COP Decision IX/16 (2008).

[51] F. Parish, et al. (eds), *Assessment on Peatlands, Biodiversity and Climate Change: Main Report* (Global Environment Centre and Wetlands International, 2008).

carbon dioxide, which would then be released into the atmosphere. It is therefore vital that peatlands are preserved, and the Ramsar treaty provides a good international tool for achieving this preservation.

Policies which are aimed at maintaining and creating protected areas, such as those under the CMS Agreements and the CBD, can also potentially play a vital role in climate change mitigation and adaptation. In many countries there is good overlap between the biodiversity value of a site and the carbon contained. Tools are being developed, for example by the UNEP World Conservation Monitoring Centre,[52] which are aimed at estimating the carbon value of different habitats. The intention is that polygons, for example, can be drawn anywhere on the landscape and the carbon value can then be automatically calculated to guide policy decisions and to apply for REDD+ funding. Currently, the quality of data available is often too poor for such tools to guide the implementation of REDD+, but this situation is likely to improve in the coming years. Funding mechanisms such as the Lifeweb Initiative and the International Climate Initiative (ICI),[53] which was launched by Germany during the 9th COP to the CBD in Germany in 2008, provide additional vehicles for protecting carbon-rich habitats. This promising financial support will no doubt improve species' adaptive capacity to cope with climate change by improving the ecological network.

Looking ahead, it is important to recognize that much of the climate change policy being drafted today is restricted by uncertainty surrounding how species and habitats will respond to contemporary climate change. Species-specific interventions are often not feasible due to a lack of knowledge; and also due to a lack of funds and time. This should not, however, be a factor which prevents action from being taken, as CMS Parties agreed in Resolution 9.7[54] on Climate Change and Migratory Species in 2008. Focusing on habitat protection and on building ecological networks may provide at least a partial viable solution to this dilemma. Despite uncertainty, it is clear that species will have the best chance of adapting to climate change if they are provided with the opportunity to move freely, even to migrate, within a functional network of a large variety of habitats.

The parties to the CMS are currently not only placing emphasis on research, illustrating how migratory species can be used as early-warning indicators and on disseminating knowledge as to how migratory species are reacting to climate change, but are also preparing for a major policy shift towards ecological network development. The slogan for the 10th COP of the CMS, to be held in 2011, 'Networking for Migratory Species', reflects this. Climate change is one of the major reasons for this shift in direction from a focus on species to more habitat-oriented conservation. Tools for

[52] See <http://www.unep-wcmc.org/>.
[53] Lifeweb Initiative, <http://www.cbd.int/lifeweb/>.
[54] 'Climate Change Impact on Migratory Species', CMS Resolution 9.7, Un Doc. UNEP/CMS/Resolution 9.7 (2008).

critical site identification have already been developed and are being implemented within the CMS Family, specifically under the African-Eurasian Waterbirds Agreement.[55] Efforts have been undertaken by the Zoological Society of London[56] to identify those CMS-listed migratory species most threatened by climate change, in order to provide policy-makers with a starting point for priority action.[57] This effort is assisted by IUCN,[58] which is currently in the process of developing a 'red flag' warning mechanism for all Red List[59] species to highlight those that are particularly vulnerable to climate change. These measures will allow policy-makers to home in on those regions and species which require most attention in the climate change context, while focusing on building ecological networks for biodiversity.

4 The CMS and the changing nature of migration

CMS and its agreements have to adapt and become sufficiently flexible to adjust to the challenges posed by climate change, most notably the movement of species to a different set of range states. There are a number of minor legal concerns related to sufficient flexibility of the treaty, however. Most immediately, there is an urgent need for better monitoring of the impact of climate change on migratory species and capacity-building at the regional level to implement the many demanding climate change decisions under CMS (see Resolutions 9.7 and 10.19).[60]

As outlined above, the interactions between climate change and biodiversity are complex[61] and there is ample of regional variation. To respond to the growing ecological and socio-economic threat that climate change poses, not only coherent international policy is needed but also consistent implementation. This is currently lacking, not least due to a lack of financial mechanisms. For forests, peatlands and other carbon-rich habitats, REDD+ offers a positive incentive; however, for the majority of habitats such mechanisms are lacking. Closer synergies between the biodiversity-related treaties, especially on climate change, in close cooperation with UNFCCC and UNCCD[62] would certainly be beneficial, especially if this collaboration

[55] The Agreement on the Conservation of African-Eurasian Migratory Waterbirds, the Hague, 16 June 1995, into force 1 November 1999, <http://www.unep-aewa.org/>.

[56] See <http://www.zsl.org/>.

[57] CMS, 'Executive Summary: Climate Change Vulnerability of Migratory Species', UN Doc. UNEP/CMS/ScC16/Inf.8 (2010); and CMS, 'Report: Climate Change Vulnerability of Migratory Species', UN Doc. UNEP/CMS/ScC16/Inf.8.1 (2010).

[58] See <http://www.iucn.org>.

[59] The IUCN Red List of Threatened Species a comprehensive, objective global approach for evaluating the conservation status of plant and animal species; see <http://www.iucnredlist.org/>.

[60] *Supra* note 54; and 'Migratory Species Conservation in the Light of Climate Change', CMS Draft Resolution 10.19, Un Doc. UNEP/CMS/Resolution 10.19 (2011).

[61] See also: W. Foden et al., 'Species Susceptibility to Climate Change Impacts', in J.-C. Vié, C. Hilton-Taylor and S. N. Stuart (eds), *The 2008 Review of the IUCN Red List of Threatened Species* (IUCN, 2008).

[62] UN Convention to Combat Desertification in Countries Experiencing Serious Drought and or Desertification, Particularly in Africa, Paris, 17 June 1994, in force 26 December 1996, 33 *International Legal Materials* (1994) 1309, <http://www.unccd.int>.

focused on the collaboration between focal points and implementing agencies at the national level as called for by Resolution 10.19.

It is not only the changing nature of migration which parties need to address, but also the changing nature of humans in response to climate change. There are climate change mitigation measures, such as renewable energy and dam constructions, which can have significant negative impacts on biodiversity and especially migratory species. However, if the locations for developments are carefully chosen to avoid ecologically sensitive areas such as migration corridors and if prior, during and after construction appropriate measures are taken,[63] mitigation measures need not have any significant negative impact on the environment. Furthermore, there are 'tertiary effects' to consider, which are the additional impacts on the environment as a result of humans responding to climate change. New shipping routes are opening up in Arctic waters, for example, due to warmer temperatures and retreating ice. This brings with it disturbance and potential exploitation to previously less disturbed regions. Resolution 10.19 aims to address these matters. However, further research and regional capacity-building is urgently needed to move forward on this specific emerging issue.

There are also a number of legal matters which need to be addressed by parties in the light of climate change. While under CMS relatively thorough and strong decisions on climate change have been adopted by the parties since 1997,[64] there is a need, for example, for the list of range states for each species to be updated regularly to reflect changes due to climate change; maybe even the Convention text itself needs to be amended or reinterpreted.[37] With regards to updating the list of range states, this can easily be done given that consensus exists amongst all the decision-makers. In fact, a number of CMS agreements have been amended during the last decade to expand the taxonomic and/or geographic scope of agreements.[65] With regards to the amendment or re-interpretation of the Convention, the matter is more complex. When CMS was drafted in the 1970s, climate change was not yet recognized as a serious threat in the international policy arena. Thus, the provisions of the Convention do not explicitly address climate change. Within the treaty provisions, there are a number of sections favouring adaptation. However, it has been argued that the definitions of 'historic coverage' (Art. I(1)(c)(4)) and 'range' (Art. I(1)(f)) could be

[63] See, for example, G. C. Ledec, K. W. Rapp and R. G. Aiello, Greening the Wind: Environmental and Social Considerations for Wind Power Development in Latin America and Beyond. (World Bank, 2011), available at <http://www.esmap.org/esmap/sites/esmap.org/files/Greening_The_Wind_LAC_ESMAP_June%202011.pdf> (visited 12 October 2011).

[64] See 'Climate Change and Its Implications for the Bonn Convention', CMS Recommendation 5.5 (1997), available at <http://www.cms.int/bodies/COP/cop5/English/Rec5.5_E.pdf> (visited 12 October 2011); 'Climate Change and Migratory Species', CMS Resolution 8.13, UN Doc. UNEP/CMS/Resolution 8.13 (2005); CMS Res. 9.7, *supra* note 54; and CMD Draft Res. 10.19, *supra* note 60.

[65] For more information, see Proceedings of the UNEP/CMS Technical Workshop on the Impact of Climate Change on Migratory Species: the Current Status and Avenues for Action, 6–8 June, Tour du Valat, Camargue, France, UN Doc. UNEP/CMS/ScC17/Inf.12 (2011).

seen as a legal obstacle to adaptation.[66] This is connected to a wider matter amongst a number of multilateral environmental agreements, which is the inconsistency in the definition of 'conservation status' or similar measures indicating how threatened a particular population or species is across different treaties. To solve this matter, a concerted effort by all decision-making bodies of a number of biodiversity-relevant treaties is required.

5 Summary and conclusions

It appears that climate change is likely to become the greatest overall threat to global biodiversity, including migratory species. Many animal species are changing their migratory pathways, and their arrival and departure times in response to climatic change, and some are already showing that they will have difficulty in adapting fast enough to the rapid changes in conditions. Because the process of migration is closely linked to climatic factors, and therefore sensitive to climatic change, migratory species are useful early indicators of the changes taking place.

