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International Environmental Law-making and Diplomacy Review 2015

Ed Couzens, Tuula Honkonen and Melissa Lewis (editors)

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Law School
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Editors
Ed Couzens, Tuula Honkonen and Melissa Lewis

Editorial Board
Sylvia Bankobeza, Michael Kidd, Tuomas Kuokkanen, Elizabeth Maruma Mrema, Barbara Ruis

Contact
Law School/UNEP Course
University of Eastern Finland
Joensuu campus
P.O. Box 111, FI-80101 Joensuu, Finland
Tel : +358 50 5207613
E-mail: mea-course@uef.fi
Website: <http://www.uef.fi/unep/>

UN Environment
Law Division
P.O. Box 305521, Nairobi, Kenya
Tel: +254 20 7624011
E-mail: delc@unep.org
Website: <http://www.unep.org/delc/>

Sales and Exchanges
University of Eastern Finland
Joensuu Campus Library/Publication Sales
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Tel.: +358 294 45 8145
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Website: <http://www.uef.fi/en/web/kirjasto>

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Foreword

The compilation of papers in the present Review is based on lectures presented during the twelfth University of Eastern Finland – UNEP Course on Multilateral Environmental Agreements (MEAs), held from 2 to 12 November 2015 in Shanghai, China.

The publication is aimed at equipping present and future negotiators of MEAs with information and experiences of others in the area of international environmental law-making in order to improve the impact and implementation of these key treaties. The ultimate aim is to strengthen and build environmental negotiation capacity and governance worldwide.

For the past twelve years the University of Eastern Finland (previously, the University of Joensuu) has partnered with the United Nations Environment Programme to conduct a training course on MEAs annually, with each Course focusing on a specific theme. From each Course, selected papers written by lecturers and participants have, after a rigorous editing process, been published in the Course *Review* (2004–2014), for the benefit of both course participants and a wider audience, who are able to access these publications through the internet.[1]

Since each MEA Course has a distinct thematic focus, the *Reviews* address a range of specific environmental issues, in addition to providing more general observations regarding international environmental law-making and diplomacy. The focus of the 2015 course was 'Climate Change', and the current *Review* builds upon the existing body of knowledge in this area.

The material presented in this *Review* is intended to expose readers to a variety of issues regarding the international climate change regime. This compilation informs negotiators of options available to them when developing instruments to address climate change, which in turn inform policy choices that can enhance bilateral and multilateral cooperation in addressing this issue.

We are grateful to all the contributors for the successful outcome of the twelfth Course, including the lecturers and authors who transcribed their presentations to compile the *Review*. We would also like to thank Ed Couzens, Tuula Honkonen and

[1] For an electronic version of this volume, and of the 2004–2014 *Reviews*, please see the University of Eastern Finland – UNEP Course on Multilateral Environmental Agreements website, <http://www.uef.fi/unep>.

Melissa Lewis for their skilful and dedicated editing of the *Review*, as well as the members of the Editorial Board for providing guidance and oversight throughout this process.

Professor Jukka Mönkkönen
Rector of the University of Eastern Finland

Elizabeth Maruma Mrema
Director, Law Division, UN Environment

Editorial preface

1.1 General introduction

The lectures given on the twelfth annual University of Eastern Finland[2] – United Nations Environment Programme (UNEP) Course on Multilateral Environmental Agreements, from which most of the papers in the present *Review* originate, were delivered by experienced diplomats, members of government and senior academics.[3] One of the Course's principal objectives is to educate participants by imparting the practical experiences of experts involved in international environmental law-making and diplomacy – both to benefit the participants on each Course and to make a wider contribution to knowledge and research through publication in the present *Review*. The papers in this *Review* and the different approaches taken by the authors therefore reflect the professional backgrounds of the lecturers, resource persons and participants (some of whom are already experienced diplomats). The papers in the various *Reviews*, although usually having particular thematic focuses, present various aspects of the increasingly complicated field of international environmental law-making and diplomacy.

It is intended that the current *Review* will provide practical guidance, professional perspective and historical background for decision-makers, diplomats, negotiators, practitioners, researchers, role-players, stakeholders, students and teachers who work with international environmental law-making and diplomacy. The *Review* encompasses different approaches, doctrines, techniques and theories in the field, including international environmental governance, international environmental law-making, environmental empowerment, and the enhancement of sustainable development generally. The papers in the *Review* are thoroughly edited, with this process being guided by rigorous academic standards.

The first and second Courses were hosted by the University of Eastern Finland, in Joensuu, Finland where the landscape is dominated by forests, lakes and rivers. The special themes of the first two Courses were, respectively, 'Water' and 'Forests'. An aim of the organizers of the Course is to move the Course occasionally to different parts of the world. In South Africa the coastal province of KwaZulu-Natal is an extremely biodiversity-rich area, both in natural and cultural terms, and the chosen special themes for the 2006 and 2008 Courses were therefore 'Biodiversity' and 'Oceans'. These two Courses were hosted by the University of KwaZulu-Natal, on

[2] 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 was renamed the University of Eastern Finland – UNEP Course. The Course activities are concentrated on the Joensuu campus of the new university.

[3] General information on the University of Eastern Finland – UNEP Course on International Environmental Law-making and Diplomacy is available at <http://www.uef.fi/unep>.

its Pietermaritzburg campus. The fourth Course, held in Finland, had 'Chemicals' as its special theme – Finland having played an important role in the creation of international governance structures for chemicals management. The sixth Course was hosted by UNEP in Kenya in 2009, in Nairobi and at Lake Naivasha, with the special theme being 'Environmental Governance'. The theme for the seventh Course, which returned to Finland in 2010, was 'Climate Change'. The eighth Course was held in Bangkok, Thailand in 2011 with the theme being 'Synergies Among the Biodiversity-Related Conventions'. The ninth Course was held in 2012 on the island of Grenada, near the capital St George's, with the special theme being 'Ocean Governance'. The tenth Course, which in 2013 returned to its original venue in Joensuu, Finland, had 'Natural Resources' as its special theme. The eleventh Course was again held in Joensuu with a special theme of 'Environmental Security'. The twelfth Course was hosted by Fudan University in Shanghai, China. Fudan University also hosts a dedicated Nordic Centre which drives and facilitates collaboration between researchers and students in the five Nordic countries and researchers and students in China. A few courses took place at the University of Tongji, Shanghai China. The special theme of the twelfth Course was 'Climate Change' – and this is therefore the special theme of the present volume of the *Review*.

The Course organizers, the Editorial Board and the editors of this *Review* believe that the ultimate value of the *Review* lies in the contribution which it can make, and hopefully is making, to knowledge, learning and understanding in the field of international environmental negotiation and diplomacy. Although only limited numbers of diplomats and scholars are able to participate in the Courses themselves, it is hoped that through the *Review* many more are reached. The papers contained in the *Review* are generally based on lectures or presentations given during the Course, but have enhanced value as their authors explore their ideas, and provide further evidence for their contentions.

All involved with the *Review* have been particularly grateful to receive contributions through the various editions both from new writers in every volume, and by writers who have written multiple papers on an ongoing basis and who have thereby been able to develop coherent bodies of work. Many of the people who have contributed papers have been involved in some of the most important environmental negotiations the world has seen. Publication of these contributions means that their experiences, insights and reflections are recorded and disseminated, where they might not otherwise have been committed to print. The value of these contributions cannot be overstated. To complement this, an ongoing feature of the *Review* has been the publication of papers by Course participants who have brought many fresh ideas to the *Review*.

Before publication in the *Review*, all papers undergo a rigorous editorial process (which process includes careful scrutiny and research by the editors, numerous rewrites, and approval for publication only after consideration by, and approval of,

the Editorial Board). Each paper is read and commented on several times by each of the editors, and returned, usually several times, to the authors for rewriting and the addressing of queries. All references are carefully considered. By the time a paper is published in the *Review*, the editors and the Editorial Board are satisfied that it meets the expectations of formal academic presentation and high scholarly standards, and that it makes a genuine contribution both to the special theme and to knowledge generally.

While convinced of the quality of all of the papers in the *Review*, the editors introduced from the 2012 volume an anonymous peer-review process[4] where authors request this for their papers. This process has been followed since then.

1.2 On international climate change governance

The special theme of the 2010 Course and volume of this *Review* was climate change, and that theme was repeated for 2015 – an indication, perhaps, of the excitement generated by the then imminent 21st Conference of the Parties to the United Nations Framework Convention on Climate Change, 1992 (UNFCCC)[5] – the treaty which provides an overall framework for the governance regime in the field of climate change. The Convention is allied with its Protocol, the Kyoto Protocol to the UNFCCC of 1997[6] – which is now partway into its second emissions reduction commitment period, to run from 2013 to 2018.[7] The UNFCCC has near universal membership with 197 Parties;[8] and the Kyoto Protocol has 192 Parties.[9]

[4] Per generally accepted academic practice, the peer-review process followed involves the sending of the first version of the paper, with the identity of the author/s concealed, to at least two experts (selected for their experience and expertise) to consider and comment on. The editors then relay the comments of the reviewers, whose identities are not disclosed unless with their consent, to the authors. Where a paper is specifically so peer-reviewed, successfully, this is indicated in the first footnote of that paper. A paper may be sent to a third reviewer in appropriate circumstances. As part of the peer-review process, the editors work with the authors to ensure that any concerns raised or suggestions made by the reviewers are addressed.

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

[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] The first commitment period ran from 2008 to 2012.

[8] 196 states and one regional economic region integration organization. UNFCCC, 'Status of Ratification of the Convention', available at <http://unfccc.int/essential_background/convention/status_of_ratification/items/2631.php> (visited 24 November 2016).

[9] 191 states and one regional economic region integration organization. UNFCCC, 'Status of Ratification of the Kyoto Protocol', available at <http://unfccc.int/kyoto_protocol/status_of_ratification/items/2613.php> (visited 24 November 2016).

The UNFCCC divides its Parties into three essential groupings: 'Annex I' Parties;[10] 'Annex II' Parties;[11] and 'Non-Annex I' Parties.[12] 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 states which have ratified or adhered to it. 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 tend to commit to provisions which, although binding, are drafted in vague or exhortatory language (being qualified, for instance, by such terms as 'should', 'as far as possible', and 'endeavour'), making it difficult – if not impossible – to accuse a Party of non-compliance. There is a strong argument to be made that this is the best way in which to proceed toward the eventual establishment of more stringent international rules – by starting on the broad and flexible scale and gradually working, through experience and trial and error, toward the specific and legally rigorous. 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 Union) to meet, has been further refined. Detailed rules for the operation of the Kyoto Protocol were 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 in its first commitment period – and now for the period 2013 to 2018 in its second commitment period. The second commitment period was established by the so-called Doha Amendment of 2012. As at December 2016, 75 states had ratified

[10] 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.

[11] These are the Parties who are the OECD members of Annex I, excluding the EIT Parties.

[12] 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.

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

[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). The rules were formally adopted at the First Meeting of the Parties to the Kyoto Protocol: 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.1-3 (2006).

the Doha Amendment – unfortunately, this is still well short of the 144 instruments of acceptance needed before the amendment will enter into force.[15] Some optimism is, however, provided by a decision of the CMP[16] to the Kyoto Protocol that Parties may provisionally apply the amendment pending its entry into force.[17]

Further optimism is provided by the Paris Agreement, which was adopted at the 21st COP at the end of 2015 as well as its entry into force at the end of 2016.[18] The homepage to the UNFCCC explains that the Paris Agreement 'builds upon' the Convention, bringing all Parties 'into a common cause to undertake ambitious efforts to combat climate change and adapt to its effects, with enhanced support to assist developing countries to do so'.[19] The Agreement's central aim is to 'strengthen the global response to the threat of climate change', including by '[h]olding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels'; strengthening countries' 'ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development'; and '[m]aking finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development'.[20]

No doubt to the surprise of many, and certainly to the editors of this volume of the *Review*, the Paris Agreement – which at the time that the twelfth UEF-UNEP Course on MEAs was held in November 2015 had not even been concluded – entered into force even before the publication of the *Review* one year later! The period for signatures opened only in April 2016, and yet the Paris Agreement entered into force on 4 November 2016, 30 days after the date on which at least 55 Parties to the Convention, with these Parties together accounting for at least a total of an estimated 55 per cent of total global greenhouse gas emissions, ratified.[21] At time of publication, the Agreement had 194 signatories and 125 parties.[22]

The adoption and rapid entry into force of the Paris Agreement shows that all countries of the world, rich and poor, have recognized and acknowledged that they have to act to mitigate climate change. The approach is largely bottom-up, giving Parties the flexibility that many have requested, but also leading to the fact that only

[15] UNFCCC, 'Status of the Doha Amendment', available at <http://unfccc.int/kyoto_protocol/doha_amendment/items/7362.php> (visited 23 January 2017).

[16] 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 – with the Conference of the Parties to the UNFCCC serving as the Meeting of the Parties to the Kyoto Protocol.

[17] UNFCCC, 'Status of the Doha Amendment', *supra* note 15.

[18] Paris Agreement to the United Nations Framework Convention on Climate Change, Paris, 12 December 2015, in force 4 November 2016; 'Adoption of the Paris Agreement', UNFCCC Dec. 1/CP.21 (2015).

[19] UNFCCC, 'Paris Agreement', available at <http://unfccc.int/paris_agreement/items/9485.php> (visited 24 November 2016).

[20] Paris Agreement, Art. 2(1).

[21] UNFCCC, 'Paris Agreement', *supra* note 19.

[22] UNFCCC, 'Paris Agreement – Status of Ratification', available at <http://unfccc.int/paris_agreement/items/9444.php> (visited 23 January 2017).

some of the provisions of the Agreement are actually legally binding. Importantly, the Paris Agreement reflects the cross-cutting UNFCCC principle of common but differentiated responsibilities (and respective capacities, as the principle is nowadays qualified). However, the principle is reflected in a different way than it is in the Kyoto Protocol. A categorical approach of dividing Parties into developed countries and developing countries is no longer used; instead, national circumstances and capacities of the Parties are at the centre, as evidenced by the 'nationally determined contributions' (NDCs) that form the basis for Parties' emission reduction commitments.

General optimism about the Paris Agreement must be tempered by a reminder that considerably less state Parties have ratified the Doha Amendment than have ratified the Paris Agreement. The cautionary note should be sounded that the Paris Agreement operates by way of requiring all of its Parties to 'put forward their best efforts through nationally determined contributions and to strengthen these efforts in the years ahead' – with additional requirements that Parties 'report regularly on their emissions and on their implementation efforts'; and that there will be regular 'global stocktakes' to assess 'collective progress towards achieving the purpose of the Agreement and to inform further individual actions by Parties'.[23]

The sense of general optimism does bode well for future regulation in the climate change issue-area; but it remains to be seen how significant the steps taken by different states will be. Two of the present authors wrote in the 2010 volume of this *Review* that:

> [a]rguably, 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 crosscutting 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.[24]

Nevertheless, it remains extremely worrying that not enough has been done in the international legal space; that there remains a gap between the 'take up' of binding obligations (the Doha Amendment) and 'take up' of exhortatory recommendations (the Paris Agreement); and that there remains an 'enforcement gap' between commitments made on the international plane and action taken to implement these commitments on the ground within Parties.

[23] UNFCCC, 'Paris Agreement', *supra* note 19.

[24] Ed Couzens and Tuula Honkonen, 'Editorial Preface' in Ed Couzens and Tuula Honkonen (eds), *International Environmental Law-making and Diplomacy Review 2010*, University of Eastern Finland – UNEP Course Series 10 (University of Eastern Finland, 2011) vi-xv at xi.

It is worrying, nay, frightening, also that with every month that goes by new evidence is accumulated showing that the direct impacts and indirect effects of global climate change will be greater than ever previously thought. To offer only a token example of new insights, in November 2016 the National Aeronautics and Space Administration (NASA) reported that October 2016 had been the second warmest October in 136 years of record-keeping (2015 having been the warmest), and that the years 2014 to 2016 had provided the three warmest on record.[25]

While global responses *are* being negotiated, two of the present authors wrote in 2010:

> 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.[26]

These remain the views and the hopes of the three editors of this volume.

1.3 The papers in the 2015 *Review*

The papers collected in this volume of the *Review* explore international environmental law-making and diplomacy in the context of climate change governance.

The present *Review* is divided into four Parts. In Part I, a paper by Daniel Bodansky, introduces readers to the course which the international climate change regime has followed. After providing a brief description of the emergence of climate change as an international issue, the author tracks the history of international negotiations concerning climate change – from the establishment, in December 2000, of an Intergovernmental Negotiating Committee to develop the UNFCCC, through the development of the Kyoto Protocol and the Copenhagen/Cancun Framework, up to the adoption of the Paris Agreement in December 2015. He concludes that, although the Paris Agreement's adoption and its rapid entry into force give new hope

[25] NASA Goddard Institute for Space Studies, 'The last three Octobers are the warmest on record', 18 November, 2016, available at <http://climate.nasa.gov/news/2519/the-last-three-octobers-are-the-warmest-on-record/> (visited 24 November 2016).

[26] Couzens and Honkonen, 'Editorial Preface', *supra* note 24.

to the UN climate change regime, much remains to be done, with the Agreement's success ultimately hinging on whether it encourages stronger action over time.

Part II contains four papers, each of which addresses an issue relating to international climate change governance from a global perspective.

The first paper, by Jamil Ahmad, concerns a recent initiative by the United Nations – the Sustainable Development Goals (SDGs). The author describes the innovative process that led to the adoption of the 2030 Agenda for Sustainable Development and how this Agenda is interlinked with other international processes. He further outlines the manner in which concerns regarding climate change were integrated into the SDGs and the relationship between these goals and the UNFCCC process which produced the Paris Agreement. Finally, he discusses the role of the UN Environment in supporting an integrated sustainable development agenda and efforts to address climate change.

In the second paper of Part II, Erik Haites examines the history, and the current international situation, in respect of climate finance. After providing an overview of the concept of climate finance and the various definitional and measurement difficulties posed thereby, the author examines this issue from the perspectives of the global total (that is, the amount of climate finance deployed globally); flows from OECD to non-OECD countries; and the commitments and mechanisms established under the UNFCCC, the Kyoto Protocol and, most recently, the Paris Agreement. He shows that, although there remain significant gaps in data, we currently have a far better picture of global climate finance than we did in the past. He further highlights that climate finance flows from developed to developing countries comprise only a small share of the global total (with most climate finance being mobilized and invested domestically) and that flows under the UNFCCC regime are only a part of the flows to developing countries.

Mohamed Behnassi, in the third paper in Part II, proceeds to consider the increasing 'securitization' of the climate change regime – climate change being seen as a national and a collective security concern. Climate change intensifies many stresses in a way that can increase the likelihood of livelihood devastation, state fragility, human displacement, and massive loss and damage in human and economic terms. These dynamics do not always result in conflict, but they certainly represent a threat to local, national, regional, and in the right context, collective security. This paper is built on the assumption that framing climate change as a security concern has the potential to raise the profile of climate change on the international political agenda, generating a higher level of ambition for addressing this threat than has hitherto been witnessed in global climate governance. After providing an overview of the reasons for which climate change is increasingly being perceived as a security concern, and the key steps that have been taken towards the securitization of climate change, the author explores the implications of this for climate politics and governance, and makes various suggestions as to the approach that should be taken in addressing the security risks of climate change.

The final paper in this part of the *Review* is by Karen Mrema and concerns governance and disaster risk reduction. The author shows that, while many of the climate-related disasters which the world is still to suffer the impacts of are not avoidable, the effects felt by these can be mitigated by good governance and wise preparedness. With the use of examples, she highlights the importance of not only prioritizing disaster risk reduction in relevant policies/laws and ensuring adequate allocation of resources for reducing and managing disaster risks, but also ensuring public awareness and participation in decision-making and implementation processes. She further emphasizes the importance of support from the international community, and explains the relevance of both the Sendai Framework for Disaster Risk Reduction 2015–2030 and the 2030 Sustainable Development Agenda in this regard.

Part III of the *Review* focuses on specific issues related to climate change.

First, a paper by Chao Fu considers the phenomenon of South-South Cooperation as a new dimension of the global response to climate change, and an increasingly important complement to the traditional reliance of the 'global South' (developing countries) on the 'global North' (developed countries) for aid and support. In particular, the paper considers the role and place of China through examination of China's various initiatives to support South-South cooperation on climate change (SSCCC) and examples of how the UNEP International Ecosystem Management Partnership has provided a platform to advance collaboration between the UN Environment and the Chinese government on SSCCC. The author further considers how to promote SSCCC in the context of the Paris Agreement, highlighting discussions towards the development of a Platform for Promotion of SSCCC, as well as the importance of developing synergies between efforts to address climate change, ecosystem management and livelihoods. The paper concludes with several lessons emerging from China's experiences with SSCCC, which can be applied to South-South Cooperation involving other countries, as well as within other MEA clusters.

The second paper, by Cilvia Cazzetta, delves further into the issue of South-South Cooperation, and proposes a conceptual framework for such cooperation in the climate change context. The argument is made that South-South Cooperation has demonstrated potential to contribute to the building blocks of climate change responses in various ways, covering both adaptation and mitigation, but that this potential has yet to be fully tapped. The author then reflects on the niche and positioning of SSCCC (highlighting in particular the need to identify remaining gaps in the present climate finance architecture, which a South-South dimension could assist in filling), and to offer suggestions regarding the methodology and selection criteria that could be used to delineate the main functions of this form of cooperation. She further examines the strategic directions of SSCCC in three overarching areas (namely, research and knowledge generation; capacity-building; and solution development and sharing of good practice), and considers enabling conditions and implementation modalities for enhanced climate action in the global South.

In the third paper, Oksana Lipka examines climate change and adaptation in Kyrgyzstan – the third most vulnerable of the European and Central Asian countries in respect of climate change, but, simultaneously, a poor country which is unlikely to meaningfully address its environmental problems in the absence of international support. The particular vulnerabilities of the country are explained, and then the efforts which the country has made toward adapting to the effects and impacts of climate change through a variety of measures and programmes aimed at stabilizing the economy, promoting security, improving the well-being of the population, and preserving biological diversity. The author emphasizes that, despite the country's very well realized need for adaptation and the availability of detailed and elaborate plans, implementation is hampered by the lack of funds, and argues that the receipt of international adaptation aid will benefit not only Kyrgyzstan itself, but all the countries in the basin of the Syrdaria, which is a key water artery in Central Asia. Conclusions are drawn which would have broader value, especially for scholars and diplomats seeking to understand the realities and negotiating positions of similar countries.

In the fourth and final paper in this Part, Ed Couzens argues that negotiators who approach climate change negotiations should do so from as informed a perspective as possible when it comes to understanding biological diversity – this being so important an issue-area that it deserves special consideration. The paper attempts to educate on this by offering an example of a particular species – the sea turtle, and sub-species thereof – and explaining how complicated is this species' life cycle, how serious the threats facing it, and how climate change is likely to threaten its very survival. The paper then laments the lack of specific biodiversity-related provisions in the recent Paris Agreement, and offers suggestions as to how future climate change-related international legal instruments might be improved.

Part IV of the *Review* reflects the interactive nature of the Course – and that education and dissemination of knowledge are at the core of the Course and of the publishing of this *Review*. During the Course international negotiation simulation exercises were organized to introduce the participants to the real-life challenges facing negotiators of international environmental agreements. Participants were given individual instructions and a hypothetical, country-specific, negotiating mandate and were guided by international environmental negotiators. Excerpts from, explanations of, and consideration of the pedagogical value of, one of the exercises is included in Part IV. This paper describes a negotiation exercise that, based on experiences from exercises run in previous years of the Course, was devised and run by Harro van Asselt, who was assisted by Tuula Honkonen in preparing the exercise. The scenario for the negotiation simulation focused on the multilateral climate change negotiations. The simulation was hypothetical but drew upon issues at play in actual ongoing negotiations. The scenario was set at the 21st meeting of the COP to the UNFCCC, and focused on various issues relating to the negotiation of a new international agreement on climate change. These included legal issues (the legal form of the instrument to be adopted, the legal nature and anchoring of mitigation contributions, and the housing

of contributions), transparency (including issues regarding reporting, review of implementation, and stocktake regarding the fairness and adequacy of contributions), and the establishment and nature of a compliance mechanism. Negotiations took place within three informal drafting groups, whose establishment was proposed by the COP President, and subsequently within the high level segment of the COP plenary. In addition to requiring participants to explore a number of substantive issues, the simulation was intended to explore issues related to decision-making procedures in the context of multilateral environmental agreements.

While the majority of the papers in the present *Review* deal with specific environmental issues, or aspects of specific multilateral environmental agreements, and thereby provide a written memorial for the future; the negotiation exercises provide, in a sense, the core of each Course. This is because each Course is structured around the practical negotiation exercises which the participants undertake; and it is 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 has significant potential value as a teaching tool for the reader or student seeking to understand international environmental negotiation. 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 Course publication.

Generally, it is the hope of the editors that the various 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* (currently spanning the years 2004 to 2015), all of which are easily accessible on the internet through a website provided by the University of Eastern Finland,[27] to gain a broad understanding of international environmental law-making and diplomacy. In particular, the present volume should be read in conjunction with the *International Environmental Law-making and Diplomacy Review 2010*, for which volume the theme was also that of 'climate change'.

Ed Couzens,[28] ***Tuula Honkonen***[29] ***and Melissa Lewis***[30]

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

[28] BA Hons LLB (Wits) LLM Environmental Law (Natal & Nottingham) PhD (KwaZulu-Natal); Attorney, RSA; Associate Professor, The University of Sydney Law School, Australia; e-mail: ed.couzens@sydney.edu.au.

[29] LLM (London School of Economics and Political Science) D.Sc Environmental Law (University of Joensuu); e-mail: tuula.h.honkonen@gmail.com.

[30] LLB LLM (Rhodes) LLM Environmental and Natural Resources Law (Lewis and Clark); Honorary Research Fellow, University of KwaZulu-Natal, South Africa; PhD Researcher, Tilburg University, the Netherlands; e-mail: M.G.Lewis@uvt.nl.

Part I

Introduction to the International Climate Change Regime

The United Nations Climate Change Regime: A Brief History[1]

Daniel Bodansky[2]

1 Introduction

The Paris Agreement[3] represents the culmination of the fourth phase of the United Nations (UN) climate change regime. Climate Change version 1 ran from 1990–1995 and involved the negotiation, adoption, and entry into force of the UN Framework Convention on Climate Change (UNFCCC).[4] Version 2 occupied the decade from 1995–2004, from the initiation of the Kyoto Protocol[5] negotiations to its entry into force. Version 3 is encapsulated in the 2009 Copenhagen Accord[6] and the 2010 Cancun Agreements,[7] and focused on developing a more global approach, which limits the greenhouse gas emissions of all countries. Version 4 builds on the Copenhagen/Cancun framework and codifies it in treaty form. This paper provides a brief history of the UN climate change regime, leading up to the adoption of the Paris Agreement in December 2015.

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[1] This paper draws on the author's previous work, including: *The Durban Platform Negotiations: Goals and Options* (Harvard Project on Climate Agreements, 2012) and 'The Paris Climate Change Agreement: A New Hope?', 110(2) *American Journal of International Law* (2016) 288-319. Material from the latter is reproduced with permission from the April 2016 issue of the American Journal of International Law © 2016 American Society of International Law. All rights reserved.

[2] JD (Yale); Foundation Professor of Law, Sandra Day O'Connor College of Law, Arizona State University; e-mail: Daniel.Bodansky@asu.edu.

[3] UNFCCC Dec. 1/CP.21 'Adoption of the Paris Agreement' (2015).

[4] United Nations Framework Convention on Climate Change, New York, 9 May 1992, in force 21 March 1994, 1771 *United Nations Treaty Series* 107.

[5] Kyoto Protocol to the UNFCCC, Kyoto, 11 December 1997, in force 16 February 2005, 2303 *United Nations Treaty Series* 162.

[6] 'Copenhagen Accord', UNFCCC Dec. 2/CP.15 (2009).

[7] 'The Cancun Agreements: Outcome of the Work of the Ad Hoc Working Group on Long-Term Cooperative Action under the Convention', UNFCCC Dec. 1/CP.16 (2010).

2 Pre-history: the emergence of climate change as an international issue[8]

Although the greenhouse warming theory has been understood for more than a century, climate change did not emerge as a political issue until the late 1980s. This resulted from better scientific understanding of the problem and increasing concern about global environmental issues generally, including depletion of the stratospheric ozone layer and loss of biodiversity. The development of the climate change issue initially took place in the scientific arena, as understanding of the greenhouse problem improved. Through careful measurements at remote observatories, such as Mauna Loa, Hawaii, scientists established in the early 1960s that atmospheric concentrations of CO_2 – the primary greenhouse gas (GHG) – are, in fact, increasing. The so-called 'Keeling curve', showing this rise, led to the initial growth of scientific concern in the late 1960s and early 1970s. Concern mounted during the 1970s and 1980s, as improvements in computing power allowed scientists to develop more sophisticated models of the atmosphere,[9] scientists recognized that anthropogenic emissions of other trace gases such as methane and nitrous oxides also contribute to the greenhouse effect, and reassessments of the historical temperature record indicated that global average temperature had indeed been increasing since the mid-twentieth century.[10]

Although these advances in scientific understanding of the climate change problem were significant in laying a foundation for the development of public and political interest, three additional factors acted as the direct catalysts for governmental action.[11] First, a small group of environmentally-oriented Western scientists – including Bert Bolin of Sweden, later the Chair of the Inter-Governmental Panel on Climate Change (IPCC)[12] – worked to promote the climate change issue on the international agenda through workshops and conferences, articles in non-specialist journals, and personal contacts with policymakers. Second, the late 1980s was a period of increased concern about global environmental issues generally – including depletion of the stratospheric ozone layer, deforestation, loss of biological diversity,

[8] This section is based on the author's previous work: 'Prologue to the Climate Change Convention', in Irving M. Mintzer and J. Amber Leonard (eds), *Negotiating Climate Change: The Inside Story of the Rio Convention* (Cambridge University Press, 1994) 45-74.

[9] The first attempt to calculate the effects of a CO_2-doubling using a three-dimensional general circulation model was performed in 1975. Syukuro Manabe and Richard T. Wetherald, 'The Effects of Doubling the CO_2 Concentration on the Climate of a General Circulation Model', 32 *Journal of the Atmospheric Sciences* (1975) 3–15.