The wealth of studies recording research on how migratory species are reacting to climate change is growing continuously, but the current understanding is far from adequate in order to predict future trends and therefore cannot serve to guide policy sufficiently. What is certain, however, is that ecological networks should provide the fundamental building block for national and international environmental policy to maximize the opportunities given to species, in fact biological diversity in general, to adapt to the effects of climate change. It is this which the CMS COP10 in 2011 called for – the use of ecological networks for migratory species, not least to assist species in adapting to climate change. If species are able to move relatively freely, and have access to well-connected habitat at the different stages of their lifecycles, there is a good chance that many of the species we see today might still be seen in abundance in years to come. Whilst many migratory species are already declining due to the adverse effects of climate change, the hope is that at least some will be able to cope with climate change – perhaps even due to the very fact that they *are* migratory, and are therefore able to move large distances.

It is imperative that the parties to multilateral environmental agreements make every effort to ensure that the right governance structures are in place to allow these species to make such moves. Not only are closer synergies between the biodiversity-related MEAs and UNFCCC essential, especially at the national level, but also the closer integration of biodiversity concerns into the available financial mechanisms such as the Carbon Investment Funds. The responsibility lies with parties to ensure that any mitigation funds are being spent not only in a carbon friendly manner, but

[66] *Ibid.*

also taking into account environmental concerns mandated by other treaties ratified by the very same parties.

Table 1: Non-conclusive list of factors affecting the vulnerability of migratory species to climate change[67]

• site-specificity to breeding and non-breeding habitats (especially to sites that will change habitat composition due to climate change)
• specialist versus generalist species (e.g. in terms of habitat or prey)
• site fidelity of migratory populations to sites that will become smaller or disappear due to climatic changes (e.g. the reduction of marine turtle nesting habitat due to changes in sea level)
• barriers to dispersal
• site restriction and limited available habitat (e.g. species on mountain tops, Arctic)
• long-distance migrants
• small populations with a lower adaptive capacity
• slow life history species with a lower adaptive capacity
• exploited and overharvested species
• sex-determination process (e.g. marine turtle sex-determination is temperature dependent)
• habitat-specific dependency of a species or population on a habitat type that is likely to become rare or modified due to climate change (e.g. coral reefs, sea grass pastures, Karoo in Southern Africa)
• sensitivity of population dynamics on environmental triggers (e.g. timing of mating, hibernation, migration)

[67] Source: 'Climate Change and Migratory Species', UN Doc. UNEP/CMS/Conf.9.24 (2008) p. 5.

Ecosystem Services and Climate Change

Leila Suvantola[1]

1 Introduction

Climate change is intertwined with ecosystem services. Climate regulation is one of the ecosystem services adversely affected by human activities. It is generally accepted that climate change is a result of the collapse of the climate regulation service. Thus, climate change is rather a symptom than a phenomenon in itself. The more complex, and more concerning, fact is that climate change is contributing to the degradation of other ecosystem services due to the interrelated nature of these services.

This paper will clarify the significance of ecosystem services; introduce some of the results of the Millennium Ecosystem Assessment (hereinafter MA) which relate to the interrelated nature of climate regulation service and other ecosystem services; consider some proposals as to how to regulate human activities in order to protect ecosystem services; and conclude by discussing shortly the benefits of a new concept in environmental law and environmental governance. The international nature of the challenge of protecting ecosystem services and their functioning is arguably self-evident, but will be considered in the conclusions.

2 The Millenium Ecosystem Assessment and a new perspective on environmental degradation

Ecosystem services have been increasingly discussed by environmental economists since the end of the 1990s, when Gretchen C. Daily raised the concept to broader scientific audience.[2] By the early 2000s, legal scholars (in the United States in

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[2] Gretchen C. Daily (ed.), *Nature's Services – Societal Dependence on Natural Ecosystems* (Island Press, 1997).

particular)[3] had also begun to recognize the importance of the concept. However, it was the Millennium Ecosystem Assessment[4] that brought the concept into the centre of environmental discourse as the report reached political decision-makers worldwide.

The MA was a United Nations initiative carried out between 2001–2005 by an astounding number of authors (1 360) and reviewers (850).[5] The purpose of the assessment was, firstly, to assess the consequences of ecosystem change for human wellbeing; and, secondly, to establish the scientific basis for actions needed to enhance the conservation and sustainable use of ecosystems and their contributions to human well-being.[6] What was examined was an overarching concept of ecosystems as dynamic complexes of plant, animal, and microorganism communities and the nonliving environment interacting as functional units. In this purpose, a full range of ecosystems was covered ranging from relatively undisturbed (natural forests) to landscapes with mixed patterns of human use, and finally to ecosystems intensively managed and modified by humans (agricultural land and urban areas).

The report established a concept of ecosystem services which is currently widely used. The ecosystem services were defined as the benefits provided by ecosystems. These services are divided into four categories: firstly, provisioning services which are familiar to us and subject to private rights and pricing mechanisms, for example food and fibre, freshwater and fuel; secondly, regulation services that are less visible and usually subject to open access, for example air quality regulation, climate regulation, erosion regulation, natural hazard regulation, pest regulation, pollination, water purification, and water regulation. Thirdly, cultural services such as aesthetic values,

See on ecological economists, for instance, Rudolf S. de Groot, Matthew A Wilson, and Roelof M. J. Boumans, 'A Typology for the Classification, Description, and Valuation of Ecosystem Functions, Goods and Services', 41 *Ecological Economics* (2002) 393–408; Robert Costanza and Steve Farber, 'Introduction to the Special Issue on the Dynamics and Value of Ecosystem Services: Integrating Economic and Ecological Perspectives', 41 *Ecological Economics* (2002) 367–373 and Herman Daly and Joshua Farley, *Ecological Economics: Principles and Applications* (Island Press, 2004), to name just a few from the beginning of the 21st century.

3 Key legal scholars were James Salzman and J. B. Ruhl. See early discussion in, for instance, James Salzman, Barton H. Jr. Thompson and Gretchen C. Daily, 'Protecting Ecosystem Services: Science, Economics, and Law', 20 *Stanford Environmental Law Journal* (2001) 309–332; and J. B. Ruhl and R. Juge Gregg, 'Integrating Ecosystem Services into Environmental Law: A Case Study of Wetland Mitigation Banking', 20 *Stanford Environmental Law Journal* (2001) 365–391. See also J. B. Ruhl, Steven E. Kraft and Christopher L. Lant, *The Law and Policy of Ecosystem Services* (Island Press, 2007).

4 Millennium Ecosystem Assessment (MA synthesis): *Ecosystems and Human Well-being: Synthesis* (Island Press, 2005). The Millennium Ecosystem Assessment was called for by United Nations Secretary-General Kofi Annan in 2000 in his report to the UN General Assembly, 'We the Peoples: The Role of the United Nations in the 21st Century' (available at <http://www.un.org/millennium/sg/report/> (visited 10 May 2011)). Governments subsequently supported the establishment of the assessment and the MA was initiated in 2001. The assessment was conducted under the auspices of the United Nations, with the secretariat coordinated by the United Nations Environment Programme (UNEP), and it was governed by a multistakeholder board that included representatives of international institutions, governments, business, NGOs, and indigenous peoples.

5 MA synthesis, *supra* note 4, at VIII.

6 *Ibid.* at V.

cultural diversity, ecotourism, educational values, inspiration, recreation, religious values and spiritual values. Fourthly, supporting services which support all of the other services, for example nutrient recycling, photosynthesis, primary production, soil formation and water recycling.[7]

The outcome of the assessment was that over the past 50 years, humans have changed ecosystems more extensively and more rapidly than in any comparable period of time in human history. This has resulted in a substantial and largely irreversible loss in the diversity of life on Earth.[8] It was reported that the changes to ecosystems have contributed to substantial net gains in human well-being and economic development, but that these gains have been achieved at significant, and increasing, cost. Again, if these problems remain unaddressed, they will substantially diminish the benefits that future generations obtain from ecosystems, despite the overall objective of sustainable development as agreed in Rio in 1992.[9]

The report stated that approximately 60 per cent (15 out of 24) of the ecosystem services evaluated in the assessment are being degraded or used unsustainably.[10] The degradation of ecosystem services often causes significant harm to human well-being and represents a loss of a natural asset or wealth of a country. According to the report, the status of practically all regulating services is deteriorating. In 2005, global climate control was identified as the only positive trend due to actions taken since 1992.[11] However, this optimistic view is unlikely to be shared today.

The most visible collapse of regulating services is perhaps that of natural hazard regulation. The capacity of ecosystems to buffer extreme events and their impacts has reduced due to loss of wetlands, forests and mangroves. The impact of natural hazards such as floods or storms is increased by the fact that people increasingly occupy coastal regions which are exposed to extreme events.[12] This, in turn, has increased the economic loss as well as human suffering caused by natural hazards.

3 The interrelatedness of ecosystem services

Most of the ecosystem services are interlinked. Increased pressure on one is likely to have impacts on another. Climate change is likely to increase the degradation of other ecosystem services. It has already been observed that recently climate change has impacted ecosystems in the form of changes in species distributions, changes in population sizes, changes in the timing of reproduction or migration events and

7 *Ibid*. at 39–40.
8 *Ibid*. at 1.
9 UN Declaration on Environment and Development, Rio de Janeiro, 14 June 1992, UN Doc. A/CONF.151/5/Rev.1 (1992), 31 *International Legal Materials* (1992) 876.
10 MA synthesis, *supra* note 4, at 6.
11 *Ibid*. at 7.
12 *Ibid*. at 43.

increase in the frequency of pest and disease outbreaks. For instance, many coral reefs have undergone major, although often partially reversible, bleaching episodes when local sea surface temperatures have increased.[13] Coral reefs host significant fish populations which will be adversely impacted if coral reefs deteriorate.

The potential future impacts which were identified by the MA report are that, by the end of the 21st century, climate change and its impacts may be the dominant direct driver of biodiversity loss and changes in ecosystem services globally. Harm to biodiversity will grow worldwide with increasing rates of changes to climates and increasing absolute amounts of change.[14]

Some ecosystem services in some regions may initially be enhanced by projected changes in climate. As climate change becomes more severe, the harmful impacts outweigh the benefits in most regions of the world.[15] The balance of scientific evidence suggests that there will be a significant net harmful impact on ecosystem services worldwide if the global mean surface temperature increases more than 2 degrees Celsius above preindustrial levels (medium certainty). This would require CO^2 stabilization at less than 450 ppm.[16]

Most direct drivers of degradation in ecosystem services remain constant or are growing in intensity.[17] Climate change is a rapidly increasing driver for degradation of biodiversity in all ecosystems, and thus also has impacts on most ecosystem services, but its impact is high only in the polar regions. Change of habitats has the biggest impact as a single driver. The impacts of ecosystem services degradation are most evident and direct on those sectors of the human population living in poverty. Half of the urban population in Africa, Asia, the Caribbean and Latin America suffers from one or more diseases associated with inadequate water and sanitation. The declining state of capture fisheries is reducing an inexpensive source of protein in developing countries. Per capita fish consumption in developing countries, excluding China, declined between 1985 and 1997. Desertification affects the livelihoods of millions of people, including a large portion of the poor in drylands.[18]

The increasing impact of climate change on other ecosystem services may well have a worsening effect – a downspin – as the degradation of, for example, provisioning services of fisheries or food production suffer from changing climate conditions. Thus, the already degrading provisioning services degrade further. This brings the idea of adaptation to climate change into a different light. How can one adapt to the degradation of the entire basis of human wellbeing?

[13] *Ibid*. at 70.
[14] *Ibid*. at 17.
[15] *Ibid*. at 79.
[16] *Ibid*.
[17] *Ibid*. figure 13.
[18] *Ibid.* at 13.

Past responses to ecosystem degradation have yielded significant benefits, but these improvements have generally not kept pace with growing pressures and demands. By the time of publication of the MA there were more than 100 000 protected areas covering about 11.7 per cent of the terrestrial surface.[19] Protected areas have an important role in the conservation of biodiversity and ecosystem services. Technological advances in production processes and increased energy and water efficiency have reduced the pressure on ecosystems.[20] This, however, creates false sense of security, as the total demand for goods and services increases along with the number of people reaching western consumption standards even though *per unit* pressure decreases. Substitutes can be developed for some but not all ecosystem services – water purification can be achieved with purification plants and pollination with rented domesticated bees as in United States – with significantly higher costs though –, but water retention, for instance, requires forest cover. Substitutes may also have other negative environmental consequences. Using the same examples, water purification plants, for instance, use chemical processes to clean the water and use energy, while use of domesticated bees for fruit farm pollination requires transport and may pose a threat of spreading of, for instance, pests or disease to natural fauna.

4 The significance of economic recognition of the ecosystem services

Degradation of ecosystem services leads to the loss of non-marketed benefits provided by ecosystems. The economic value of these benefits is often high and sometimes higher than the marketed benefits.[21] The total economic value associated with managing ecosystems more sustainably would most often be higher than the value associated with the conversion of ecosystems.[22] Conversion of ecosystems may, however, still occur because private economic benefits are often greater for the converted system and, most importantly, the non-marketed benefits do not generate income to the land owner who is making decisions over his/her land use.

The economic value of ecosystem services is revealed by scarcity. Scarcity is caused by over-exploitation or tradeoffs between ecosystem services. The price can be assessed in the form of the costs of substitutes or lost income. The annual value of lost biodiversity and the related ecosystem services in 2000–2010 has been estimated to be 50 billion euros.[23] At the current rate, seven per cent of the world's gross national product is likely to be lost by the year 2050.[24] A practical example can be

[19] *Ibid.* at 19.
[20] *Ibid.*
[21] *Ibid.* figures 3.2 and 3.3.
[22] *Ibid.* figure 9.
[23] *The Economics of Ecosystems and Biodiversity – Interim report* (The European Communities, 2008), available at <http://www.unep.ch/etb/publications/TEEB/TEEB_interim_report.pdf> (visited 13 January 2011) at 35.
[24] *Ibid.*

found in New York city, where the Catskill watershed water purification service was protected at the cost of 1.5 billion US dollars. However, the potential substitute in the form of a water purification plant would have cost four to five-fold – 6–8 billion US dollars in construction costs only and another 300 million US dollars annually as the running costs of the plant.[25]

MA conclusions propose responses to the challenge of how to protect ecosystem services. They relate to five topics: economics, institutions, knowledge, social and behavioral aspects, and technology. A number of these proposals relate to barriers to successful responses, for instance to market failures and the misalignment of economic incentives; to social and behavioral factors, including the lack of political and economic power of some groups that are particularly dependent on ecosystem services or harmed by their degradation; to insufficient knowledge (as well as the poor use of existing knowledge) concerning ecosystem services and responses that could enhance benefits from these services while conserving resources; and to inability to recognize the value of ecosystem services.[26] Accordingly, the MA proposed several responses to meet the mentioned challenges, inter alia: 1) institutional responses such as increased transparency and accountability of government and private-sector activities and decisions with impact on ecosystems; 2) economic responses, including elimination of subsidies, to promote the use of ecosystem services (transformation of subsidies to payments for non-marketed ecosystem services) and greater use of economic instruments (taxes, fees) and market-based approaches in the management of ecosystem services (payments for ecosystem services and certification); and 3) lastly, but not least importantly, knowledge includes incorporation of nonmarket values of ecosystems in resource management decisions.[27]

5 Examples of potential instruments for protection of ecosystem services

One potential instrument for enhancing the protection of ecosystem services that has been identified is market creation, where this provides income to the ecosystem service producer and charges those benefitting from the ecosystem service. This type of instrument has the benefit of providing an incentive: payment for producing or sustaining the service gives an incentive to the landowner to protect the service rather than to convert the land for another use, usually for the detriment of the ecosystem service provided by it in its natural state. At the same time, market creation attaches a price tag to the ecosystem service and thus serves to remind the user of the economic significance of the service. This increases awareness of its economic impor-

[25] Gretchen C. Daily and Katherine Ellison, *The New Economy of Nature – The Quest to Make Conservation Profitable* (Island Press, 2002).
[26] MA synthesis, *supra* note 4, at 92.
[27] *Ibid*. at 93–98.

tance and gives transparency to the cost effect of activities and decisions degrading the ecosystem service.

There are hundreds of examples of payments for ecosystem services worldwide.[28] These often relate to fresh water, either for irrigation as in Australia,[29] or for human consumption as in Central or South America.[30] However, this may prove to be a double-edged sword: how can one address the injustice of the pricing mechanisms as the poor are most affected and less capable of paying more? In addition, the increased price may act contrary to the objective and reduce the ethical commitment to protect the environment as the item in question comes to be seen as merchandise. Such a development has been witnessed for instance in Athens where the implementation of a water pricing mechanism reduced residents' commitment to saving fresh water and in fact appeared to have the effect of increasing the use of water by private individuals.[31]

One of the most efficient market creations so far witnessed concerned a single group of actors which faced a loss of income due to their unorchestrated actions. New Zealand was on the brink of seeing a total collapse of its fisheries in the 1980s. Consequently, the state introduced a cap-and-trade scheme for all commercial fishing. An annual total catch was set jointly by scientists, government and fisheries industry and this annual quota was – and still is – distributed to individual fishermen or companies. These actors trade amongst themselves according to an actual catch and restrain their fishing below the set total catch to avoid sanctions. This has proved successful and has made New Zealand a world leader in current fisheries management.[32] Environmental economists regard the evidence to date to suggest that in reasonably economic sophisticated markets market-based quota systems are potentially effective instruments for efficient fisheries management.[33] However, without the support of credible supervision and sanctions the quota system is less likely to be successful.

Another potential policy instrument which might be used to enhance protection of ecosystem services is the imposition of a duty to provide for an ecological compensation for the degraded service (often referred to as 'offsetting'). Such an instrument

[28] James Salzman, 'Creating Markets for Ecosystem Services: Notes from the Field, 80 *New York University Law Review* (2005), 870–961 at 874.

[29] Sharon Beder, *Environmental Principles and Policies: An Interdiciplinary Approach* (University of New South Wales Press, 2006).

[30] Stefano Pagiola et al., *Paying for Biodiversity Conservation Services in Agricultural Landscapes*, The World Bank Environment Department Paper 96 (World Bank, 2004), available at <http://siteresources.worldbank.org/INTEEI/Resources/PayingforBiodiversityConservationServicesinAgriculturalLandscapes.pdf> (visited 24 January 2010).

[31] Dimitrios Zikos, 'Urban Water Dilemmas under the Multi-Dimensional Prism of Sustainability', 8 *Transactions on Business and Economics* (2008) 413–422.

[32] Richard G. Newell, James N. Sanchirico and Suzi Kerr, 'Fishing Quota Markets', 49 *Journal of Environmental Economics and Management* (2005) 437–462.

[33] *Ibid*. at 460.

has been long used in the United States where the conversion of a wetland site has been allowed only where the wetland functions of the converted area are substituted by rehabilitation or recreation of another wetland site.[34] This has the benefit of sustaining the level of ecosystem functions, provided the offsetting takes place before the damage to the service is allowed and provided it is spatially connected to the affected area (usually this would mean located in the same catchment area). Offsetting is an effective instrument only if the ecosystem services can sustain some level of degradation as the substitution does not take place on the spot.[35] The biggest challenge has been the uncertainty of the effectiveness of offsetting.[36]

Furthermore, economic incentives can be used to initiate beneficial activities such as restoration of lost services or ecosystems as in the Australian Bush Tender scheme, where landowners are encouraged to submit auction bids for native vegetation activities financed by the state. Successful bids result in management agreements which are binding on the landowner as well as subsequent landowners.[37]

What remains obvious is that there is no 'one size fits all' instrument available as the situations causing degradation of ecosystem services vary. One can identify at least three different scenarios: 1) a group of people acting in the same individual interest cause a cumulative degradation of a service which benefits them all (for instance, over-exploitation of fisheries); 2) one or more users of an ecosystem service exploit the service in a manner which causes degradation of another service (for instance, through the use of pesticides in agriculture leading to loss of pollinators; overuse of fertilizers resulting in the degradation of fresh water used for drinking or recreation; or logging leading to a loss of water retention and, consequently, to a reduction in the availability of fresh water); and 3) the land use being changed from ecosystem service use to another use (such as housing) and the ecosystem service produced by the ecosystem in its natural state thus being lost.