[10] For the history of greenhouse warming science, see generally Melinda L. Cain, 'Carbon Dioxide and the Climate: Monitoring and a Search for Understanding', in David Kay and Harold K. Jacobson (eds), *Environmental Protection: The International Dimension* (Allanheld, Osmun & Co., 1983) 75-99; William W. Kellogg, 'Mankind's Impact on Climate: The Evolution of an Awareness', 10 *Climatic Change* (1987) 113-36; Roger Revelle, 'Introduction: The Scientific History of Carbon Dioxide', in Eric T. Sundquist and Wallace S. Broecker (eds.), *The Carbon Cycle and Atmospheric CO_2* (American Geophysical Union, 1985) 1-4.

[11] See generally Rafe Pomerance, 'The Dangers from Climate Warming: A Public Awakening', in Dean E. Abrahamson (ed.), *The Challenge of Global Warming* (Island Press, 1989) 259-69.

[12] See <http://www.ipcc.ch>.

pollution of the oceans, and international trade in hazardous wastes. The discovery of the so-called Antarctic 'ozone hole', followed by the confirmation that it resulted from emissions of chlorofluorocarbons (CFCs), dramatically demonstrated that human activities can indeed affect the global atmosphere and raised the prominence of atmospheric issues generally. Finally, the North American heat wave and drought of the summer of 1988 gave an enormous popular boost to greenhouse warming proponents, particularly in Canada and the United States (US).

By the end of 1988, global environmental issues were so prominent that *Time* magazine named endangered Earth 'Planet of the Year'. A conference organized by Canada in June 1988 in Toronto called for global emissions of CO_2 to be reduced by 20 per cent by the year 2005, the development of a global framework convention to protect the atmosphere, and establishment of a world atmosphere fund financed in part by a tax on fossil fuels.

1988 marked a watershed in the emergence of the climate change regime. Until 1988, the climate change issue had been dominated by non-governmental actors. In 1988, it emerged as an intergovernmental issue. Landmarks of the pre-negotiation phase of the climate change issue included:

- The 1988 UN General Assembly resolution on climate change, characterizing the climate as the 'common concern of mankind'.[13]
- The 1989 Hague Summit, attended by seventeen heads of state, which called for the development of a 'new institutional authority' to preserve the earth's atmosphere and combat global warming.[14]
- The 1989 Noordwijk ministerial meeting, the first high-level inter-governmental meeting focusing specifically on the climate change issue.

Initially, the governments interested in climate change were primarily those of Western industrialized countries, which had conducted the bulk of the scientific research on climate change and had the most active environmental constituencies and ministries. At the 1989 Noordwijk meeting, the basic split among Western countries became apparent. On the one hand, most European countries supported adopting the approach that had been successfully used to address the acid rain and ozone depletion problems, namely establishing quantitative limitations on national emission levels of greenhouse gases ('targets and timetables') – initially, stabilizing carbon dioxide emissions at current levels. On the other hand, the United States – supported at Noordwijk by Japan and the former Soviet Union – questioned targets and timetables on the grounds that targets and timetables were too rigid, did not take account of differing national circumstances, and would be largely symbolic. Instead,

[13] 'Protection of Global Climate for Present and Future Generations of Mankind', UNGA Res. 43/53 of 6 December 1988.

[14] Hague Declaration on the Environment, 11 March 1989, reprinted in 28 *International Legal Materials* (1989) 1308.

the US argued that emphasis should be placed on further scientific research and on developing national rather than international strategies and programs. The differences between the US and other Western states deepened at the 1990 Bergen Ministerial Conference on Sustainable Development and the Second World Climate Conference.[15] The US continued to block the adoption of targets and timetables, instead insisting on conference language that was neutral as between targets and timetables, on the one hand, and national strategies, on the other.

At the Second World Climate Conference, in late 1990, a second fault-line began to emerge in the climate change negotiations, between developed and developing countries, the so-called 'global North and South'. Developing countries argued that developed countries were responsible for causing the climate change problem and should have the burden of addressing it, and that climate change is a development issue, not just an environment issue.

3 Climate Change v.1: the UN Framework Convention on Climate Change

In December 2000, the General Assembly established an Intergovernmental Negotiating Committee (INC) to negotiate 'an effective framework convention on climate change, containing appropriate commitments'.[16] Over the next year and a half, the INC met six times. On 9 May, 1992, it adopted the UN Framework Convention on Climate Change (UNFCCC). The UNFCCC entered into force less than two years later on 21 April 1994 as a result of its ratification by 50 states.[17]

The UNFCCC exemplifies the framework convention/protocol approach to international environmental law-making, which prior to the emergence of the climate change issue had been used with considerable success to address the acid rain and ozone depletion problems. The approach allows law-making to proceed incrementally, beginning with a framework convention that establishes a general system of government for an issue area, followed by protocols that contain more specific substantive obligations. States tend to be willing to join a framework convention, because it does not entail significant commitments. But, once created, the regime created by a framework convention can take on a momentum of its own, by providing a forum for discussions, serving as a focal point for international public opinion, and building trust among participants.[18]

[15] Jill Jager and Howard L. Ferguson (eds), *Climate Change: Science, Impacts and Policy. Proceedings of the Second World Climate Conference* (Cambridge University Press, 1991).

[16] 'Protection of Global Climate for Present and Future Generations of Mankind', UNGA Res. 45/212 of 21 December 1990.

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

[18] Daniel Bodansky, 'The Framwork Convention/Protocol Approach', WHO Doc. WHO/NCD/TFI/99.1 (1999).

The framework of governance established by the UNFCCC includes the following elements:

Objective – Article 2 defines the 'ultimate objective' of the regime as stabilizing greenhouse gas concentrations at levels that would prevent dangerous anthropogenic climate change.

Principles – Article 3 articulates principles intended to guide the future development of the regime, including the principle of common but differentiated responsibilities and respective capabilities (CBDRRC), precaution, and cost-effectiveness.

Commitments – Article 4 defines both common commitments applicable to all Parties as well as differentiated commitments applicable only to Parties listed in Annexes I and II. All Parties have general obligations to formulate, implement and regularly update national programs to limit emissions and adapt to climate change, and to report on emissions and policies (Article 4(1)). In addition, Annex I Parties (often equated with 'developed countries') have additional commitments on reporting (Article 12(2)), and Annex II Parties (a subset of Annex I Parties limited to countries not part of the former Soviet bloc) are required to provide financial and technology assistance to developing countries (Articles 4(3)-4(5)).

Institutions – The UNFCCC establishes the basic institutions of the UN climate change regime, including the annual Conference of the Parties (COP), which serves as the supreme body of the Convention (Article 7); the secretariat (Article 8); subsidiary bodies on science and implementation (Articles 9 and 10); and a financial mechanism (Article 11).

Importantly, the UNFCCC did not establish legally binding targets to limit greenhouse gas emissions. Instead, it set forth a non-binding aim for Annex I Parties to return their emissions to 1990 levels by the year 2000 (Article 4(2)) – a target that has now expired.

4 Climate Change v.2: the Kyoto Protocol

No sooner had the UNFCCC entered into force than the first Conference of the Parties (COP-1) in Berlin decided that the commitments in the UNFCCC were inadequate and adopted the Berlin Mandate, which established an ad hoc negotiating group – the Ad Hoc Group on the Berlin Mandate (AGBM) – to develop a legal agreement establishing 'quantitative emission limitation and reduction objectives' (QELROs) for Annex I countries for the post-2000 period.[19] The AGBM negotiations continued for two years, leading to the adoption of the Kyoto Protocol in December 1997.

[19] 'Berlin Mandate', UNFCCC Dec. 1/CP.1 (1995) 4.

In contrast to the UNFCCC, the Kyoto Protocol is primarily regulatory in purpose, and has four key features:

Internationally negotiated emission targets – First, the Kyoto Protocol established quantitative, absolute, economy-wide limits on GHG emissions through a 'top-down' process of intergovernmental negotiations. Initially, the European Union (EU) proposed a comparatively strong target, requiring a 15 per cent cut in greenhouse gas emissions below 1990 levels by the year 2010, while other industrialized states such as the United States and Canada proposed weaker targets, with Japan somewhere in the middle.[20] Ultimately the issue was resolved by specifying different QELROs for each Annex I Party, specified in Annex B of the Protocol, ranging from an 8 per cent reduction from 1990 levels for the EU, to a 10 per cent increase for Iceland (Kyoto Protocol Article 3(1)). The emission targets were defined relative to a 1990 baseline, and applied on an economy-wide basis to both sources and sinks of a basket of six GHGs.[21] The initial round of targets specified in Annex B applied to a five-year commitment period running 2008-2012.

Legally binding – The Berlin Mandate did not specify whether the QELROs to be negotiated were to be legally binding. This issue was resolved by the Geneva Ministerial Declaration, adopted in July 1996 at COP-2, which called for the negotiation of legally binding QELROs.[22] The Kyoto Protocol further strengthened the legal character of its targets through detailed accounting rules and an elaborate compliance mechanism that includes an enforcement branch (Articles 5, 7, 8, and 18).

Differentiation – The Berlin Mandate specified that the Kyoto Protocol would establish QELROs only for Annex I Parties, and expressly excluded any new commitments for non-Annex I Parties (often referred to as 'developing countries', even though they include some of the richest countries in the world). As a result, the Kyoto Protocol established emission targets only for countries listed in Annex I of the Convention. This hard differentiation between Annex I and non-Annex I Parties was further exacerbated by the rejection in Kyoto of proposals to allow developing countries to assume voluntary commitments to reduce their emissions.[23]

Market mechanisms – Finally, the Kyoto Protocol established several market mechanisms – Emissions Trading, Joint Implementation, and the Clean Development Mechanism (CDM) – to allow Annex I Parties to meet their targets in a flexible,

[20] Joanna Depledge, 'Tracing the Origins of the Kyoto Protocol: An Article-by-Article Textual History', UNFCCC Technical Paper, UN Doc. FCCC/TP/2000/2 (2000) at 45.

[21] CO_2, methane, nitrous oxide, and three industrial gases, hydroflourocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF_6).

[22] Geneva Ministerial Declaration, 18 July 1996, UN Doc. FCCC/CP/1996/15/Add.1 (1996), Annex, 73, para. 8.

[23] Depledge, *Tracing the Origins*, *supra* note 20, at 102–105.

cost-effective manner.[24] Whether or not to create these market mechanisms was one of the most contentious issues in the Kyoto Protocol negotiations. The United States, supported by some business NGOs, sought mechanisms that would allow developed countries to achieve their emissions targets either by providing assistance for emissions abatement projects in other countries or through emissions trading, while the European Union generally opposed the inclusion of market mechanisms. In addition, developing countries tended to resist any mechanism that would allow developed countries to receive credit for emissions reductions occurring in developing countries, arguing that industrialized countries should achieve their emissions targets domestically. The inclusion of three market mechanisms in the Kyoto Protocol was a major success for the United States, which proved ironic, given the later US rejection of the Protocol.

Following the Kyoto Protocol's adoption in 1997, states spent an additional four years negotiating the detailed rules for how the Kyoto Protocol would work, including rules on accounting, sinks, the market mechanisms, and compliance. These negotiations were completed in 2001 with the adoption of the Marrakesh Accords, which paved the way for the Protocol's ratification and eventual entry into force in 2005.[25]

5 Climate Change v.3: the Copenhagen/Cancun Framework

If Climate Change v.2 focused on the development of quantitative emission targets for developed countries, Climate Change v.3 focused on the development of a global regime, which addresses developing as well as developed country emissions. Since the creation of the climate change regime in the early 1990s, developing country emissions have risen rapidly, and now are significantly higher than developed country emissions. In response, Climate Change v.3 shifted the central axis of the negotiations from the US-EU to developed-developing countries.

The transition towards Climate Change v.3 began following the Kyoto Protocol's entry into force in 2005, when attention turned to the question of what to do post-2012, after the Protocol's first commitment period ended. Developing countries wanted a continuation of the Kyoto system, since it established emissions targets only for Annex I Parties, not for non-Annex I Parties. However, Parties with Kyoto emissions targets were reluctant to do so, both because they believed the Kyoto Protocol annex structure was outdated and because they did not want to be the only ones bound by emissions limitation targets, since this would not solve the climate change problem and would put them at a competitive disadvantage. Instead, they pushed to develop a more global approach, which addresses the emissions of the

[24] See generally Cameron Hepburn, 'Carbon Trading: A Review of the Kyoto Mechanisms', 33 *Annual Review of Environmental Resources* (2007) 375-393.

[25] 'Marrakesh Accords', Decisions 2/CP.7–19/CP.7 (2001).

United States (which had by now rejected Kyoto), as well as emerging economies such as China and India.[26]

The initial compromise was to pursue negotiations along two parallel tracks, one to consider an amendment to the Kyoto Protocol establishing a second commitment period, the other to develop a more global approach to promote 'long-term cooperative action' under the UNFCCC. The Kyoto Protocol Parties launched the first track at their first meeting in 2005;[27] the UNFCCC Parties launched the second track two years later in the Bali Action Plan.[28] Both tracks were to conclude their work at the 2009 Copenhagen COP, creating enormously high expectations for the Conference – expectations that were further heightened by the Danish decision to invite heads of state, thereby upgrading the meeting from a ministerial to a summit.

Two years, however, proved too little time to resolve fully the enormous issues at stake about the future architecture of the regime, and the Copenhagen Conference ended in acrimony and disappointment.[29] Although leaders of a broadly representative group of states, including all of the world's major economies, agreed to the Copenhagen Accord on the penultimate day of the Conference, the agreement did not win acceptance from the Conference as a whole, due to opposition by a small group of countries, including Venezuela, Bolivia, and Sudan. Instead, the Copenhagen COP was able only to 'take note' of the Copenhagen Accord.

Despite these disappointments, the Copenhagen Accord, in embryonic form, established a new paradigm for the climate change regime.[30] The new paradigm was formalized and elaborated the following year in the Cancun Agreements. The Copenhagen/Cancun framework differed from the Kyoto Protocol in three critical respects:

First, in contrast to Kyoto, which prescribed a common, internationally-negotiated regulatory approach – legally-binding, quantitative, economy-wide emissions targets – the Copenhagen Accord and Cancun Agreements established a bottom-up architecture, which allows each country to decide for itself the commitments and actions it wished to undertake internationally, and does not subject these national pledges to international negotiations in an effort to make them stronger.

Second, the Copenhagen Accord was a political rather than a legal instrument. The emissions reduction pledges put forward by countries were not legally binding, unlike the Kyoto Protocol targets.

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[26] See, for instance, European Commission, *Winning the Battle Against Climate Change*, Doc. COM(2005) 35 final (2005).

[27] 'Consideration of Commitments for Subsequent Periods for Parties Included in Annex I to the Convention under Article 3, Paragraph 9, of the Kyoto Protocol', Dec. 1/CMP.1 (2005) 3.

[28] 'Bali Action Plan', Dec. 1/CP.13 (2007) 3.

[29] Daniel Bodansky, 'The Copenhagen Climate Change Conference: A Postmortem', 104 *American Journal of International Law* (2010) 230-240.