6 The value of the concept of ecosystem services

The new concept of ecosystem services benefits environmental law and governance by improving understanding of the significance of the environment and natural

[34] Jonathan Silverstein, 'Taking Wetlands to the Bank: The Role of Wetland Mitigation Banking in a Comprehensive Approach to Wetlands Protection', 22 *Environmental* Affairs Law Review (1994) 129–161; and J. B. Ruhl, Steven E. Kraft and Christopher L. Lant, *The Law and Policy of Ecosystem Services* (Island Press, 2007).

[35] Louise Fromond, Jukka Similä and Leila Suvantola, 'Regulatory Innovations for Biodiversity Protection in Private Forests'. 21 *Journal of Environmental Law* (2009) 1–32, at 26.

[36] *Ibid.* at 23.

[37] Victoria Department of Sustainability and Environment, *BushTender: Rethinking Investment for Native Vegetation Outcomes. The Application of Auctions for Securing Private Land Management Agreements* (The State of Victoria, 2008), available at <http://www.dse.vic.gov.au/CA256F310024B628/0/E8653777854ADDC8CA25747100005E2C/$File/BushTender_rethinking+investment_web.pdf> (visited 14 January 2011). See also on the scheme Fromond, Similä and Suvantola, Regulatory Innovations', *supra* note 35, at 16–20.

processes to individual good life (air quality, climate, food, pure water, and security). This concept simplifies the concept of climate change as well as the loss of biodiversity into more easily comprehensible costs of life. It needs to be admitted that to an ordinary person the fact of climate change might not necessarily seem bad news: in many areas climates might even improve, distracting from the true picture of overall negative effects. The ecosystem services concept also, importantly, gives decision-makers a better understanding of the true costs of environmental degradation. Ecological accounting, such as the TEEB,[38] also gives transparency to the costs which have been ignored and externalized so far.

Finally, and perhaps most importantly, the concept of ecosystem services ought to serve to shift attention from symptoms (obvious losses of biodiversity, observable climate change, visible pollution) to the real reasons (impacts of activities on ecosystem services functions, conflicting interests and tradeoffs) and thus perhaps provide a move toward solutions such as recognition of a wider variety of policy instrument choices. In Australia, for instance, land clearance for agriculture was in the past regarded as a natural resource use issue. Now it is seen as a biodiversity issue, due to our better understanding of natural complexity. In effect, land clearance has led to the degradation of the land's capacity for food production due to salination[39] and, thus, it is also an ecosystem service issue.

The ecosystem services concept requires new types of regulation and regulatory instruments. Simple legislative prohibitions on degrading activities have generally proved insufficient worldwide. Instead, there is a need for instruments that would make supporting of the services economically more beneficial than is 'ordinary' transformation of the ecosystem.

There is a strong need for international cooperation in the protection of ecosystem services due to the fact that ecosystem services are often shared on a regional scale by two or more states (catchment areas providing for water purification, fresh water or aquaculture), while some services benefit and are adversely affected globally. Some ecosystem services, such as fisheries, are by nature open access and, thus, no single state has the interest of protecting them alone. Moreover, in the global market, the financial benefits provided by ecosystem services in general, and provisioning services, in particular, and the costs due to the degradation of ecosystem services do not meet. Most often the price of the product, such as tulips cultivated in Eastern Africa and sold in Northern Europe, does not cover the cost to the developing country caused by land conversion leading to diminished fresh water for local people and irrigation of local agriculture.

[38] The Economics of Ecosystems and Biodiversity Initiative, see <http://www.teebweb.org>.

[39] Land clearing causes rise of the water level which in turn raises to the surface soil salt which occurs naturally in the ground, a problem caused by Australian peculiar geological conditions. See Rosemary Lyster, Zada Lipman, Nicola Franklin, Graeme Wiffen, and Linda Pearson, *Environmental and Planning Law in New South Wales* (the Federation Press, 2007) at 288.

The Millennium Ecosystem Assessment has resulted in the initiative for international payments for ecosystem services, promoted by the UNEP.[40] The initiative is based on the findings of the MA and it aims at responding to the very problem of the 'polluter pays principle' in international sphere, how to get the costs and benefits meet.[41] The eighth Conference of the Parties to the Convention on Biodiversity (CBD)[42] expressed its support to the initiative in order to push forward the effort to develop positive incentives to create financing for preventing the loss of biodiversity and ecosystem services. Development of payments to avoid deforestation would help to combat climate change.

The awareness of ecosystem services and their nature may not need to result in specific international agreements on the very topic. Rather, the understanding of the state of ecosystem services and the reasons for it may help to develop existing regimes to better achieve the targets of biodiversity conservation, combating climate change and desertification as well as protection of our common resources such as the fisheries while also finding ways of fairer sharing of the environmental costs – such as the international payments for ecosystem services.

[40] See UNEP, 'International payments for ecosystem services', available at <http://www.unep.ch/etb/areas/ipes.php> (visited 8 May 2011).

[41] UNEP, IUCN with CBD, *International Payments for Ecosystem Services (IPES)*, available at <http://www.unep.ch/ewtb/events/IPES Side Event Bonn/IPES SUM FINAL.pdf> (visited 8 May 2011). See also OECD, *Paying for Biodiversity – Enhancing the Cost-Effectiveness of Payments for Ecosystem Services* (OECD, 2010).

[42] Convention on Biological Diversity, Rio de Janeiro, 5 June 1992, in force 29 December 1993, 31 *International Legal Materials* (1992) 822, <http://www.biodiv.org>.

Part V

Interactive Exercise

Climate Change Negotiation Simulation

Marko Berglund[1] *and Kati Kulovesi*[2]

1 Overview

1.1 Introduction

This paper sets out the elements and structure of the simulation exercise for the seventh University of Eastern Finland – UNEP course on Multilateral Environmental Agreements (MEAs). The exercise focused on some key procedural and substantive issues related to ongoing negotiations, under the United Nations Framework Convention on Climate Change (UNFCCC),[3] on enhancing international climate change cooperation. The scenario placed participants at the United Nations Climate Change Conference in Cancún, Mexico and the 16th session of the Conference of the Parties to the UNFCCC (COP 16).[4]

The simulation scenario and the issues therein reflected recent actual work by the Ad Hoc Working Group on Long-term Cooperative Action under the UNFCCC (AWG-LCA). The mandate of the AWG-LCA derives from the Bali Action Plan,[5] which calls for agreement on 'a shared vision for long-term cooperative action, including a global long-term goal for emission reductions'. Negotiations on a shared

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[3] United Nations Framework Convention on Climate Change, New York, 9 May 1992, in force 21 March 1994, 31 *International Legal Materials* (1992) 849, <http://unfccc.int>.

[4] The exercise took place in August 2010. The actual UN Climate Change Conference in Cancun took place from 29 November to 10 December 2010.

[5] Decision 1/CP.13 'Bali Action Plan', in Report of the Conference of the Parties on its 13th sess., UN Doc. FCCC/CP/2007/6/Add.1 (2008), Appendum.

vision are closely linked to the other building blocks of the Bali Action Plan, namely adaptation, finance, mitigation and technology and capacity-building. These issues form the key pillars of future climate change cooperation under the UNFCCC. They were also addressed in the Copenhagen Accord,[6] which was negotiated at COP 15 by a small group but which was not adopted by the COP due to lack of consensus. Deliberations on the adoption of the Copenhagen Accord focused on procedural issues; in particular, on the transparency and inclusiveness of its negotiating process. In the end, COP 15 agreed to 'take note' of the Copenhagen Accord; and to extend the AWG-LCA's mandate for one more year, requesting it to report the results of its work for adoption by COP 16.[7] During the simulation exercise, participants were asked to negotiate procedural and substantive issues resembling those that had played an important role in Copenhagen.

1.2 Simulation objectives

Questions concerning process and the textual basis of Parties' work play an important role in negotiations under MEAs, as is illustrated by recent developments within UNFCCC negotiations. The simulation exercise focused on the following issues:

1. discussion and appreciation of the key elements of international climate change cooperation;
2. understanding of the principles and practices of multilateral negotiation and appreciation of the value of procedural issues, including the rules of procedure; and
3. familiarity with specific substantive and drafting issues, as well as legal implications of different types of instruments.

The simulation exercise was linked to questions concerning process and transparency. One of the tasks for the participants was to try to reach agreement on the process for finalizing negotiations on the Bali Action Plan at COP 16. At the same time, the simulation exercise touched upon some of the key substantive issues in the ongoing negotiations under the UNFCCC. It also addressed the question concerning the legal form of the outcome, enabling participants to consider differences between various legal instruments.

1.3 Scenario

The scenario for the simulation exercise was set at COP 16 and partly resembled the situation in the beginning of the second week of the UN Climate Change Confer-

[6] Decision 2/CP.15 'Copenhagen Accord', in Report of the Conference of the Parties on its 15th sess., UN Doc. FCCC/CP/2009/11/Add.1 (2010).