[30] Bodansky, 'Copenhagen Climate Change Conference', *supra* note 29, at 239-240. *Ibid*

Third, the Copenhagen/Cancun framework began to erode the sharp differentiation between Annex I and non-Annex I Parties. For the first time, the major emerging developing countries, such as China, India, and Brazil, put forward national emissions limitation pledges, in exchange for the promise by developed countries to mobilize significant new money to support mitigation and adaptation by developing countries – USD100 billion per year by 2020.

6 Climate Change v.4: the Paris Agreement

The Copenhagen Accord and the Cancun Agreements reoriented the climate change regime, away from the top-down, rigidly differentiated approach of the Kyoto Protocol, toward a more bottom-up, global approach. However, they left open whether the new approach would be a one-shot solution or a long-term architecture, and whether to extend the Kyoto Protocol beyond 2012, when the first commitment period ended. These issues were addressed at the 2011 Durban COP, where the EU agreed to extend the Kyoto Protocol beyond 2012, in exchange for a mandate to negotiate a new agreement applicable to all Parties.

The Durban Platform for Enhanced Action,[31] which launched the negotiations leading to the Paris Agreement, was a finely balanced compromise among the principal negotiating groups in the UN climate change regime:[32]

- The European Union, supported by small-island and least-developed countries (LDCs), sought a fast-start mandate to negotiate a new legally-binding instrument engaging all countries, as a condition for its agreement to a second commitment period under the Kyoto Protocol. The Durban Platform addressed this demand by establishing a process to negotiate 'a treaty, another legal instrument or an agreed outcome with legal force'.[33]
- In exchange for their agreement to a new negotiating mandate, China, India, Brazil, and South Africa achieved their main demand, namely, acceptance by the EU of a second commitment period under the Kyoto Protocol.
- Finally, the United States insisted that any mandate to negotiate a new legal agreement must be 'symmetrical' in its application to developing as well as developed countries. The Durban Platform addressed this concern by calling for 'the widest possible cooperation by all countries and their participation in an effective and appropriate international response',[34] and by providing that the outcome of the Durban Platform negotiations will be

[31] 'Establishment of an Ad Hoc Working Group on the Durban Platform for Enhanced Action', UNFCCC Dec. 1/CP.17 (2011).
[32] This section draws on Bodansky, *Durban Platform Negotiations*, *supra* note 1, at 1-2.
[33] Durban Platform, *supra* note 31, at para. 2.
[34] *Ibid.* at preamble, para. 1.

> 'applicable to all parties'.[35] These provisions differed dramatically from the Kyoto Protocol's negotiating mandate, which had categorically excluded any new commitments for developing countries.[36]

The Durban Platform established the Ad Hoc Working Group on the Durban Platform (ADP), which met fifteen times over the next four years, producing a draft negotiating text that it forwarded to Ministers at the end of the first week in Paris. After further negotiations among Ministers, the Paris Agreement was adopted by acclamation on 12 December 2015.

In many respects, the Paris Agreement formalizes and extends the bottom-up paradigm to which the Copenhagen Accord gave birth. Elements of the Paris Agreement that originated in the Copenhagen Accord include:[37]

- The goal of holding global warming below 2 degrees Celsius.
- The system of nationally determined contributions (NDCs) to reduce emissions. In the year leading up to the Paris Conference, more than 187 states submitted intended NDCs, representing roughly 95 per cent of global emissions.[38]
- The non-binding character of these contributions. Although the Paris Agreement is a treaty within the meaning of international law,[39] Parties' nationally determined contributions are not legally binding, in contrast to the Kyoto Protocol targets.
- The reliance on transparency rather than legal enforcement to promote accountability and effectiveness.[40]
- The shift away from the binary approach to differentiation towards a more flexible approach that encompasses all countries.
- The pledge to mobilize climate finance from public and private sources.
- Perhaps most importantly, the expansion of the regime to address the vast majority of global emissions, rather than focusing only on the emissions of developed countries.

Nevertheless, the Paris Agreement does not simply recapitulate the Copenhagen Accord. It builds on Copenhagen in three important respects:

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35 *Ibid.* at para. 2.
36 'Berlin Mandate', UNFCCC Dec. 1/CP.1 (1995) para. 2(b).
37 This section draws on Bodansky, 'The Paris Climate Change Agreement', *supra* note 1.
38 Climate Action Tracker, 'Tracking INDCs', available at <http://climateactiontracker.org/indcs.html> (visited 5 June 2016).
39 Vienna Convention on the Law of Treaties, Vienna, 23 May 1969, in force 27 January 1980, 1155 *United Nations Treaty Series* 331.
40 Daniel Bodansky, 'The Legal Character of the Paris Agreement', 25(2) *Review of European, Comparative, and International Environmental Law* (2016) 142-150.

A rules-based structure – First, the Paris Agreement supplements the bottom-up system of NDCs with internationally negotiated rules to promote greater ambition and transparency. In this regard, the Agreement contains a number of significant features:

- It calls for a peaking of global emissions as soon as possible, with rapid reductions thereafter.
- It requires each Party to prepare and communicate an NDC and to report regularly on its progress in achieving its NDC.
- It provides for a global stocktake every five years to assess progress.
- It requires each Party to submit a successive NDC every five years, which is to represent a progression from previous efforts and to be as ambitious as possible.

The idea is that the global stocktakes and the requirements on states to update their NDCs every five years will promote progressively more ambitious NDCs over time.

Durability – Second, the Paris Agreement gives the Copenhagen architecture a more durable character. The Copenhagen Accord was a political deal and addressed only the period up until 2020, through a one-off pledging process. The Paris Agreement, in contrast, establishes a treaty regime of indefinite duration.

Differentiation – Finally, the Paris Agreement largely completes the move away from the categorical approach to differentiation of the Kyoto Protocol, towards a more nuanced approach, which establishes a common framework for all Parties, but with built-in flexibility to take account of Parties' differing capabilities and circumstances. Copenhagen still retained elements of the binary approach to differentiation of the Kyoto Protocol, with distinctions drawn in various provisions between Annex I and non-Annex I Parties.[41] In contrast, the Paris Agreement completely abandons the Annex I/non-Annex I bifurcation. Instead, it reflects the principle of CBDRRC differently in its different elements:

- Its provisions on NDCs are largely undifferentiated. They establish common commitments to prepare, communicate and regularly update an NDC, and to provide the information necessary to track progress in implementing and achieving one's NDC (Article 4). To the extent there is explicit differentiation, it applies to the non-binding, soft elements of the mitigation article, rather than the legal obligations.
- The agreement reaffirms the financial commitments of developed country Parties, requires them to report biennially, and recommends that they take the lead in mobilizing climate finances, but it also expands the donor pool, by encouraging other countries to provide support voluntarily (Article 9).

[41] Bodansky, 'Copenhagen Climate Change Conference', *supra* note 29, at 240.

- It establishes a common transparency framework, in contrast to the bifurcated approach of Copenhagen/Cancun, but provides that the new transparency framework shall provide 'built-in flexibility' (Article 13.1), allowing the Parties to tailor the new framework to meet the needs of developing countries.

7 Conclusion

The Paris conference gives new hope to the UN climate change regime. After years of contentious negotiations, it has received unprecedented political support. At the UN signing ceremony on 22 April 2016, 175 countries signed the Agreement, apparently the most ever to sign an agreement on a single day. Many countries quickly ratified, including the United States, China, India, and the European Union, bringing the Agreement into force on 4 November 2016, less than a year after its adoption.

Much remains to be done, of course, and much could still go wrong. The initial contributions offered by countries do not put the world on a pathway to limiting temperature change to less than 2 degrees Celsius, much less 1.5 degrees, the goals set in the Paris Agreement. Therefore, success will depend ultimately on whether the Agreement encourages stronger action over time. Moreover, the position of some countries can cast doubt on their participation in the regime, at least in the near-term. Nevertheless, the Paris Agreement justifies cautious optimism about the future of international climate policy.

Part II

Climate Change-related Issues of Global Relevance

Climate Change and the 2030 Agenda for Sustainable Development – Tackling Challenges with the SDGs

Jamil Ahmad[1]

1 Introduction

Climate change is one of the major challenges the world faces today. Intensive use of natural resources for development and industrialization had begun to take its toll and the international community awoke to the dangers of climate change rather late. A coherent and collective response to the dangers posed by climate change came at the Earth Summit (the United Nations Conference on Environment and Development (UNCED)) in Rio in 1992, where, along with other agreements, the UN Framework Convention on Climate Change (UNFCCC)[2] was adopted. The Convention came into force on 21 March 1994, and its ultimate objective is to 'stabilize the greenhouse gas concentrations at the level that would prevent dangerous anthropogenic interference with the climate system'.[3] Prior to the Earth Summit and adoption of the UNFCCC, the United Nations Environment Programme (UNEP),[4] as the lead UN agency on environment, was spearheading action on the environment and climate change. The preamble of the Convention thus takes note of several UNEP resolutions on climate.

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[1] MA Pol Sc (University of Peshawa); Deputy Director, UN Environment New York Office; e-mail: ahmad24@un.org.

[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] Art. 2.

[4] See <http://www.unep.org>. 'Institutional and financial arrangements for international environmental cooperation', UNGA Res. 2997 of 15 December 1972, which established UNEP as subsidiary body of the UN General Assembly.

In 1988, UNEP, together with the World Meteorological Organisation (WMO),[5] created the Intergovernmental Panel on Climate Change (IPCC),[6] which was tasked with providing periodic assessment reports on the current state of knowledge on climate change; the social and economic impact of climate change, and possible response strategies'.[7] The First Assessment Report of the IPCC[8] highlighted the importance of international cooperation to tackle the consequences of climate change and thus paved the way for the creation of the UNFCCC. Still, it took many more years before a work plan for such international cooperation was developed through an international legal framework. In 1997, the Kyoto Protocol (KP)[9] to the UNFCCC set emission reduction targets for industrialized countries (Annex 1 countries) through a time bound commitment. However, it was only in 2005 that the Kyoto Protocol came into effect. In the meantime, the challenges and threats posed by climate change continued to multiply.

The world had ignored the imperative to act on climate change for too long, despite strong scientific proof[10] of the need to respond urgently. Progress in reducing the carbon intensity of consumption and production was outstripped by increased levels of consumption due to resource intense production processes and an increase in population. With a current world population of seven billion, expected to reach 9.5 billion by 2050, the regenerative capacity of the Earth's ecosystems will be unable to sustain humanity's current ways of living and consumption. The goal set by the KP to hold the increase in global average temperature below 2°C above pre-industrial levels remains asking, both in terms of the goal itself being insufficient and in the sense that humanity is not on track to meet the goal as currently articulated.

As a threat multiplier, climate change poses a serious challenge to overarching development goals. The increase in frequency and intensity of extreme weather events is endangering natural habitats, harvests and human lives. Food security, the loss of biodiversity, ecosystem degradation, disasters and even conflicts are related and linked to climate change. Being the most vulnerable and least prepared to deal with its consequences, the world's poor people and nations bear the brunt of climate change.

A powerful cyclone in the Pacific island of Vanuatu, Hurricanes Katrina and Sandy, floods in parts of Asia as well as droughts in other parts of the world have

5 See <http://www.wmo.int>.

6 'Protection of global climate for present and future generations of mankind', UNGA Res. 43/53 of 6 December 1988. IPCCC published its first assessment report in 1990, a supplementary report in 1992, a second assessment report (SAR) in 1995, a third assessment report (TAR) in 2001, a fourth assessment report (AR4) in 2007 and a fifth assessment report (AR5) in 2014. See <https://www.ipcc.ch>.

7 UNGA Res. 43/53 at para. 10.

8 John T. Houghton, G. J. Jenkins and J. J. Ephraums (eds), Climate Change: The IPCC Scientific Assessment. Report prepared for Intergovernmental Panel on Climate Change by Working Group I [IPCC First Assessment Report] (Cambridge University Press, 1990).

9 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.

10 IPCC reports and assessments.

recently demonstrated the devastating impact of climate change for developing and developed countries alike. Scientific evidence and our experiences show that we all share and depend on the Earth's ecosystems. The challenges to achieving sustainable development are universal. These are shared concerns that affect all, irrespective of our countries' circumstances and locations. Global challenges warrant global action and global solutions. Providing and protecting global public goods will thus require collective action. It was in this context that the international community responded to the clarion call for trying to redefine the development paradigm through a comprehensive and elaborate consultative process which was established at the 'Rio+20' United Nations Conference on Sustainable Development (UNCSD) in 2012 and culminated more than three years later with the adoption of a universal, integrated and transformative 2030 Agenda for Sustainable Development.[11]

2015 marked the 70th year since the establishment of the United Nations in 1945. This year saw the culmination of several tracks of international processes and negotiations on sustainable development that have galvanized serious discussions in recent years. The world reached milestone agreements under the auspices of the UN, reiterating its commitment to the principles of multilateralism. The Sendai Framework on Disaster Risk Reduction,[12] the Addis Ababa Action Agenda (AAAA)[13] and the 2030 Agenda, including the Sustainable Development Goals (SDGs), all contain strong references to action on climate change. The year was capped by the adoption of the landmark Paris Agreement on Climate Change in December 2015.[14]

The 2030 Agenda provides the overall framework for action at all levels – global, regional, national and local – to work for the achievement of sustainable development for the next 15 years and beyond. Only an ambitious and universal agenda will help guide collective action on a global level, as well as in each region and country, to overcome the challenges of climate change.

Before the 2030 Agenda is discussed, it will be pertinent briefly to consider the challenges to achieving sustainable development and addressing climate change. Extreme poverty and hunger remain a global problem, with more than 830 million people still living in extreme poverty (that is, on less than USD 1.25 per day).[15] Providing each individual of the growing global population with a life that can be lived

[11] 'Transforming our world: the 2030 Agenda for Sustainable Development', UNGA Res. 70/1 of 25 September 2015.

[12] 'Sendai Framework for Disaster Risk Reduction 2015–2030', UNGA Res. 69/283 of 3 June 2015.

[13] Addis Ababa Action Agenda of the Third International Conference on Financing for Development, 16 July 2015.

[14] Paris Agreement to the United Nations Framework Convention on Climate Change, Paris, 12 December 2015, in force 4 November 2016; 'Adoption of the Paris Agreement', UNFCCC Dec. 1/CP.21 (2015).

[15] UN, The Millennium Development Goals Report 2015 (UN, 2015), available at <http://www.un.org/millenniumgoals/2015_MDG_Report/pdf/MDG%202015%20rev%20(July%201).pdf> (visited 21 August 2016).

in dignity and promoting human well-being, while remaining within the Earth's safe operating space, is a major challenge.

This will truly be a historic ambition as the currently observed changes to the Earth's system are unprecedented in human history. The most readily recognized changes include a rise in global temperatures[16] and sea levels,[17] glacier melting[18] and ocean acidification[19] – all associated with the increase in emissions of greenhouse gases (GHGs). Other human-induced changes include extensive deforestation[20] and land clearance for agriculture and urbanization as well as desertification and land degradation precipitated by inadequate and unsustainable use of natural resources,[21] all causing loss of biodiversity as natural habitats are degraded and destroyed.

Efforts to slow the rate or extent of change have resulted in moderate successes but have not succeeded in slowing or reversing adverse environmental impacts. Neither the scope of these nor the rate at which they are occurring has abated, with significant negative implications for human well-being. Overcoming them will only be possible by pursuing sustainable development that integrates the economic, social and environmental dimensions of sustainability.

This paper considers the important UN-led processes on sustainable development which culminated in 2015 and at how these distinctly different processes on closely related subjects were organized, conducted and finalized in parallel tracks. First, the paper describes and discusses how the 2030 Agenda was negotiated in an innovative manner with active engagement of major stakeholders and adopted at the summit level by the United Nations General Assembly. Secondly, it focuses closely on the integration of climate change in the Agenda 2030 and the interlinkage with the UNFCCC led process on climate change which produced the landmark Paris Agreement. Finally, it highlights the role of the UN Environment in support of an integrated sustainable development agenda of which environment is an essential part and how the UN Environment has made crucial contributions to the implementation of this agenda, including through its Programme of Work and through partnerships with others. The paper concludes by briefly considering how the climate change framework has moved

[16] The global average temperature has risen by about 0.3°F per decade since 1970 amounting to 1.5°F over past fifty years. See Climate Central, 'The State of the Earth in 4 Climate Trends', available at <http://www.climatecentral.org/news/earth-day-climate-trends-18907> (visited 22 May 2016).

[17] The rise in sea level has been 85mm over the past 50 years. The current rate of sea level rise is 3.42 mm per year. See NASA, 'Global Climate Change. Vital Signs of the Planet: Sea Level', available at <http://climate.nasa.gov/vital-signs/sea-level/> (visited 22 May 2016).

[18] See LuAnn Dahlman, 'Climate Change: Glacier Mass Balance', available at <https://www.climate.gov/news-features/understanding-climate/climate-change-glacier-mass-balance> (visited 22 May 2016).

[19] Ocean acidification has increased by over 30 per cent in the past 200 years. See Ocean Portal, 'Ocean Acidification', available at <http://ocean.si.edu/ocean-acidification> (visited 22 May 2016).

[20] 46–58 thousand square miles of forest are lost each year. See WWF, 'Deforestation. Overview', available at <http://www.worldwildlife.org/threats/deforestation> (visited 23 May 2016).

[21] 52 per cent of the land used for agriculture is moderately or severely affected by soil degradation. See UN, 'World Day to Combat Desertification', available at <http://www.un.org/en/events/desertificationday/background.shtml>.

from a legally binding Kyoto Protocol to a voluntary framework on Intended Nationally Determined Contributions (INDCs).

2 The 2030 Agenda

2.1 Introduction

Heads of states and governments adopted the 2030 Agenda for Sustainable Development at the UN Summit for Sustainable Development, which was held at the UN headquarters in New York from 25 to 27 September 2015. The 2030 Agenda is a blueprint for sustainable development. It is universal, transformative and characterized by a foundation of indivisible and interlinked dimensions of economic, social and environmental issues. Sustainable development itself is a universal aspiration and builds on universal principles and values – human rights, solidarity and shared responsibility.

UN Secretary General Ban Ki Moon described the 2030 Agenda as the 'declaration of interdependence'.[22] The new agenda is guided by a set of Sustainable Development Goals. Action to combat climate change and its impacts is conspicuous as a standalone goal, though issues related to the environment and climate change are also covered by several other goals. The 2030 Agenda builds on the progress achieved by the Millennium Development Goals (MDGs):[23] eight goals established following the Millennium Summit of the United Nations in 2000. The MDGs were viewed as not sufficiently covering the environmental dimension of development as the standalone single goal on environmental sustainability did not address the inter-linkages between the three dimensions of sustainable development.[24]

The MDGs achieved progress, albeit uneven and insufficient.[25] They were viewed as exemplifying a classical donor–recipient development model and remaining confined to a silo approach. The new agenda is designed to build on the progress of the MDGs, complete their unfinished business and address their shortcomings by comprehensively tackling new challenges facing people and the planet in an integrated manner.

[22] UN Secretary General's address to the National Assembly of Seychelles, 8 May 2016, available at <http://www.un.org/sg/statements/index.asp?nid=9681> (visited 23 May 2016).

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

[24] See UNECOSOC, 'Breaking the Silos: Cross-sectoral partnerships for advancing the Sustainable Development Goals (SDGs)' 2016 Partnership Forum (31 March 2016), Issues Note, available at <https://www.un.org/ecosoc/sites/www.un.org.ecosoc/files/files/en/2016doc/partnership-forum-issue-note1.pdf> (visited 21 August 2016).

[25] UNDP, 'MDGs produced most successful anti-poverty movement in history: UN report', available at http://www.undp.org/content/undp/en/home/presscenter/pressreleases/2015/07/06/mdg-s-produced-most-successful-anti-poverty-movement-in-history-un-report.html (visited 21 August 2016).

People, Planet, Prosperity, Peace and Partnership, the 'five P's', served as the guiding principles for the 2030 Agenda and are areas of critical importance for humanity and the planet. Poverty remains at the heart of the challenges to climate and sustainable development, and the 2030 Agenda offers a unique opportunity to propel and galvanize efforts for sustainable development by integrating the social, economic and environmental dimensions in a balanced manner.

The importance of such an integrated approach has been recognized by member states of the UN through the adoption of the 2030 Agenda. Throughout the process of developing the Agenda, the UN Environment Programme (through a series of policy papers) stressed that the use of such an approach is essential.[26] the UN Environment Programme argued that choosing between development and sustainability has proven to be a false choice; only if both go hand in hand will humanity be able to overcome the challenges with which it is confronted.

The main elements of the 2030 Agenda consist of the following:

- A political declaration, which expresses the international community's political will to achieve sustainable development and specifies the underlying principles that guide global and national action in the context of the new agenda.
- A set of 17 Sustainable Development Goals and 169 targets that cover all dimensions of sustainable development and are closely linked and interconnected. The 2030 Agenda makes clear that all goals will have to be implemented in an integrated way in order to be successful.
- A description of the means of implementation for successfully achieving the goals enshrined in the Agenda, which is complemented by the Addis Ababa Action Agenda for Financing Sustainable Development. Both documents focus on mobilizing resources, capacity-building, technology transfer, and creating an enabling environment, as well as on systemic issues, such as debt, debt restructuring, the financial system or trade.
- A follow-up and review mechanism with the High-level Political Forum at its centre.

2.2 A new and innovative process of negotiations

At the completion of the MDGs, which were time-bound, the scope of the UN's development agenda was expanded by bringing together the social, environmental and economic dimensions. The idea of a post-2015 development agenda emerged in the discussions on the implementation of the MDGs and was formalized at the UN Summit on Sustainable Development (Rio+20). The outcome document of

[26] See UNEP Post-2015 Notes, available at <http://www.nrg4sd.org/unep-post-2015-briefing-notes/> (visited 23 May 2016).

Rio+20, 'The Future We Want',[27] called for establishing an inclusive and transparent intergovernmental process on SDGs, open to all stakeholders. Governments, international organizations and civil society, as well the UN family of programmes, funds and agencies participated actively throughout the process.

The adoption of the 2030 Agenda brought to fruition a three and half year process that was probably unprecedented in UN history in terms of its inclusiveness and participatory nature, and the interest it generated throughout the world and among various stakeholders. Initially described as the 'post-2015 development agenda', several streams of informal and formal consultations fed into the deliberations.

An Open Ended Working Group (OWG), comprising 30 representatives, was to be nominated by member states from the five UN regional groups in order to achieve fair, equitable and balanced geographic representation. The OWG was to decide on its method of work, including developing modalities to ensure the full involvement of relevant stakeholders, as expertise from civil society, the scientific community and the UN system was also to be included.[28] At the outset of consultations for the post-2015 development agenda, an Open Ended Working Group was established in January 2013.[29] Member states of the UN agreed to an innovative constituency-based-representation accommodating 70 states in constituencies of two, three and in one case four states, while retaining the total representatives as 30 to be in accord with the 'The Future We Want'.

The deliberations were lengthy and, at times, complex. Although not an exhaustive list, the important elements of the deliberations included the following:

- A High-Level Panel of Eminent Persons,[30] created by the UN Secretary-General produced the first set of recommendations. This Panel's work between September 2012 and June 2013 already built to a large extent on stakeholder outreach.
- A series of 11 global thematic consultations were carried out by the UN over the course of 2013 on themes of central importance to sustainable development. These themes were identified by the UN Development Group[31] and included, for instance, inequalities, education, environmental sustainability and energy.

[27] Rio +20 Outcome Document 'The Future We Want', UNGA Res. 66/288 of 11 September 2012, available at <http://www.uncsd2012.org/content/documents/727The%20Future%20We%20Want%2019%20June%201230pm.pdf> (visited 23 May 2016).

[28] *Ibid*. at para 248.

[29] The UNGA established the OWG on 23 January 2013 by its Decision 67/555.

[30] 'UN Secretary-General Appoints High-level Panel on Post-2015 Development Agenda', UN press release of 31 July 2012, available at <http://www.un.org/sg/management/pdf/PRpost2015.pdf> (visited 23 May 2016).

[31] See <https://undg.org/>.

- Regional consultations and discussion on the proposed agenda were conducted by the UN Regional Commissions[32] in partnership with relevant regional bodies. Particularly in Africa, this led to the development of a continent-wide position on the agenda, under the leadership of the African Union.[33]
- Worldwide, the UN, in partnership with member states and civil society, conducted 88 national consultations during 2013 and 2014.
- The UN organized the WorldWeWant Survey,[34] which was related to topics of the thematic consultations and enabled close to a million people to vote on their preferences and contribute to the process.
- In parallel to these official elements of the consultation process, there was an unprecedented level of engagement with civil society, the scientific community and the private sector, as well as with the general public.
- Discussions on the 2030 Agenda spilled over into the climate change negotiations under the UNFCCC, as well as into negotiations under other multilateral environmental agreements (MEAs), such as the Convention on Biological Diversity.[35] During the period of its deliberation, the 2030 Agenda additionally stood out as the predominant topic in all the regular meetings and discussions taking place in the General Assembly and its Committees,[36] as well as the Economic and Social Council.[37]
- The negotiations in the Open Working Group on the SDGs[38] (from March 2013 until July 2014) constituted a major milestone, and finalized a proposal for the SDGs that was ultimately accepted by member states in the inter-governmental negotiations leading to the adoption of the Agenda.
- The Secretary-General institutated an Expert Committee on Sustainable Development Financing[39] to prepare for the Addis Conference on Financing for Development (FfD), both of which tackled the question of how to finance sustainable development in general and the 2030 Agenda in particular.
- The High-level Political Forum (HLPF)[40] constituted another important forum for member states to discuss issues related to follow-up and review of the Agenda.

[32] See <http://www.regionalcommissions.org/>.
[33] Common African position on the post 2015 development agenda was adopted at the 22nd AU Assembly on 31 January 2014 at Addis Ababa. Available at <http://www.uneca.org/sites/default/files/uploaded-documents/Macroeconomy/post2015/cap-post2015_en.pdf> (visited 23 May 2016).
[34] See <http://data.myworld2015.org/>.
[35] 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>.
[36] See <http://www.un.org/ga/maincommittees.shtml> (visited 26 May 2016).
[37] See <https://www.un.org/ecosoc/en/home>.
[38] See <https://sustainabledevelopment.un.org/owg.html>.
[39] See <https://sustainabledevelopment.un.org/?menu=1558>.
[40] 'Format and organizational aspects of the high-level political forum on sustainable development', UNGA Res. 67/290 of 12 July 2013. See <https://sustainabledevelopment.un.org/hlpf>.

The OWG completed its deliberations in July 2014 and transmitted its report,[41] containing the proposed SDGs as 'input', to the intergovernmental negotiations on the post-2015 development agenda.

The broad-based discussions and the inclusive and open process that was followed during the development of the 2030 Agenda set a new standard for UN-led deliberations. It generated an unprecedented buy-in on the part of stakeholders, which is already flowing into discussions on implementation and policy actions in local, national and regional contexts.

The innovative format, scope and methodology of the process leading to the adoption of the new agenda became one of the success factors for the major UN achievements in the last decade. It is quite possible that this format and style will also be adopted for other processes in the future. The following are some of the factors which defined this unique process:

- Line by line negotiation of the draft text – which, although the norm for international negotiations, is complex and time consuming – was avoided. This enabled the co-Chairs to abide by the time plans and advance the work in a timely fashion.
- The co-facilitators in the OWG, and co-chairs in the intergovernmental negotiations, played a critical role through their leadership and diplomatic expertise.
- Led by the Secretary-General, his adviser on the post-2015 development agenda and the UN Department of Economics and Social Affairs (UN-DESA),[42] the Secretariat provided strong support throughout the process, including time advice and efficient services in supporting the co-chairs and the delegations.
- Transparent and continuous civil society engagement helped to mobilize political momentum for the Agenda.
- Innovative seat/representational arrangements in the OWG avoided the formation of traditional blocks and saved the deliberations from getting bogged down.
- Active involvement of delegates coming from their respective countries; against the usual norm where such working groups mostly comprise New York based delegates.
- The entire process was carefully choreographed, and most of the time lines were respected.

[41] Report of the Open Working Group of the General Assembly on Sustainable Development Goals, UN Doc. A/68/970 (2014).

[42] See <https://www.un.org/development/desa/en/>.

2.3 Indicators framework

An indicator framework for the 169 targets of the SDGs, which was not ready at the time of the adoption of the Agenda, has been finalized by an Inter-agency and Expert Group on SDG Indicators[43] under the UN Statistical Commission,[44] and was adopted by the 47th session of the UN Statistical Commission in March 2016. The High-Level Political Forum will now consider this framework as it has a central role in the follow-up and review of the implementation of the new agenda.

The creation of the HLPF was mandated[45] at Rio+20 as part of the overall strengthening of the institutional framework for sustainable development. The HLPF, created in 2013,[46] replaced the Commission on Sustainable Development (CSD), which was perceived to be weak in its oversight function and in galvanizing political will and action. The HLPF will convene on an annual basis under the auspices of the UN Economic and Social Council (ECOSOC) and every four years at the level of heads of states and governments under the auspices of the General Assembly to follow-up and review the implementation of commitments on sustainable development, including the 2030 Agenda and the SDGs, and to provide political leadership, guidance and recommendations to the international community. The HLPF stands at the global apex of the review and accountability framework for the 2030 Agenda, drawing on the contributions by the UN system, member states and other intergovernmental bodies. It is also mandated to address new and emerging challenges, and to promote the science–policy interface and the integration of the economic, social and environmental dimensions of sustainable development. In this regard, the Forum is of particular importance for the work of the UN Environment, as it will, together with the ECOSOC, contribute to the incorporation of environmental considerations throughout the operations of the UN development system.

2.4 The Addis Ababa Action Agenda and Means of Implementation (MOI)

The Third International Conference on Financing for Development, which was held in Addis Ababa, Ethiopia in July 2015, adopted the Addis Ababa Action Agenda (AAAA). Financing for Development (FfD) is a distinct but related process to the Sustainable Development Agenda, including climate change. During negotiations on FfD and the SDGs, developing countries supported this division in order to retain the visibility of FfD in terms of follow-up on the means of implementation.[47]

[43] See <http://unstats.un.org/sdgs/>.
[44] See <http://unstats.un.org/unsd/statcom>.
[45] 'The Future We Want', paras 84–86.
[46] UNGA Res. 67/290 (2013).
[47] Statement on behalf of Group of 77 and China by Finance Minister of South Africa at the Third Conference on Financing for Development, Addis Ababa, 14 July 2016, available at <http://www.g77.org/statement/getstatement.php?id=150714> (visited 23 May 2016).