[7] Decisions 1/CP.15 'Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention' and 2/CP.15 'Copenhagen Accord', in UN Doc. FCCC/CP/2009/11/Add.1 (2010).

ence in Copenhagen, while also taking into account progress made during 2010. The task for the participants was to prepare for the arrival of the ministers at the end of COP 16 by aiming to reach agreement on the negotiating process during the High-level segment; and to identify 'crunch' issues possibly requiring political input from the ministers. They also had to work to 'clean up' the negotiating text before the ministers' arrival and provide clear options on issues where agreement without political input might not be possible. Participants were also required to consider the legal form of the AWG-LCA's outcome. To complete these tasks, the exercise involved the establishment of three groups with the following basic set up and tasks:

- Group A: Informal consultations focusing on a proposal by the COP President to establish a small 'Friends of the Chair' group to negotiate 'crunch issues' during the High-level segment.
- Group B: A contact group that focused on cleaning up text on a shared vision for long-term cooperative action so that the text would be ready for possible consideration by the ministers during the High-level segment.
- Group C: A contact group that focused on the legal form of the AWG-LCA's outcome.

Participants were given general instructions detailing the scenario and tasks of the three groups. They were also provided with individual instructions with information on countries, which they were asked to represent. Certain participants were also given specific roles, such as COP President, Co-Facilitator or Co-Chair or Secretariat. The participants were asked to use a draft negotiating text by the AWG-LCA Chair (FCCC/AWGLCA/2010/8) as a basis for their substantive discussions

1.4 Introduction to the exercise[8]

Participants were instructed to play their part in the overall scenario for the simulation, following both general and individual instructions. They were encouraged to cooperate to develop alliances and coordinated strategies. It was suggested that participants consider developing joint proposals and making interventions on behalf of more than one Party, and that they consider using regional and negotiation groups as a point of departure. They were also asked to keep in mind their interests and positions on all issues, but to focus primarily on issues assigned to their own drafting group.

Participants were encouraged to work hard towards their objectives, keeping in mind the draft rules of procedure being applied under the UNFCCC. They were also asked

[8] This section has benefited from insights from previous years' exercises and published in previous editions of this *Review*, such as Cam Carruthers and Marko Berglund, 'Negotiating Procedures: A Multilateral Simulation Exercise based on the Compliance Procedure under the 1996 Procedure to the London Convention on the Prevention of Marine Pollution' in Ed Couzens and Tuula Honkonen (eds), *International Environmental Lawmaking and Diplomacy Review 2008*, University of Joensuu – UNEP Course Series 8 (University of Joensuu, 2009), 241–256 at 244–245.

to elaborate on their positions and to intervene in the drafting groups and plenary even when they had no specific instructions to do so. During the final day of the two-day exercise, participants were given the choice to 'call their capital' and receive further instructions from the exercise coordinators.

Participants were also reminded that delegates to MEA negotiations often face situations similar to the simulation, where there is only limited time and opportunity to prepare, but objectives still need to be defined and strategies still need to be developed. Overall, the simulation was designed to be difficult, with failure to reach agreement a real possibility. It must also be emphasized that the scenario was entirely hypothetical and, while being realistic, was not intended to reflect specific positions of particular Parties or the views of individuals.

It was suggested to the participants that informal diplomacy is where most progress toward agreement on concepts is made; while drafting groups and plenary discussions are often required for agreement on specific texts. Drafting often involves a fine balance between accommodation and clarity. Decision-making in plenary may be pro forma, but there can be surprises. Decisions in the plenary are critical and can sometimes move very quickly, at times shifting back and forth on an agenda, so that being prepared to make an effective intervention at any moment is essential.

2 Instructions

2.1 General instructions

The following general instructions were provided to all participants:

1. At a minimum, please review the general and individual instructions and the key simulation documents.[9]
2. Each participant will be assigned a role as a representative of a Party, or as a Secretariat official. Additional **confidential** individual instructions will be provided to each participant.
3. Participants representing Parties have been sent with full credentials from their governments to participate in the conference, using their confidential individual instructions as a guide. Parties should do their best to achieve the objectives in their instructions. They should develop a strategy and an integrated rationale to support their positions. Do not share your confidential individual instructions with other participants. Do not concede to a fall-back position without a serious effort to achieve your primary objective (and not on the first day!). Consider consulting with others before the session, to

[9] See also Cam Carruthers (ed.), *Multilateral Environmental Agreement Negotiators' Handbook,* University of Joensuu – UNEP course series 5 (2nd ed. 2007, University of Joensuu); in particular, see sections 3.1, 3.2, 3.3, 3.6, 2.4, 4.3 and 5.

identify and coordinate with those who have similar instructions, and even prepare joint interventions. You should build alliances and try to support anyone with a similar position who is out numbered. You should try to identify participants with opposing views, and influence them both in formal negotiations, as well as in informal settings. At any time, you may receive supplementary instructions. Participants should, of course, always be respectful of each other's views and background.

4. Participants playing the role of Secretariat officials will support the Presidency and group Co-chairs, and join specific groups, in an advisory role only. Secretariat officials support the process and the Parties in any appropriate manner. Secretariat officials support the contact groups and work directly with the COP President, co-chairs, facilitators and rapporteurs, and respond to requests from Parties.
5. The Simulation Coordinators (Marko Berglund and Kati Kulovesi) may, as needed, play the role of the AWG-LCA Chair, UNFCCC Executive Secretary, and/or one of the designated senior government officials in a state's capital authorized to provide supplementary instructions to their delegations. The Simulation Coordinators will remain as far as possible outside of the simulation and should not be consulted unless necessary. Questions on procedure, etc. should a priori be addressed to the COP Presidency, Contact Group Co-Chairs / Co-Facilitators of the informal consultations or Secretariat Officials.
6. In the COP plenary and smaller groups, the COP President / Co-Chairs / Co-Facilitators sit at the head of the room, with the Secretariat officials beside them. Parties will be provided with a 'flag' or country nameplate (fold it twice, so the name is in the mid panel). To speak, please raise your 'flag' and signal the Secretariat official keeping the speakers' list. Secretariat Officials will have their own name plates.
7. The COP will begin work in plenary. The COP will establish two contact groups (Groups B and C) and one informal group (Group A) to consider specific issues.
8. The first task for Parties is to elect two Co-chairs for each of the two contact groups (Groups B and C) and one additional co-facilitator for the informal group (Group A). The usual practice for such groups is that one Co-chair is from a developing country and the other is from a developed country. For this exercise, selection should be based on informal consultations, and decided by consensus given the fact that no voting rules have been adopted under the UNFCCC.
9. When the COP plenary breaks into the three groups, please join the group identified in your individual instructions. The groups will operate much like an informal drafting group (see the *MEA Negotiator's Handbook).*
10. The three groups will begin their work in a plenary, and they must reach agreement on what to report back to the COP plenary. It is possible for the three groups to break into smaller drafting groups to work on text or to try to reach agreement on sensitive issues. Such drafting groups should be run

on an informal basis, with reference to participants by name not country. Each such group will select a facilitator to manage the meeting (see the *MEA Negotiator's Handbook*, on drafting, especially use of brackets).

11. Once elected, co-chairs and facilitators must play their roles throughout the negotiation simulation exercise, and refrain from openly taking positions.
12. Please follow the draft rules of procedure of the UNFCCC provided in these materials.
13. Please use only the materials provided, as well as advice and information from other participants, and don't be distracted by internet resources or use any precedent found there or elsewhere (even though this is often a good idea in real life!).
14. The exercise takes place over a two-day period. Participants are encouraged to consult informally in the evening of the first day (as often happens in real life) to from alliances and broker solutions.

2.2 Individual instructions

The core of the simulation was set out in confidential individual instructions of approximately one to two pages in length. They provided very brief positions and fall-back positions on each of the issues under discussion, but no rationales or strategies; these were to be developed by each participant. It was noted to the participants that, in some cases, the instructions might seem contradictory – something that also happens in real life, and which is interesting to watch! Instructions were provided in a simplified form rather than by way of official delegation instructions. In some cases, instructions stipulated that a position could not be abandoned for a fall-back position without consultation with a designated senior official in the state's capital. Parties were referred to the *MEA Negotiators' Handbook* for further guidance in dealing with procedural and strategic issues.

3 Informal documents and background information provided

3.1 Brief overview of ongoing negotiations under the UNFCCC

The following additional information was provided to simulation participants.

3.1.1 Two-track negotiations

Negotiations to enhance long-term international climate change cooperation are currently taking place under the UNFCCC. The deadline for completing these negotiations is the sixteenth Conference of the Parties (COP 16) and sixth Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (CMP 6). This brief overview, written by Kati Kulovesi, describes the negotiating process and the key issues thus far. It also outlines some of the main procedural issues during the last days of the UN Climate Change Conference in Copenhagen.

The international climate change negotiations are taking place on two legally and procedurally distinct 'tracks'.[10] The so-called Protocol track was launched by the first Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (CMP 1) in 2005 on the basis of Article 3(9) of the Kyoto Protocol and it focuses on Annex I Parties' commitments beyond the first Kyoto Protocol commitment period in 2008–2012. The main issue under this negotiating track concerns Annex I Parties' emission reductions in the post-2012 period. The work is carried out by the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG-KP). The AWG-KP's work programme also covers so-called 'other issues', which relate to the means available for Annex I Parties to reach their emission reduction commitments; and include issues such as market-based flexibility mechanisms and land use, land-use change and forestry (LULUCF).

While the mandate of the AWG-KP is limited to Annex I Parties' further commitments under the Kyoto Protocol, a broader negotiating track under the Convention was launched by COP 13 in 2007. The key instrument in this regard is the Bali Action Plan (Decision 1/CP.13), which identifies the key elements or 'building blocks' for enhancing the Convention's implementation – namely mitigation, adaptation, finance as well as technology and capacity-building. The Bali Action Plan also calls for agreement on 'a shared vision for long-term cooperative action, including a global long-term goal for emission reductions'. COP 13 established a new subsidiary body, the *Ad Hoc* Working Group on Long-term Cooperative Action under the UNFCCC (AWG-LCA) to undertake the work needed to reach agreement on the issues identified in the Bali Action Plan. Parties also agreed on the Bali Roadmap, setting out a two-year negotiating process with the objective of concluding work under both negotiating tracks at the UN Climate Change Conference in Copenhagen in December 2009.

In order to reach agreement by the deadline, a number of UNFCCC negotiating sessions took place in 2008 and 2009 with the two AWGs always convening in parallel. Issues relevant to the UNFCCC negotiations were also taken up in a number of other international fora: the Group of Eight (G-8);[11] the Group of Twenty (G-20);[12] the Greenland Dialogue[13] convened by the Danish COP Presidency; and the

[10] For a comprehensive overview of the UNFCCC negotiating process and key substantive issues, see Kati Kulovesi and Maria Gutierrez, 'Climate Change Negotiations Update: Process and Prospects for Copenhagen Agreed Outcome in December 2009', 18 *Review of European Community and International Environmental Law* (2009) 229–243.

[11] G-8 is a forum that was originally created in the 1970s for the governments of six major economies: France, Germany, Italy, Japan, the United Kingdom and the United States. Later on, also Canada and Russia have joined the group. The European Union is currently also represented within the Group.

[12] The G-20 is a group of Finance Ministers and Central Bank Governors, established in 1999 in the wake of the Asian financial crisis. Its main focus is on issues related to economic stability. Its members are: Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, Republic of Korea, Turkey, United Kingdom and the US.

[13] The Greenland Dialogue initially convened in Ilulissat, Greenland in 2005. It subsequently served as an informal forum for ministers to discuss climate change issues outside the UNFCCC negotiation process

Major Economies' Forum on Energy and Climate[14] launched by US President Obama. On 22 September 2009, approximately 100 of the world's leaders attended the UN Secretary-General's Summit on Climate Change in New York in an attempt to strengthen political will to reach agreement in Copenhagen. Regardless of these efforts, expectations for Copenhagen were consistently lowered throughout 2009 and many critical issues remained outstanding when Parties convened in Copenhagen, Denmark from 7 to 18 December 2009.

3.1.2 The UN Climate Change Conference in Copenhagen[15]

Some of the main issues characterizing the Copenhagen Conference included unprecedented public interest and political pressure. More nearly 120 heads of State and government attended the joint High-level segment of the COP and CMP at the end of the Conference. The Conference was also subject to unprecedented media attention and in total nearly 40 000 people applied for accreditation, far exceeding the capacity of the conference venue in the Bella Centre. Access to the venue was further restricted during the High-level segment. This gave rise to numerous complaints concerning transparency from organizations that normally participate in the UNFCCC negotiations as observers.

Also in terms of the negotiations, the Copenhagen Conference was characterized by complex discussions on procedure and transparency. With many outstanding issues remaining, both AWGs continued their work in Copenhagen. Their deadline for reporting their respective outcomes to the COP and CMP was 16 December 2009, in other words, the second Wednesday of the Conference. As had been commonly expected, neither AWG was able to reach agreement on the key outstanding issues by the deadline. The AWG-KP finished its work without a result late on Tuesday evening, while the AWG-LCA continued its closing plenary throughout the night until early Wednesday morning.

On Wednesday morning, 16 December 2009, the CMP convened to hear the AWG-KP's report. After the report, the Danish COP Presidency briefly notified the CMP of its intention to table a text (commonly referred to as the 'Danish text') and then proceeded to open the joint High-level segment of the COP and CMP. However, many Parties raised points of order to interrupt the opening of the High-level seg-

in the lead-up to the UN Climate Change Conference in Copenhagen in 2009. Convened by Denmark, the Greenland Dialogue tended to include ministers and heads of delegation from around 29 countries.

[14] The Major Economies' Forum on Energy and Climate was launched by President Barack Obama in 2009 and it has met ten times by April 2011. The Forum is intended to facilitate a candid dialogue among major developed and developing economies. The 17 major economies participating Forum are: Australia, Brazil, Canada, China, the European Union, France, Germany, India, Indonesia, Italy, Japan, Korea, Mexico, Russia, South Africa, the United Kingdom, and the United States. The United Nations has also regularly participated in the forum. A number of other countries have attended some of the sessions.

[15] This overview is adapted and elaborated from 'Summary of the Copenhagen Climate Change Conference', 12 (459) *The Earth Negotiations Bulletin*; 'Summary of the Bonn Climate Change Talks', 12 (460) *The Earth Negotiations Bulletin*; and 'Summary of the Bonn Climate Change Talks', 12 (472) *The Earth Negotiations Bulletin*. The reports are available through <http://www.iisd.ca>.

ment, questioning the Danish proposal and raising concerns over transparency of the process. Some also stressed that text negotiated by the Parties, rather than a text tabled by the COP Presidency, should form the basis of further work. All-day informal consultations ensued on how to move forward. The COP plenary convened late on Wednesday evening to hear, briefly, the AWG-LCA's report. Parties were then informed that consultations by the COP Presidency on how to proceed were still continuing.

At around noon on Thursday, 17 December 2009, the COP plenary resumed. COP President Lars Løcke Rasmussen, Prime Minister of Denmark, reported on his informal consultations and explained that further work would be based on negotiating texts forwarded to the COP by the AWG-LCA. Parties agreed to establish a contact group with a mandate to complete work on unresolved issues 'within a short deadline'. They further agreed that open-ended drafting groups facilitated by people whom the Parties 'know and trust' would also be established. Immediately afterwards, the CMP plenary convened and a similar agreement was reached; in other words, that a contact group, assisted by drafting groups, would be established to conclude work based on the text presented by the AWG-KP.

The two contact groups thus began working on Thursday afternoon, with each dividing into smaller drafting groups. Late in the evening, both contact groups held 'stocktaking' meetings. After progress reports were presented from the drafting groups, Parties exchanged views on how to proceed. In the CMP contact group, the European Union proposed to proceed by establishing a 'Friends of the Chair' group. The proposal was supported by the key negotiating groups, including the Group of 77 and China (G-77/China),[16] the African Group[17] and the Alliance of Small Island States (AOSIS).[18] The G-77/China highlighted the importance of the smaller group reporting back to the contact group with a view to reaching a party-driven consensus. The contact group meeting was then closed and the COP President's Special Representative Connie Hedegaard proceeded to consult Parties informally on how to proceed with the establishment of the 'Friends of the Chair' group.

In the COP contact group, a proposal was also made to proceed by establishing a 'Friends of the Chair' group. This proposal was supported by several developed and

[16] In the UNFCCC negotiations, developing countries generally work through the Group of 77 and China to establish common negotiating positions. The G-77/China was founded in 1964 in the context of the UN Conference on Trade and Development and now functions throughout the UN system. It has over 130 members.

[17] The Alliance of Small Island States (AOSIS) is a coalition of some 43 low-lying and small island countries, most of which are members of the G-77, that are particularly vulnerable to sea-level rise. They usually take a common position in the UNFCCC negotiations.

[18] Based on the tradition of the United Nations, UNFCCC Parties are organized into five regional groups, mainly for the purposes of electing the Bureau, namely: African States, Asian States, Eastern European States, Latin American and the Caribbean States, and the Western European and Other States. Of these, the African Group often has a common position in the UNFCCC negotiations. Its members are also members of the G-77.

developing countries. Some developing countries, however, raised concerns over the transparency of the proposed smaller group and suggested continuing work in the drafting groups. In an attempt to reach a compromise, suggestions were then made for the 'Friends of the Chair' and drafting groups to meet in parallel and to forward only certain key issues to the political level. In the end, Parties decided that most of the drafting groups should continue working while a 'Friends of the Chair' group also meets to discuss some of the key political issues. Some developing countries still expressed concerns over the procedure; and the G-77/China stressed that negotiating groups would have to be allowed to select their representatives.

While these discussions took place, the world's leaders had already begun to arrive in Copenhagen to attend a dinner hosted by the Queen of Denmark on Thursday evening 17 December 2009. At the conference centre, rumours began circulating that some of the leaders planned to meet after the dinner and take their own initiative to push the stalling negotiations forward. Ultimately, the end of the Copenhagen Conference came to be characterized by parallel negotiations at the expert and political levels. Late on Friday evening 18 December 2009, US President Obama held a quick press conference before his departure back to the US, announcing that agreement had been reached on the Copenhagen Accord.

The COP plenary convened a couple of hours after Obama's announcement. COP President Lars Locke Rasmussen explained that 'many hours of intense negotiation' had 'paid off' and that he had held consultations with leaders and 'mobilized support for an Accord which has been developed in a representative group of leaders from regional groups all around the world'. He said that the document 'can be a significant impulse to our process' and asked regional groups to consult on whether they wanted to join consensus to take the document forward as a COP decision and report back to him before the plenary reconvened. He then suspended the COP plenary and proceeded to open the CMP plenary, presenting the same document and then suspending the CMP meeting. The suspension of the plenary was, however, strongly opposed by representatives of a number of developing countries banging their flags and raising points of order. Intense discussions followed, many of them focusing on the transparency of the negotiating process. Some of the key interventions, based on a transcript of the COP plenary from the UNFCCC webcast, are included in the background materials for the simulation exercise.

During the COP and CMP plenary discussions, it transpired that the Copenhagen Accord had been negotiated by delegates from Algeria, Bangladesh, Brazil, China, Colombia, Denmark, Ethiopia, France, Germany, Grenada, India, Lesotho, the Maldives, Mexico, the Republic of Korea, the Russian Federation, Saudi Arabia, South Africa, Sweden (which held the EU's rotating Presidency during the COP), Spain (the incoming EU Presidency), the United Kingdom and the United States of America. The meeting was chaired by COP President Rasmussen and UN Secretary-General Ban Ki-Moon was also present. Most Parties were willing to support the

adoption of the Copenhagen Accord; despite what many recognized as flaws in its negotiating process and weaknesses in terms of substance. However, a small number of developing countries continued to oppose the Accord. Ultimately, no consensus was reached to adopt the Copenhagen Accord as a COP decision. After intense informal consultations in the sidelines of the plenary hall, Parties agreed to 'take note' of it. The COP and CMP also agreed to extend the mandates of the AWG-LCA and AWG-KP until COP 16 and CMP 6 in Cancún at the end of 2010.