Developed countries, on the other hand, would have preferred that FfD be merged with the 2030 Agenda.[48]

The global financing and investment needs for achieving sustainable development are tremendous, but it is as clear that the costs of inaction will be far higher. Therefore, discussions on Financing for Development contemplate how to mobilize sufficient resources from all sources, public and private, national and international, and how to address systemic issues such as sovereign debt and macroeconomic and financial stability.[49] In addition, capacity development, systemic issues and technology transfer are crucial. The latter is a particularly important issue for member states, and to this end the AAAA mandated the establishment of a technology facilitation mechanism (TFM),[50] which was launched with the 2030 Agenda. The UN Environment Programme is co-leading the development of this TFM, as the transfer and dissemination of environmentally sound technologies are a core part of its operational portfolio and outreach.

Despite the AAAA being distinct from the 2030 Agenda, member states have made it clear that they want to consider both jointly so as to ensure that sustainable development is achieved globally. The AAAA was endorsed by the United Nations General Assembly as an integral part of the Agenda 2030.[51]

The Political Declaration,[52] through which the 2030 Agenda was adopted, highlights the integrated nature of the Agenda. In paras 60–71 (entitled 'Means of Implementation and Global Partnership'), it spells out the financial resource requirements for the Agenda 2030. For instance, SDG 13.a on climate change refers to the 'implementation of the commitment of developed country parties to mobilize jointly USD100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions'. The Declaration further 'recognize[s] that the full implementation of the Addis Ababa Action Agenda is critical for the realization of the Sustainable Development Goals and targets'.[53]

[48] Statement on behalf of the European Union and its Member States delivered by H.E. Mr. Thomas Mayr-Harting, Head of the Delegation of the European Union to the United Nations, High Level Thematic Debate on Means of Implementation for a Transformative post 2015 development agenda. 9 February 2015, available at <http://eu-un.europa.eu/eu-statement-united-nations-means-of-implementation-for-transformative-post-2015-development-agenda/> (visited 23 May 2016).

[49] Sections II.A, II.B, II.C, E and F of the Addis Ababa Action Agenda.

[50] See <https://sustainabledevelopment.un.org/TFM>.

[51] 'Addis Ababa Action Agenda of the Third International Conference on Financing for Development (Addis Ababa Action Agenda)', UNGA Res. 69/313 of 27 July 2015.

[52] 'Transforming our world: the 2030 Agenda for Sustainable Development', UNGA Res. 70/1 of 25 September 2015.

[53] *Ibid*. at para 40 on Means of Implementation.

3 Climate Change and the 2030 Agenda[54]

3.1 Introduction

Combatting climate change is the biggest challenge to sustainable development, as failure to act urgently will precipitate negative impacts, cancelling out past sustainable development gains and making any future engagement in this regard more difficult and costly. Further, the failure to address climate change will impede efforts for poverty eradication, the overarching goal of the 2030 Agenda.

Action to combat climate change and its impacts is a stand-alone goal: SDG 13 in the new agenda. At the same time, many other SDGs contain strong aspects of action on climate change related issues. As a cross-cutting issue, climate change will have direct and indirect impacts on other SDGs, highlighting their strong interlinkages and the necessity to ensure an integrated approach when implementing the Agenda that balances the three dimensions of sustainable development.

SDG 13 on climate change establishes a direct reference to the UNFCCC process and its outcomes. While the UNFCCC framework is the main intergovernmental process to address and negotiate climate action, member states expressly recognized the relevance of this process for the successful implementation of the 2030 Agenda and for realizing sustainable development. The nexus between climate change and other issues affecting sustainable development has thus been brought into sharp focus for the first time.

A relevant example is food security. Climate change will have direct impacts on the productivity of agriculture through increasing climate variability, extreme weather conditions and changing patterns of incidence of pests and diseases, as well as indirectly by exacerbating the negative impacts of the unsustainable use of natural resources such as land and water. Climate change will decrease food security if not tackled appropriately. Food and nutrition in turn are closely linked to ensuring the health and well-being of people – in particular the poor and vulnerable – as well as ensuring better education outcomes. At the same time, climate change is directly impacting the health of people, for example through the increased risk of weather-related hazards and disasters, and the increased health risks related to changing disease vectors. The nexus between climate change, food security and health is just one of several examples that are testimony to the integrated nature of sustainable development challenges, with climate change at their center.

Air pollution serves as another good example. Air pollution is now documented to

[54] Much has been written on these issues in recent years. The information contained in this paper is based on multiple reports of the UN in the run-up to, and during, the Post-2015 Development Agenda process leading to the adoption of the Agenda 2030, including reports and assessments by UNEP and other bodies. References have been provided as available.

be the world's largest single environmental health risk, responsible for approximately 7 million premature, preventable deaths every year, according to the latest data from the World Health Organization.[55] Significantly, many of the air pollutants that are harmful to health also exacerbate climate change. These include short-lived climate pollutants such as methane or black carbon (carbon produced from incomplete combustion of fossil fuels and biomass, with sources ranging from cooking stoves and diesel engines to forest fires).

3.2 The broadening scope of climate change discussions

Recent years have seen a broadening of the scope of climate change discourses in the UN context and beyond, such as in the G8,[56] G20[57] and European Union (EU), and the national security discourses of the US and China. While previously limited to the UNFCCC or environmental contexts of other multilateral environmental agreements, the topic of climate change has incrementally and continuously gained more traction in other bodies in the UN and elsewhere.

Action on climate change – both in terms of mitigation and adaptation – featured strongly throughout the post-2015 process and the intergovernmental negotiations on Financing for Development.

In recent years, some member states have tried to anchor the topic of climate change in discussions of the UN Security Council and to link it to the more traditional security-related deliberations the Council conducts. In 2007 the Security Council held its first ever debate on climate, peace and security,[58] and in 2011 the Council held another debate on the same topic, from which a Presidential Statement[59] was issued. The Executive Director of UN Evironment Programe then , Mr. Achim Steiner, addressed the meeting and described climate change's profound implications for global stability and security, noting that it was a threat multiplier that could result in simultaneous and unprecedented impacts on where people could settle, grow food, maintain infrastructure or rely on functioning ecosystems; and that managing the potential disruption, displacement and adaptation to sea-level rise or extreme

[55] Worldwide, ambient air pollution contributes to 6.7 per cent of all deaths. See WHO, 'Mortality from ambient air pollution', available at <http://www.who.int/gho/phe/outdoor_air_pollution/burden/en/> (visited 23 May 2016). WHO reports that in 2012, around 7 million people died – one in eight of total global deaths – as a result of exposure to air pollution. See WHO, '7 million premature deaths annually linked to air pollution', available at <http://www.who.int/mediacentre/news/releases/2014/air-pollution/en/> (visited 23 May 2016).

[56] See, for instance, <http://www.g8.co.uk/>. At the time of writing, the Group is known as G7, as Russia has been suspended from the Group.

[57] See, for instance, <http://www.g20.utoronto.ca/>.

[58] UN, 'Security Council holds first-ever debate on impact of climate change on peace, security, hearing over 50 speakers', Security Council press release of 17 April 2007, available at <http://www.un.org/press/en/2007/sc9000.doc.htm>.

[59] UN, 'Security Council, in Statement, Says "Contextual Information" on Possible Security Implications of Climate Change Important When Climate Impacts Drive Conflict', available at <http://www.un.org/press/en/2011/sc10332.doc.htm> (visited 23 May 2016).

weather events is profoundly challenging to sustainable development.[60] In 2013 and 2015, the Council held Arria-Formula meetings[61] on the security implications of climate change. According to the then Deputy Secretary General of the UN, Jan Elliasan, who spoke at the 2015 meeting, '[c]limate change is a threat multiplier. Positive climate action, on the other hand, can help mitigate risks and strengthen prospects for peace'.[62]

At the same time, climate change and its impacts have received closer scrutiny from a humanitarian perspective. The relation to disaster risk reduction and humanitarian action is self-evident, and the impacts of climate change and its relation to human rights has played an increasingly important role in the discussions at various fora. In a submission to the 21st Conference of the Parties (COP21) to the UNFCCC, the Office of the High Commissioner for Human Rights (OHCHR)[63] highlighted the close links between action on climate change and realizing human rights.[64] Among other issues, the submission explained why it is important to 'integrate human rights in climate change-related actions', 'what human rights principles apply in the context of climate change', 'what actions have been taken by international human rights mechanisms so far' and 'what steps should be taken going forward'.[65] It is an important development that the preamble of the Paris agreement makes a specific mention of the link between climate change and human rights.[66]

3.3 COP21

Despite international efforts to mitigate climate change, including those occurring under the Kyoto Protocol, GHG emissions have been steadily rising. It has become clear that emission reductions from developed countries alone will not be sufficient to limit global warming to below 2°C. This is why the need was recognized for any

[60] *Ibid*.

[61] The 'Arria-formula meetings' are informal meetings of the members of the Security Council for a frank and private exchange of views on important matters. Named after Ambassador Diego Arria of Venezuela, who, as the representative of Venezuela on the Council (1992–1993), initiated the practice in 1992, such informal meetings are not part of the official programme of the Security Council and these are held in a conference room, not in the Security Council consultation room. See UN Security Council, 'Working Methods Handbook. Background Note on the "Arria-Formula" Meetings of the Security Council Members', available at <http://www.un.org/en/sc/about/methods/bgarriaformula.shtml> (visited 22 August 2016).

[62] UN Deputy Secretary-General, Remarks to the Security Council on Climate Change' (30 June 2015), available at <http://www.spainun.org/wp-content/uploads/2015/07/Deputy-Secretary-General_CC_201506.pdf> (visited 23 May 2016).

[63] See <http://www.ohchr.org>.

[64] 'Understanding Human Rights and Climate Change', Submission of the Office of the High Commissioner for Human Rights to the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change (2015), available at http://www.ohchr.org/Documents/Issues/ClimateChange/COP21.pdf> (visited 23 May 2016).

[65] These questions are posed as topics for sections in Part I (Human Rigths and Climate Change) of the OHCHR submission: Understanding Human Rights and Climate Change', Submission of the Office of the High Commissioner for Human Rights to the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change (2015), available at http://www.ohchr.org/Documents/Issues/ClimateChange/COP21.pdf> (visited 23 May 2016).

[66] Preamble of the Paris Agreement.

new climate deal to be universal, ambitious and transformative, and to entail rapid action by all countries and stakeholders, ensuring that 'no one is left behind', irrespective of where they might live.

At the 21st meeting of the Conference of Parties to the UNFCCC, a universal agreement on the reduction of greenhouse gas emissions was concluded for a long term and ambitious agenda to combat climate change. The Paris Agreement is characterized by four key elements. First, the Agreement has a clear long-term direction, as stipulated in Article 4:

> Parties aim to reach global peaking of greenhouse gas emissions as soon as possible, recognizing that peaking will take longer for developing country Parties, and to undertake rapid reductions thereafter in accordance with best available science, so as to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century, on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty.

Second, the Agreement stipulates specific national commitments and plans for the post-2020 period, including the Intended Nationally Determined Contributions (INDCs),[67] as well as a mechanism to increase ambition over time (i.e. every five years).[68] Third, the Agreement introduces a transparent accounting system, including measurement, verification and reporting arrangements for climate action.[69] The Agreement states that financial resources provided to developing countries should enhance the implementation of their policies, strategies, regulations and action plans and their climate change actions with respect to both mitigation and adaptation to contribute to the achievement of the purpose of the Agreement.[70] Finally, paragraph 54 of the Agreement calls for setting 'a new collective quantified goal from a floor of USD100 billion per year, taking into account the needs and priorities of developing countries'. An important aspect of the Agreement, in Section V paragraph 133, relates to efforts of all non-Party stakeholders to address and respond to climate change, including those of civil society, the private sector, financial institutions, cities and other subnational authorities.[71]

[67] Article 3 of the Paris Agreement:
As nationally determined contributions to the global response to climate change, all Parties are to undertake and communicate ambitious efforts as defined in Articles 4, 7, 9, 10, 11 and 13 with the view to achieving the purpose of this Agreement as set out in Article 2. The efforts of all Parties will represent a progression over time, while recognizing the need to support developing country Parties for the effective implementation of this Agreement.

[68] Article 14 of the Paris Agreement.

[69] Article 13 of the Paris Agreement.

[70] Para. 52 of Paris Agreement.

[71] *Ibid*. items 134–136.

The UN Environment Programme's Emissions Gap Report[72] has quantified the aggregate effect of all INDCs and calculated the shortfall in overall ambition for emissions reduction. Reaching the goals set by this new Agreement to hold the increase in global average temperature below 2°C above pre-industrial levels will require more action than just fulfilling the pledges made in the INDCs. Transformative change towards a low carbon economy therefore remains an urgent imperative. On the positive side, the world's biggest greenhouse gas emitters, including the United States, China, the European Union, Brazil and India, submitted pledges; and these pledges will need to be scaled up in the future.

Managing an effective and fair differentiation of national contributions to the global fight against climate change that reflect countries' historical responsibility as well as their current emissions, capabilities and capacities to contribute to tackling climate change, lies at the heart of the new climate treaty. The Paris Conference was the most immediate and timely opportunity to obtain a universal climate change agreement. Ultimately, the success of the Conference will be measured by its contribution to triggering the necessary actions to avoid passing an irreversible environmental tipping point – that is, to put the world on the track of staying below 2°C in temperature rise.

3.4 Specific questions

3.4.1 Implementation and CBDR

These interlinked deliberations contained several controversial moot points and issues, such as the provision of resources, participation of stakeholders, and differences in interpreting some agreed notions and principles. One major point revolved around the provision of means of implementation for the Paris Agreement and the SDGs. Provision of new, additional and adequate financial and technological resources was discussed in depth. In the context of the 2030 debate, it was a particularly sensitive point. The multifaceted nature of the new agenda and the overlap with other processes – for instance, the Financing for Development – made the discussions complex and laborious. Developing countries argued that the processes were distinct though interlinked and thus opposed the option to have a common resource pool as Means of Implementation for SDGs and other processes, including climate change.

Another controversial topic has been the interpretation of the principle of common but differentiated responsibilities (CBDR). The Kyoto Protocol specified reduction targets, but these apply only to developed countries (or Annex I Parties), since it was recognized that the principal responsibility for the current high levels of GHGs in the atmosphere lies with developed countries as a result of more than 150 years of industrial activity. The Protocol thus reflects CBDR, a principle of international

[72] UNEP, *The Emissions Gap Report. Are the Copenhagen Accord Pledges Sufficient to Limit Global Warming to 2° C or 1.5° C? A preliminary assessment* (UNEP, 2010), available at <http://www.unep.org/publications/ebooks/emissionsgapreport/pdfs/GAP_REPORT_SUNDAY_SINGLES_LOWRES.pdf> (visited 23 May 2016).

environmental law formalized in the outcome of the 1992 UN Conference on Environment and Development as one of the Rio principles,[73] as well as in Article 3, paragraph 1, of the UNFCCC itself. According to the principle, all states are responsible for addressing global environmental degradation (which is a global concern affecting all), yet, at the same time, states are not *equally* responsible due to wide differences in levels of economic development, capacities and resources.