3.1.3 UNFCCC Negotiations after Copenhagen

Negotiations under the UNFCCC resumed in Bonn, Germany in April 2010 with a three-day meeting focusing on procedural issues. Many Parties expressed concern over the negotiating process in Copenhagen and stressed the need to have a transparent and party-driven process at COP 16 and CMP 6 in Cancún. Under the AWG-LCA, discussions also took place on the role of the Copenhagen Accord and the textual basis for the AWG-LCA's further work. Some countries stressed that political guidance from world leaders, as outlined in the Copenhagen Accord, should be reflected in further negotiations; while others opposed this on the grounds that the Accord had not been adopted by the COP and that its negotiating process had not been legitimate. The compromise was to mandate the new AWG-LCA Chair Margaret Mukahanana-Sangarwe (Zimbabwe) to prepare text, under her own responsibility, for the next session – drawing both on the AWG-LCA's report to COP 15 and on work undertaken by the COP on the basis of that report. The Chair noted that these conclusions should be read with the understanding that such work refers to all work undertaken by the COP, including its decisions.

During the AWG-LCA's next session in June 2010, Parties exchanged views on the Chair's draft negotiating text. Based on these discussions, at the end of the June meeting, the Chair released a preliminary version of her new draft negotiating text. Parties' reactions to the preliminary version were critical, and many called for substantial changes. The second official version of the Chair's negotiating text was then released as *the second iteration of the text to facilitate negotiations reflecting the Chair's sense of how the text could be advanced to further facilitate negotiations among Parties based on the work undertaken by the AWG-LCA at its tenth session* (FCCC/AWGLCA/2010/8) and will be used to facilitate the simulation exercise.

Negotiations under both AWGs are scheduled to continue in August and October 2010, before the UN Climate Change Conference in Cancún from 29 November to 11 December 2010.

3.2 Additional informal material

Simulation exercise participants were also provided with a brief general overview of issues related to rules of procedure under MEAs as well as a transcript of key interventions during the COP 15 closing plenary in Copenhagen on 19 December 2009.

4 Official documents

The following additional information was provided to simulation participants.

4.1 Draft negotiating text on a shared vision for long-term cooperative action

This draft negotiating text provided to the simulation exercise participants was based on Preamble and Section A of *the second iteration of the text to facilitate negotiations*, reflecting AWG-LCA Chair Mukahanana-Sangarwe's sense of how the text could be advanced to further facilitate negotiations among Parties based on the work undertaken by the AWG-LCA at its tenth session (FCCC/AWGLCA/2010/8).

Chapter I

The Conference of the Parties,

Pursuant to the Bali Action Plan (decision 1/CP.13) which recognizes the need for long-term cooperative action to enable the full, effective and sustained implementation of the Convention now, up to and beyond 2012,

Guided by the ultimate objective of the Convention, as stated in its Article 2,

Recalling the principles, provisions and commitments set forth in the Convention, in particular the provisions of Articles 3 and 4,

Reaffirming the political commitment and renewing the global partnership to combat climate change and to address existing deficiencies in the implementation of the Convention,

Acknowledging the important and ongoing role of the Kyoto Protocol in contributing to the ultimate objective of the Convention,

Deeply concerned about the findings of the Fourth Assessment Report of the Intergovernmental Panel on Climate Change that the climate system is warming as a consequence of human activity,

Recognizing that the adverse effects of climate change are already evident and widespread, particularly in vulnerable regions of the world, and that a delay in prompt and sufficient global emission reductions will lead to significant additional cost for both mitigation and adaptation, constrain opportunities to achieve lower stabilization levels and increase the risk of large-scale, abrupt and irreversible impacts and breaches of critical climate thresholds,

Noting the important role of food production systems in mitigation and adaptation efforts,

Resolving to safeguard the survival of all nations and peoples threatened by the adverse effects of climate change,

Noting resolution 63/278 of the United Nations General Assembly on 'International Mother Earth Day', which acknowledges that the Earth and its ecosystems are our home and that in order to achieve a just balance among the economic, social, and environmental needs of present and future generations, it is necessary to promote harmony with nature and the Earth,

Emphasizing the need for deep cuts in global greenhouse gas emissions and early and urgent undertakings to accelerate and enhance the implementation of the Convention by all Parties, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities,

Acknowledging that the largest share of historical global emissions of greenhouse gases has originated in developed countries and that, owing to this historical responsibility, developed country Parties must take the lead in combating climate change and the adverse effects thereof [by adopting ambitious, [quantified, legally-binding and economy-wide domestic] emission reduction commitments or actions, and by providing adequate financial, technological and capacity-building support to developing country Parties],

Recognizing that developing country Parties are already contributing and will continue to contribute to a global mitigation effort in accordance with the provisions of the Convention and could enhance their mitigation actions depending on the provision of means of implementation by developed country Parties,

Reaffirming that social and economic development and poverty eradication are the first and overriding priorities of developing country Parties, and also that the share of global emissions originating in developing countries will grow to meet their social and development needs,

Also reaffirming that policies and measures to respond to climate change are to be implemented in such a way as to minimize adverse effects on other Parties, especially developing country Parties,

Recalling the special national circumstances of Parties undergoing the process of transition to a market economy, as stated in Article 4, paragraph 6, of the Convention and relevant decisions by the Conference of the Parties, and of Parties whose special circumstances are recognized by decisions of the Conference of the Parties, such as decision 26/CP.7,

Realizing that addressing climate change requires a paradigm shift towards building a low-emission society that offers substantial opportunities and ensures continued high growth and sustainable development, based on innovative technologies and more sustainable production and consumption and lifestyles, while ensuring a just transition of the workforce that creates decent work and quality jobs,

Recognizing the need to engage a broad range of stakeholders at global, regional, national and local levels, be they governmental, including subnational and local government, private business or civil society, including the youth and persons with

disability, and that gender equality and the effective participation of women and indigenous peoples are important for effective action on all aspects of climate change,

Noting resolution 10/4 of the United Nations Human Rights Council on 'Human rights and climate change', which recognizes that the adverse effects of climate change have a range of direct and indirect implications for the effective enjoyment of human rights and that the effects of climate change will be felt most acutely by those segments of the population that are already vulnerable owing to geography, gender, age, indigenous or minority status and disability,

Having considered the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention pursuant to paragraph 2 of the Bali Action Plan,

A. A shared vision for long-term cooperative action

Note from the Chair: The choice of auxiliary verbs such as "shall" and "should" in this document will need to be made once the form and legal nature of the outcome to be presented to the Conference of the Parties at its sixteenth session has been determined.

Agrees that

1. Parties share a vision for long-term cooperative action that is to guide and enhance the full, effective and sustained implementation of the Convention in order to achieve its ultimate objective as set out in its Article 2; this vision addresses mitigation, adaptation, finance, technology development and transfer, and capacity-building in a balanced, integrated and comprehensive manner, giving equal weight to action on adaptation and mitigation.

2. Deep cuts in global emissions are required according to science, and as documented in the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, with a view to reducing global emissions so as to maintain the increase in global temperature below [1][1.5][2] degrees Celsius above pre-industrial levels, and that Parties should take action to meet this objective consistent with science and on the basis of equity[, taking into account historical responsibilities and equitable access to global atmospheric space].

3. Parties should cooperate in achieving the peaking of global greenhouse gas emissions by 2020 at the latest, and the peaking of national emissions as soon as possible, recognizing that the time frame for peaking of national emissions will be longer in developing country Parties, and bearing in mind that social and economic development and poverty eradication are the first and overriding priorities of developing country Parties and that a low-emission development strategy is indispensable to sustainable development.

4. Parties should collectively reduce global emissions by [50][85][95] per cent from 1990 levels by 2050 and should ensure that global emissions continue to decline thereafter. Developed country Parties as a group should reduce

their greenhouse gas emissions by [[75-85][at least 80-95][more than 95] per cent from 1990 levels by 2050] [more than 100 per cent from 1990 levels by 2040].

Note from the Chair on paragraphs 5–11: In response to the call from Parties to reflect all building blocks of the Bali Action Plan in the part on a shared vision for long-term cooperative action, the Chair has included paragraphs 5–11 below as an initial attempt to express a shared vision for the different elements.

5. Adaptation is a challenge faced by all Parties and that enhanced action and international cooperation on adaptation is urgently required to enable and support the implementation of adaptation actions aimed at reducing vulnerability and building resilience in developing countries, taking into account the urgent and immediate needs of developing countries that are particularly vulnerable to the adverse effects of climate change, especially the least developed countries and small island developing States, and further taking into account the needs of countries in Africa affected by drought, desertification and floods.

6. Enhanced action on adaptation should be undertaken in accordance with the Convention, follow a country-driven, gender-sensitive, participatory and fully transparent approach, taking into consideration vulnerable groups, communities and ecosystems, and be based on and guided by the best available science, and, as appropriate, traditional knowledge, with a view to integrating adaptation into relevant social, economic and environmental policies and actions, where appropriate.

7. Addressing the impact of the implementation of response measures is a challenge faced by all Parties, in particular developing country Parties, and that enhanced action and international cooperation on response measures is urgently required to enhance knowledge and understanding of the matter and to reduce vulnerability and build resilience in affected countries.

8. The full, effective and sustained implementation of the Convention requires long- term national and international cooperative efforts to accelerate research and development, demonstration, deployment, diffusion and transfer of environmentally sound technologies and know-how, in particular to developing country Parties.

9. In order to achieve the ultimate objective of the Convention, all Parties should cooperate, consistent with international obligations, through effective mechanisms, enhanced means, appropriate enabling environments and the removal of obstacles, and ensure the provision of technological support to developing country Parties to enable action on mitigation and adaptation.