The CBDR principle was at the centre of contentious debates during the climate change negotiations leading up to and at the Paris talks, as it had not adequately addressed the major GHG producers of recent decades – emerging economies such as Brazil, China, Indonesia, India and South Africa. The intensity of climate change has made it clear that emission reductions from developed countries alone will not be sufficient to limit global warming to below 2°C. With the universal nature and scope of the Paris Agreement, it will now be difficult to support this principle on the same grounds.

In the context of the 2030 Agenda, the developing countries argued that CBDR should be an underlying principle for the broader integrated agenda of sustainable development, including the environmental sphere. The developed states did not share this view. In the end, an agreement was reached with text in the political declaration which reaffirms the Rio principles – including CBDR – but without mentioning this principle explicitly. The agreement at Paris might indicate a compromise on this issue among the Parties, but the divergent and contentious interpretations of the role, extension and applicability of the CBDR principle will continue to be a moot point.

3.4.2 The role of the UN Environment

Through its mandate, the UN Environment has endeavoured to serve the international community as the leading global environmental authority that sets the global environmental agenda, that promotes the coherent implementation of the environmental dimensions of sustainable development within the UN system, and that serves as an authoritative advocate for the global environment. This mandate is not always easily fulfilled in today's complex world characterized by conflicting interests and widespread narratives focusing solely on economic issues instead of integrating them with the environmental and social dimensions of sustainable development. Nonetheless, the UN Environment has achieved some milestone results since its establishment,[74] which are briefly described below.

[73] 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. For more information, see, for instance, Tuula Honkonen, 'The development of the principle of common but differentiated responsibilities and its place in internaitonal environmental regimes' in Tuomas Kuokkanen *et al,* (eds), *International Environemntal Lawe-making and Diplomacy. Insights and overviews* (Routledge, 2016) 160-183.

[74] UNEP was founded in 1972 following the UN Conference on the Human Environment through UNGA Res. 27/2997 ('Institutional and financial arrangements for international environmental cooperation') of 15 December 1972. For more information, see, for instance, Donald Kaniaru, 'The development of the concept of sustainable development and the birth of UNEP' in Tuomas Kuokkanen *et al, International Environmental Law-making, supra* note 73, at 127-143; and Shafqat Kakakhel, 'An overview od milestones in international environmental diplomacy and suggestions for improved environmental governance' in Tuomas Kuokkanen *et al*, *International Environmental Law-making, supra* note 73, at 144-159.

The UN Environment has contributed to environmental awareness building, both among state actors and the public. An appropriate example is the creation of the Intergovernmental Panel on Climate Change, a scientific body responsible for assessing the scientific knowledge on climate change and its potential impacts. Its creation as a globally coordinated scientific cooperation body was a crucial breakthrough for global action on climate change. Apart from academia and science, the UN Environment actively engages with civil society and youth in order to jointly raise societal awareness on environmental issues and trends.

The UN Environment has contributed to and supported the strengthening of international environmental governance and law. At the time of the establishment of the United Nations, more than 70 years ago, protection of the environment was not on the international agenda. In the aftermath of the Second World War, the UN was tasked with focussing on issues of security, human rights and development. It was not until the 1970s that the environment first appeared in the UN work plan. Since then, the international community has established a large number of institutions for environmental governance and improved environmental law, both at the international and the national levels. This includes, but is not limited to, the adoption of multilateral environmental agreements, and declarations and other soft-law instruments. MEAs play a critical role in the overall framework of environmental law and complement national legislation and bilateral or regional agreements, forming the over-arching international legal framework for global efforts to address particular environmental issues. Some outstanding examples include the international conventions on chemicals: i) the Vienna Convention for the Protection of the Ozone Layer[75] and its Montreal Protocol[76] phased out the use of substances that deplete the ozone layer, thus stopping the loss of the Earth's protective atmospheric skin and hopefully leading to its recovery by the middle of this century; ii) the Basel,[77] Stockholm[78] and Rotterdam[79] Conventions established a regulatory scheme and international framework for the environmentally sound management of chemicals and waste throughout their life-cycle, including their production and use, transboundary movement, trade and disposal; and iii) the Minamata Convention on Mercury,[80]

[75] Convention on the Protection of the Ozone Layer, Vienna, 22 March 1985, in force 22 September 1988, 26 *International Legal Materials* (1985) 1529.

[76] 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://ozone.unep.org/>.

[77] 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>.

[78] Convention on Persistent Organic Pollutants, Stockholm, 22 May 2001, in force 17 May 2004, 40 *International Legal Materials* (2001) 532, <http://www.pops.int>.

[79] Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, Rotterdam, 11 September, 1998, in force 24 February, 38 *International Legal Materials* (1999) 1, <http://www.pic.int>.

[80] Minamata Convention on Mercury, Geneva, 19 January 2013, not yet in force, <http://www.mercury-convention.org/>.

aimed at protecting human health and the environment from the adverse effects of mercury (this being the most recently adopted MEA, agreed upon in 2013[81]).

At the 2012 UN Conference on Sustainable Development (Rio+20), UN member states reinvigorated their commitment to address environmental challenges by improving the institutional arrangements for sustainable development and by strengthening the environmental pillar of the UN system. This included a strengthened mandate for the UN Environment Programme as well as the establishment of the United Nations Environment Assembly (UNEA),[82] which guides the UN Environment as a governing body.[83] At this universal forum, environmental issues are discussed by the international community at the highest level.[84]

The UN Environment is mandated to work on a wide range of issues. The current programme of work of the UN Environment is structured around seven sub-programmes: 1) environment under review; 2) climate change; 3) disasters and conflicts; 4) ecosystem management; 5) environmental governance; 6) chemicals and waste; and finally 7) resource efficiency. To support the implementation of the 2030 Agenda and climate change Agreement, the UN Environment is focusing its efforts on crucial areas supporting transformation: green economy and sustainable consumption and production, incentivizing investment in sustainable development and facilitating climate adaptation, mitigation and finance.

The UN Environment's climate change sub-programme focuses on four main areas:

- Adaptation to climate change, which is crucial to reduce the vulnerability of countries and communities and to use ecosystem services as well as ecosystem based approaches to build natural resilience against the impacts of climate change and to secure livelihoods.
- Mitigation, meaning immediate action to limit climate change through emissions reduction, which is essential for safeguarding sustainable development gains. Sound policy, the use and scaling up of new technologies, the extension of renewable energy sources and increasing energy efficiency are at the core of mitigating climate change.

[81] 128 member States have signed the convention and 28 have ratified it as of 12 May 2016. See Minamata Convention on Mercury, 'Successful outcomes at INC7 pave the way for entry into force and COP1', available at <http://www.mercuryconvention.org/News/INC7outcome/tabid/5049/Default.aspx> (visited 25 May 2016).

[82] See http://www.unep.org/unea.

[83] See, for instance, Sylvia Bankobeza, 'Strengthening and Upgrading of the United Nations Environment Programme', in Tuula Honkonen, Melissa Lewis and Ed Couzens (eds), *International Environmental Law-making and Diplomacy Review 2013*, University of Eastern Finland – UNEP Course Series 13 (University of Eastern Finland, 2014) 73–84.

[84] The Second Session of UNEA (23–27 May 2016, Nairobi), considered the health and environment nexus in the 2030 Agenda under the overall theme 'healthy people, healthy environment'.

- Climate change finance. It is crucial to foster investment in low-carbon development and to re-direct investment choices from unsustainable to sustainable options and portfolios.
- REDD+. One particularly important element of both mitigation and adaptation is to safeguard the sustainable use of the global forests. The UN Programme on Reducing Emissions from Deforestations and Forest Degradation (UN-REDD),[85] jointly managed by the UN Environment, UN Development Programme (UNDP)[86] and Food and Agriculture Organization (FAO),[87] seeks to unlock co-benefits for emission reduction, biodiversity conversation and livelihoods through sustainable forest management.

Other, more specific, important initiatives of the UN Environment that contribute towards the goals under the four focus areas are:

- the 1 Gigaton Coalition, which aims at delivering annual emission savings of 1 gigaton of carbon dioxide equivalents annually through renewable energy and energy efficiency;[88]
- the Climate Technology Centre and Network (CTCN),[89] the operational arm of the UNFCCC Technology Mechanism,[90] which is hosted and managed by the UN Environment in collaboration with the UN Industrial Development Organization (UNIDO)[91] and aims at promoting the transfer and scaling-up of environmentally sound technologies for climate change mitigation and adaptation;
- the Climate and Clean Air Coalition (CCAC),[92] which aims at reducing short-lived climate pollutants, such as methane, black carbon and hydrofluorocarbons, in order to mitigate climate change and reduce health and economic impacts of such pollutants; and
- the UN Environment flagship publications informing the policymakers of climate change: The Emissions Gap Reports,[93] which help identify the gap between the emission commitments and the action needed to combat climate change; and the Adaptation Gap Reports[94] which identify the needs for adaptation to climate change.

In order to implement the Paris outcome and achieve sustainable development, it

[85] See <http://www.un-redd.org/>.
[86] See <http://www.undp.org/>.
[87] See <http://www.fao.org>.
[88] UNEP, 'Join the Coalition', available at <http://www.unep.org/energy/Portals/50177/Flyer_1Gigaton_07.pdf> (visited 25 May 2016).
[89] See <https://www.ctc-n.org/>.
[90] See <http://unfccc.int/ttclear/templates/render_cms_page?TEM_home>.
[91] See <http://www.unido.org>.
[92] See <http://www.ccacoalition.org/en/content/about-us>.
[93] See *supra* note 66.
[94] See <http://web.unep.org/adaptationgapreport/content/adaptation-gap-reports>.

will be imperative to transform economies and societies and adjust lifestyles to the impacts of climate change – an uphill battle and a challenge of unprecedented scale.

3.4.3 Green economy

One major instrument to promote such transformation will be the shift to a green economy. A green economy will improve human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. Low-carbon development, resource efficiency and social inclusiveness are at the heart of a green economy that will focus on expanding green sectors while 'greening' traditional economic activities.[95] To realize this ambition, four transformative changes will be crucial:

- to incorporate sustainability as a core criteria of investment and shift capital flows towards green investments;
- to make production patterns more efficient, cleaner and safer for humans and the environment;
- to shift towards more sustainable patterns of consumption; and
- to ensure a socially inclusive and equitable access to and distribution of environmental goods and services.

In other words, the green economy is about changing institutions and incentive structures for individual behavior. More than 65 countries worldwide have already embarked on green economy and related strategies.[96]

3.4.4 Financial needs for climate change agenda and SDGs

Considerable financing will be required to drive the transition to a green, inclusive economy.[97] It is estimated that the implementation of the SDGs will need annual investment between USD 5–7 trillion on a global scale. Around USD 1 trillion of additional investment to today's financing and investment habits is needed annually to 2030 to green new infrastructure in energy, transport, buildings and industry alone.[98] The World Bank report *Inclusive Green Growth: The Pathway to Sustainable Development*,[99] published in 2012, made similar estimates.

On a global scale, enough capital is available to realize the necessary investments.

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[95] UNEP, Towards a Green Economy. Pathways to Sustainable Development and Poverty Eradication (UNEP, 2011), available at <http://web.unep.org/greeneconomy/sites/unep.org.greeneconomy/files/field/image/green_economyreport_final_dec2011.pdf> (visited 25 May 2016).

[96] UNEP, *Uncovering Pathways towards an Inclusive Green Economy. A Summary for Leaders* (UNEP, 2015), available at <http://web.unep.org/greeneconomy/sites/unep.org.greeneconomy/files/publications/ige_narrative_summary_web.pdf> (visited 22 August 2016).

[97] To meet the investment needs of the SDGs, the global community needs a paradigm shift to move the discussion from 'billions' in overseas development assistance (ODA) to the 'trillions' in investments of all kinds: public and private, national and global, in both capital and capacity. See World Bank, 'Financing the Post-2015 Development Agenda', available at <http://www.worldbank.org/mdgs/post2015.html> (visited 25 May 2016).

[98] IMF, *Global Financial Stability Report. Moving from Liquidity- to Growth-Driven Markets* (IMF, 2014), available at <http://www.imf.org/external/pubs/FT/GFSR/2014/01/pdf/text.pdf> (visited 25 May 2016).

[99] The World Bank, *Inclusive Green Growth: The Pathway to Sustainable Development* (World Bank, 2012), available at <https://openknowledge.worldbank.org/handle/10986/6058> (visited 22 August 2016).

Worldwide capitals and assets are estimated to range around USD 300 trillion. Unfortunately, however, the majority of investments are still being channelled into resource intense economic activities. The UN Environment Programme's Finance Initiative (UNEP FI)[100] is working with private and public partners from the financial sector to explore ways of structuring incentives and aligning the financial system for sustainable investment. In addition to increasing overall investment into sustainable development, disinvestment from unsustainable assets is also crucial. The UN Environment is working with a large array of partners to promote the decarbonization of investment and asset portfolios.[101]

The UN Environment Programme's Inquiry into the Design of a Sustainable Financial System[102] gives insight into how sustainability can be embedded into the core of financial and capital markets, while at the same time increasing green finance, strengthening resilience and stability of markets and enhancing market practice and governance. Supported by a high-level Advisory Council of financial leaders,[103] the Inquiry looked in-depth at practice in more than 15 countries and across key segments of the financial system, such as banking, bond and equity markets, institutional investment, insurance and as monetary policy. Over a two-year period, the Inquiry worked with central banks, environment ministries and international financial institutions, as well as major banks, stock exchanges, pension funds and insurance companies.

The main findings of UNEP's Inquiry are that, first, a 'quiet revolution' is underway as financial policymakers and regulators take steps to integrate sustainable development considerations into financial systems to make them fit for the 21st century. Second, momentum is building and is largely driven by developing and emerging nations – including Bangladesh, Brazil, China, Kenya, and Peru – with developed country champions, including France and the UK. Third, amplifying these experiences through national and international action could channel private capital to finance the transition to an inclusive, green economy and support the realization of the Sustainable Development Goals.[104]

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[100] See <http://www.unepfi.org/>. UNEP FI is a global partnership between UNEP and the financial sector. Over 200 institutions, including banks, insurers and fund managers, work with UN Environment to understand the impacts of environmental and social considerations on financial performance. In addition, UNEP FI develops selective collaborations, it is UN-driven and finance sector-driven, with other partner organizations, with the aim to increase awareness and raise support for critical activities. The cross-cutting themes of the UN Environment are embedded throughout UNEP FI's activities, specifically in its thematic work areas of Climate Change, Ecosystems Management, Energy Efficiency and Social Issues. *Ibid*.

[101] UNEP's annual report for 2015 describes the Portfolio Decarbonization Coalition's commitment to decarbonize over USD600 billion of assets under management. See *UNEP Annual Report 2015*, available at <http://www.unep.org/annualreport/2015/en/index.html> (visited 25 May 2016) at 4.

[102] See <http://web.unep.org/inquiry/>. The Inquiry was launched in October 2015.