10. In order to achieve the full, effective and sustained implementation of the Convention [and in the context of meaningful mitigation actions and trans-

parency on implementation], developed countries shall provide new, additional, adequate, predictable and sustained financial resources. [Developed countries commit to a goal of mobilizing jointly USD 100 billion dollars] [Developed countries shall make assessed contributions of 1.5 per cent of the GDP of those countries] a year by 2020 to support enhanced action on mitigation and adaptation, technology development and transfer, and capacity-building in developing countries.

11. Capacity-building is cross-cutting in nature and essential to enable developing country Parties to participate fully in, and to implement effectively their commitments under, the Convention.

Note from the Chair: The section on a shared vision for long-term cooperative action of the report of the AWG-LCA presented to the COP at its fifteenth session contained a place holder for a 'provision on trade measures (reference to Article 3, paragraph 5, of the Convention)' to be elaborated. Paragraph 12 below provides text to this end, drawn from Article 3, paragraph 5, of the Convention. Specific text on this subject matter can also be found in chapter VII (economic and social consequences of response measures) and chapter IX (cooperative sectoral approaches and sector-specific actions in agriculture) of this document.[19]

12. The Parties should cooperate to promote a supportive and open international economic system that would lead to sustainable economic growth and development in all Parties, particularly developing country Parties, thus enabling them better to address the problems of climate change. Measures taken to combat climate change, including unilateral ones, should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade.

Sections B to G of Chapter I (Shared Vision) in the AWG-LCA's Chair's draft negotiating text are provided in section IV of these materials.

4.2 UNFCCC Draft Rules of Procedure

Participants were also provided with a copy of the UNFCCC draft rules of procedure (FCCC/CP/1996/2, 22 May 1996) with the following explanatory note: [20]

Under the UNFCCC, Article 7.2, in tandem with Article 7.3, mandated COP 1 to agree upon and adopt, by consensus, rules of procedure for itself and for any subsidiary bodies. The rules of procedure to be adopted were drafted in the run-up to COP 1. They broadly mirrored the rules used in the UN General Assembly and in other MEAs. The draft rules of procedure could not be adopted at COP 1 due to

[19] Not included in the materials of this negotiation simulation exercise.

[20] Introductory remarks by Kati Kulovesi, also using Farhana Yamin and Joanna Depledge, *The International Climate Change Regime. A Guide to Rules, Institutions and Procedures* (Cambridge University Press, 2004), 432–434.

disagreement relating to the decision-making procedures set out in draft Rule 42, including the specified voting majorities required for adoption of particular decisions.

In the absence of consensus, the draft Rules of Procedure have been "applied" rather than "adopted" at all subsequent COP sessions, with the exception of the disputed draft Rule 42. Successive COP Presidents have conducted informal consultations to try to break the deadlock, but to no avail. Great importance was attached to resolving this issue during the Kyoto Protocol negotiations, given that, in the absence of any agreed majority voting rule for the adoption of protocols, the Protocol would have to be adopted by consensus. Since the successful adoption of the Kyoto Protocol by consensus, however, interest in securing formal adoption of the rules has diminished and consultations of COP Presidents on this issue in recent years have been largely perfunctory or have not taken place at all. The same draft Rules of Procedure have been applied under the CMP. This is due to Article 13.5 of the Kyoto Protocol, according to which the CMP shall apply the Rules of Procedure of the Convention *mutatis mutandis*, unless otherwise decided by the CMP.

At COP 15 in Copenhagen, one Party opposed the proposal in the opening plenary to continue to apply the draft rules of procedure, stressing the need to adopt them to enable majority decisions. However, no progress was made concerning the Rules of Procedure in Copenhagen. After a small number of countries prevented the adoption of the Copenhagen Accord by consensus, some commentators have identified the need to reform the working methods and move away from the consensus requirement. Any such reform would, however, need to be adopted by consensus.

5 Evaluation

5.1 Unfolding of the exercise

Thirty-two course participants engaged in the negotiation simulation exercise. Of those participants, one played the role of COP President, one played the role of Friends of the Chair Co-Facilitator, four played the role of Contact Group Co-Chairs and three played the role of the UNFCCC Secretariat (one in each break out group). The remaining players represented UNFCCC Parties.The general scenario note and confidential individual instructions were distributed to participants during the first week of the course. As far as possible the individual roles were distributed so that participants from UNFCCC Annex I countries played the role of a non-Annex I country, and vice versa. Participants were asked to review the documents, to keep their individual instructions confidential and to liaise with like-minded countries to coordinate positions and interventions. While the course organizers had pre-selected a participant to play the role of COP President, participants were asked to coordinate among themselves to select the Contact Group Co-Chairs.

The negotiation simulation began on Monday 23 August at 09h00, with one of the simulation coordinators playing the role of the AWG-LCA Chair, delivering the report of that group to the UNFCCC COP-16 plenary. The pre-selected COP President then took over proceedings according to a general scenario, speaking notes and suggested timeframe for the negotiations. These documents were only provided as guidance, however, and it is important to note that the COP President and other participants were fully in charge of the conduct of negotiations. The simulation coordinators played an observer role, never intervened in plenary, and intervened only occasionally in the Contact Groups. Some additional instructions and guidance were given to players informally outside of the main negotiation settings. This guidance also was very limited, however, and participants had great autonomy in playing out their roles.

Spontaneous coordination by participants prior to the negotiation simulation led to quick opening statements on behalf of the regional groups. Nomination and election of the Contact Group Co-Chairs also proceeded quickly. Having fast-tracked these issues in the beginning of the first session, reality quickly set in when the group became bogged down in discussions on logistical issues (room allocation, time management, etc.). As is often the case in real negotiations these procedural discussions ultimately took as much of the first session as the substantive discussions.

The bulk of the negotiation simulation exercise took place in the three separate groups, viz. a Friends of the Chair Group and two Contact Groups on Text for a shared vision for long-term cooperative action and legal form of the outcome, respectively. These formal negotiation sessions were supplemented by informal consultations during the lunch and coffee breaks, as well as by an impromptu regional coordination meeting in the evening of Monday 23August, which was initiated by the participants themselves.

On the morning of the second and final day of negotiations some participants were given additional instructions from 'their capitals', to move the simulation forward. Despite these new instructions, participants took several more hours to come to an agreement in the three groups. Participants then re-convened for a closing plenary in the late afternoon of Tuesday 24 August, which proceeded very smoothly. This was made possible again through additional instructions from 'capitals'. Often actual negotiations in closing plenaries can be extremely protracted, with crunch issues only being agreed on in the small hours of the morning, if at all.

5.2 Feedback session

A feedback session on the negotiation simulation exercise was conducted two days after the simulation itself. In previous courses this feedback session had been held directly after the course. Due to the intense nature of the two-day negotiation simulation the simulation coordinators and participants agreed that this session could be

held a couple of days later. Despite this time lag the discussions in the feedback session were very active, with members from each Contact Group providing views and comments.

Key issues raised during the feedback session included:

- a perceived need for a negotiation primer;
- a perceived need for a primer on regional coordination; and
- a perceived need for additional background on substantive / technical issues.

Many participants felt that a 'negotiation primer' would have been useful before the simulation exercise. While some participants had previous experience in multilateral negotiations, others were new to the process and would have appreciated an introductory session or sessions on general negotiating skills, making interventions in plenary / contact group, drafting decision texts, and so forth.

Some participants felt that the conduct of regional negotiation blocs was not entirely clear to all participants. The exercise was originally designed to include an element of coordination among like-minded countries with similar positions. This evolved during the course of negotiations as participants spontaneously organized themselves into regional groupings, and negotiated as and on behalf of the European Union and the G-77/China. This created something of an additional challenge – and also some confusion when one participant playing an EU country had instructions which did not match those of other EU states. This issue was eventually resolved by providing additional instructions from 'capital' to that participant. Nevertheless, it is important to stress that the individual instructions did not reflect the actual positions or views of any specific country. In subsequent exercises, hypothetical country names could be considered alongside the hypothetical country positions. In addition, participants felt that they would benefit from a session outlining the role, coordination and conduct in negotiations of specific regional blocs. This is something which could be included in the negotiation primer session in future courses.

Some participants also felt that they did not have the required substantive or technical background to engage properly in the negotiation simulation. They would have benefited from a more in-depth brief on the issues under negotiation. This was especially the case in Group C, which focused on the legal form of the AWG-LCA's outcome. The distinction between the two separate processes under the LCA and KP tracks caused some confusion, as did the distinction between adopting a non-binding COP/MOP decision, and a legally-binding Protocol as an Annex to a COP/MOP decision. Some participants enjoyed this challenge, however, which also helped to illustrate the complex technical and procedural issues faced by negotiators of multilateral environmental agreements.

5.3 Overall assessment

In previous years, a specific questionnaire on the negotiation simulation exercise had been circulated. Due to difficulties with receiving answers to this separate questionnaire the course organizers felt that feedback should be given as part of the overall course feedback, which included a segment on the active participation sessions. On the basis of this feedback participants viewed the exercise as very relevant (4.7 on a scale of 1 to 5) and considered the quality of the exercise to be good (4.4 on a scale of 1 to 5).

The articles in the present Review are based on lectures given during the seventh University of Eastern Finland - UNEP Course on International Environmental Law-making and Diplomacy, which was held from 15 to 27 August 2010 at the Joensuu campus of the University of Eastern Finland. The special theme of the course was Climate Change. The aim of the Course was to convey key tools and experiences in the area of international environmental law-making to present and future negotiators of multilateral environmental agreements. In addition, the Course served as a forum for fostering North-South co-operation and for taking stock of recent developments in the negotiation and implementation of multilateral environmental agreements and diplomatic practices in the field.

The lectures were delivered by experienced hands-on diplomats, government officials and members of academia. The Course is an annual event designed for experienced government officials engaged in international environmental negotiations. In addition, other stakeholders such as representatives of non-governmental organizations and the private sector may apply and be selected to attend the Course. Researchers and academics in the field are also eligible.

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