[103] *Ibid*.

[104] UNEP, 'UNEP Inquiry Shows How to Align Global Finance with Sustainable Development' (2015), available at <http://www.unep.org/newscentre/Default.aspx?DocumentID=26851&ArticleID=35480&l=en> (visited 27 May 2016).

4 The road ahead

According to Secretary General Ban Ki Moon, '[w]e are the first generation that can end poverty and the last one that can save our planet'.[105] The Paris Climate Agreement was signed by world leaders from 175 countries at the UN Headquarters on 22 April 2016. On this occasion, the Secretary General stressed that 'the poor and most vulnerable must not suffer further from a problem they did not create', and that 'climate action could help eradicate poverty, create green jobs, defeat hunger, prevent instability and improve the lives of girls and women.' However, he added, that the window for keeping the global temperature rise below 2°C, let alone 1.5°C, was closing and that intensified efforts were needed to decarbonize economies.[106] The next step was the coming into force of the Agreement after the requisite number of states completed the ratification process and formalities.[107]

The implementation of the 2030 Agenda will be followed up and reviewed at the High-level Political Forum. Modalities of the work of the HLPF are being formalized by member states to enable it to effectively fulfill its role.

The challenges faced by humanity today are too big and too complicated to be tackled effectively by governments working alone. Successfully implementing the ambitious climate agenda and achieving the SDGs will require action by all stakeholders. Climate change is an integrated part of the sustainable development agenda, as the 2030 Agenda has climate change reflected in many of its goals. This is one agenda now. Its implementation will also require an integrated framework and comprehensive approach. The UN development system constructed around the entire array of UN funds, programmes and agencies will need to align itself to serve and facilitate the Agenda's implementation. A team of independent advisors was appointed to examine the challenges and opportunities and make recommendations on the longer term positioning of the UN development system in the context of the 2030 Agenda.[108] Governments, civil society, the private and the public sector, academia and the scientific community will all play their roles through partnerships. The Independent Team of Advisers (ITA) presented their reports and recommendation to ECOSOC on 16 June 2016, recommending, among other measures: the establishment of a Sustainable Development Board; adoption of a Global Strategic Framework for UN Development System; negotiated pledges for Uniform National Discharge Stand-

[105] 'We Are the First Generation that Can End Poverty, the Last that Can End Climate Change', Secretary-General Stresses at University Ceremony', Secretary-General press release SG/SM/16800 (28 May 2015), available at <http://www.un.org/press/en/2015/sgsm16800.doc.htm>.

[106] Secretary-General's remarks to Signature Ceremony for the Paris Agreement, New York, 22 April 2016, available at <http://www.un.org/sg/statements/index.asp?nid=9641>.

[107] See the Editorial Preface of this *Review*.

[108] 'United Nations appoints independent advisors to position UN development system for 2030 Agenda', UN ECOSOC press release (12 February 2016), available at <https://www.un.org/ecosoc/sites/www.un.org.ecosoc/files/files/en/qcpr/press-release-independent.pdf> (visited 25 May 2016).

ards (UNDS); reform of the Resident Coordinator System; and enhanced regional coordination.[109]

The High Level Political Forum (HLPF) meeting under the auspices of ECOSOC adopted a ministerial declaration stressing that 'reducing vulnerability to climate change is a global challenge faced by all, an in particular those living in poverty' and also 'recognising the synergies of the Paris Agreement with the 2030 Agenda for Sustainable Development'.[110]

From the perspective of international environmental law, it is interesting to observe that the challenges in the full implementation of the Kyoto Protocol and the lack of an effective enforcement mechanism encouraged the Parties to the UNFCCC to move away from the compliance regime of the Kyoto Protocol to a voluntary framework of Intended Nationally Determined Contributions. It will be through the periodic 'increase in ambition' mechanism of the Paris Agreement and the follow-up and review process of the High Level Political Forum, assisted by voluntary national presentations on the implementation of SDGs, which will serve as the review mechanisms.

Through its enhanced mandate and as the lead UN agency dealing with the environment, the UN Environment is well positioned to play a crucial part in promoting transformational change in the implementation efforts of the 2030 Agenda and the Climate Change Agreement, just as it contributed to the deliberations and discussions in the run-up to these milestone agreements.

[109] 'ECOSOC Dialogue on longer-term positioning of UN Development System in the context of the 2030 Agenda for Sustainable Development Findings and Conclusions' (2016), available at <https://www.un-.org/ecosoc/sites/www.un.org.ecosoc/files/files/en/qcpr/ita-findings-and-conclusions-16-jun-2016.pdf> (visited 22 August 2016).

[110] Draft ministerial declaration of the high-level segment of the 2016 session of the Economic and Social Council and the high-level political forum on sustainable development, convened under the auspices of the Council, submitted by the President of the Council, Oh Joon (Republic of Korea), available at <http://www.un.org/ga/search/view_doc.asp?symbol=E/2016/L.24&Lang=E> (visited 22 August 2016) para. 19.

Climate Finance under the UNFCCC

Erik Haites[1]

1 Introduction

Climate finance is fundamental to international cooperation to address climate change. Under the United Nations Framework Convention on Climate Change (UNFCCC)[2] developed countries, whose prosperity stems in part from historic greenhouse gas emissions, commit to provide financial support for various actions implemented by developing countries. These climate finance flows from developed to developing countries are, however, only part of the picture. Most climate finance consists of mitigation and adaptation measures financed domestically by public and private entities in all countries.

This paper begins with an overview of climate finance. There is no agreed operational definition of climate finance, neither in the general literature nor for the UNFCCC. Climate finance is generally understood to mean finance for measures intended to address climate change. This concept poses several definitional challenges and measurement difficulties that are discussed in the next section.

Interest in climate finance relates, firstly, to the global total; secondly, to flows from developed to developing countries; and, thirdly, to commitments under the UNFCCC. The global total is an indicator of progress in limiting climate change and its impacts. Flows to developing countries reflect efficiency (low cost emission reductions tend to be more prevalent in developing countries) and equity (developed countries are better able to pay for mitigation and adaptation measures) issues.[3] Climate finance under the UNFCCC reflects the commitments of Annex II Parties to provide financial support to non-Annex I Parties for mitigation, costs of adaptation

[1] MBA (McGill) PhD (Purdue); Margaree Consultants Inc., Toronto, Canada; e-mail: Ehaites@margaree.ca.

[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] Since developed countries became rich using fossil fuels it is also argued that they have a historic responsibility to finance actions to address climate change.

and other purposes. These three perspectives are discussed in parts 3, 4 and 5 of the present paper respectively.

The Kyoto Protocol[4] created the Clean Development Mechanism (CDM), which allows mitigation projects in non-Annex I countries to earn credits that can be sold to developed countries. Although the CDM is not always included in a discussion of climate finance, it did lead to implementation of a large number of projects involving significant investment in, and financial flows to, non-Annex I countries. The CDM and its associated financial flows are discussed in part 6.

At the 15th Conference of the Parties (COP) in Copenhagen in 2009, developed countries committed to a goal of mobilizing USD 100 billion per year by 2020 to finance measures to address climate change in developing countries. This pledge is discussed in part 7.

This paper concludes with a discussion of climate finance under the UNFCCC post-2020. The concluding section discusses the climate finance provisions of the Paris Agreement adopted in December 2015.

2 Definitional challenges

There is no agreed operational definition of climate finance, either in the general literature or for the UNFCCC. Climate finance is generally understood to mean finance focused on mitigation of anthropogenic greenhouse gas emissions or adaptation to the adverse impacts of climate change. The UNFCCC Standing Committee on Finance proposed the following definition in 2014: '[c]limate finance aims at reducing emissions, and enhancing sinks of greenhouse gases and aims at reducing vulnerability of, and maintaining and increasing the resilience of, human and ecological systems to negative climate change impacts'.[5]

Moving from such a conceptual definition to an operational definition poses numerous challenges. To identify finance for mitigation, a list of measures that reduce anthropogenic greenhouse gas emissions or that enhance removals by sinks is typically specified. Organizations that compile climate finance data agree on most of the measures; including renewable energy, energy efficiency and afforestation/reforestation, for example. Differences remain, however. Some organizations include efficient coal-fired generating units as mitigation measures while others exclude them. Energy efficiency measures pose further challenges. Efficiency must be assessed relative

[4] 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.

[5] UNFCCC Standing Committee on Finance, 'Biennial Assessment and Overview of Climate Finance Flows 2014', available at <http://unfccc.int/cooperation_and_support/financial_mechanism/standing_committee/items/8034.php> (visited 7 March 2016) at 5.

to a baseline, such as the average efficiency of the existing equipment or the average efficiency of new equipment. The efficiency measures often are incorporated into a vehicle, appliance or equipment so the cost of the efficiency measures, the climate finance, is typically part of a larger investment. For instance, the cost of the energy efficiency measures embodied in an efficient automobile are an unknown part of the purchase cost of the vehicle.

Organizations that compile climate finance data have not been able to agree on a list of adaptation measures. Rather, specific projects are reviewed to determine whether they have been modified to address anticipated adverse impacts of climate change; for instance, whether the location or design of a road has been altered to cope with anticipated adverse impacts of climate change such as sea level rise or increased rainfall intensity. If a project has been modified to adapt to anticipated climate change, the extra costs are considered to be climate finance. Deciding whether modifications have been made to address anticipated adverse impacts of climate change and, if so, what the extra costs are can require considerable judgment. So the estimate of the amount of climate finance can depend on the experts compiling the data.

Organizations that compile data on climate finance need to delineate the scope of their efforts in other ways as well. The costs associated with capacity-building and technology transfer related to adaptation and mitigation are consistent with the conceptual definition of climate finance, but identification of specific activities that qualify and their costs may be too difficult. Guarantees related to adaptation or mitigation measures, such as a guarantee related to the performance of wind turbines, may be essential to implementation of the project. But if no payment related to the guarantee is made, does it constitute climate finance? Conceptually, there is an imputed cost to a guarantee, like an insurance premium, but it may be impractical to estimate or compile these imputed costs.

Having decided on an operational scope of climate finance, data must be collected from numerous sources and be integrated. This presents further challenges because there is no single tracking system for climate finance. Data sources use different definitions and have different coverage, leading to gaps and duplication. The best data relate to financial commitments (rather than disbursements) for renewable energy investments and projects funded bilaterally by governments, multilateral development banks (MDBs) or climate funds. As noted above, finance for energy efficiency is difficult to collect because the cost is part of larger investment. Data on finance for adaptation is only available from some sources, such as MDBs, that explicitly consider project modifications to address potential adverse impacts.

Very limited data is available on private climate finance except for investment in renewable energy; and, for most countries, very limited data is available on government (national, sub-national, and municipal) climate finance.

In practice, the most readily available data relate to investment in renewable energy and incremental investment to adapt projects with bilateral or multilateral public funding to the adverse impacts of climate change. Data relating to commitments are better than those relating to disbursements, but commitments may differ from the finance actually disbursed. Data on the total investment may not distinguish the different instruments used. Hence, if a wind farm is financed using a mix of grants, concessional loans, commercial loans, equity and guarantees, a dollar of finance provided using each of these instruments is implicitly treated as being equivalent even though the economic value to the recipient is very different. Data often relate to different time periods (calendar year, fiscal year, and so forth) and the exchange rates used when currencies are converted may be for different dates.

In summary, organizations that compile data on climate finance use their own definitions. While there is increasing convergence, differences remain. Estimates of climate finance also depend on the data available. The most readily available data relate to investment in renewable energy and incremental investment for adaption projects with bilateral or multilateral public funding. Data on private climate finance and government climate finance is very limited for most countries. Available data mostly cover investment commitments implicitly treating all instruments equivalently.

3 Global climate finance

Global climate finance, the amount of climate finance deployed globally during a year, is an indicator of progress in limiting climate change and its impacts. At some level, global climate finance for mitigation measures should lead to a decline in anthropogenic greenhouse gas emissions. The finance needed to reduce greenhouse gas emissions is affected, of course, by the resources devoted to increasing fossil fuel use and other sources of greenhouse gas emissions. Today, subsidies for fossil fuel use and investment in fossil fuel related infrastructure substantially exceed global climate finance.[6]

Estimates of global climate finance are compiled by the Climate Policy Initiative (CPI)[7] and published annually in its landscape of climate finance reports. The latest report, *Global Landscape of Climate Finance 2015*,[8] presents its estimate of global climate finance for 2014, reflecting a mix of 2013–2014 data. After levelling off in 2012, and declining in 2013, the amount of climate finance invested around the

[6] *Ibid*. at 55.
[7] See <http://climatepolicyinitiative.org/>.
[8] Barbara K. Buchner *et al*, *Global Landscape of Climate Finance 2015* (CPI, 2015), available at http://climatepolicyinitiative.org/publication/global-landscape-of-climate-finance-2015/ (visited 7 March 2016). Related reports are available for 2011 through 2014.

world in 2014 increased by 18 per cent to an estimated USD 391 billion.[9] Estimates for 2011 through 2013 range between USD 330 and 360 billion.

The UNFCCC Standing Committee on Finance (SCF), drawing extensively on the CPI's estimates, reported global climate finance for 2011 and 2012 at USD 340 to 650 billion per year.[10] The main difference between the SCF and CPI figures is the estimated investment for energy efficiency. CPI includes only observable expenditures for energy efficiency, such as government and utility payments to participants in energy efficiency programs. These amount to about USD 30 billion per year. The SCF includes estimates of the imputed investment in energy efficiency – the portion of the investment in buildings, vehicles and equipment for energy efficiency – which range up to USD 330 billion per year.

Regardless of which estimate of the total amount is used, global climate finance is mostly (about 75 per cent) mobilized within the country where it is invested. Most (about 60 per cent) of the climate finance is private investment. Most climate finance (about 75 per cent) consists of commercial loans, project equity and balance sheet finance invested on market terms. Renewable energy and energy efficiency account for most (about 70 per cent) of total climate finance, partly reflecting the availability of data. Adaptation currently accounts for about 10 per cent of climate finance, but this share is growing.

The *Global Landscape of Climate Finance* reports for 2011 through 2014 indicate that global climate finance is deployed almost equally in OECD and non-OECD countries. Information on the geographic distribution of energy efficiency investment is not available, so the overall distribution is not known.

4 Climate finance flows from OECD to non-OECD countries

The UNFCCC SCF estimates annual climate finance flows from OECD[11] to non-OECD countries at USD 40 to 175 billion for 2011 and 2012.[12] Of that amount, USD 35 to 50 billion flows through public institutions. Information on international private climate finance flows is very sparse and so the range of the estimates is very large.[13]

Data for international financial flows from OECD to non-OECD countries is quite good. Such finance is provided by OECD government departments and agencies (such as aid agencies and bilateral development banks), multilateral development

[9] *Ibid*. at 1.
[10] UNFCCC SCF, 'Biennial Assessment and Overview', *supra* note 5, at 7.
[11] Organisation for Economic Cooperation and Development; see, generally, <http://www.oecd.org/>.
[12] UNFCCC SCF, 'Biennial Assessment and Overview', *supra* note 5, at 7.
[13] *Ibid*. at 49.

banks, and climate funds. Determining the climate finance component of these flows and eliminating double counting are the challenges. Some institutions, especially bilateral and multilateral development banks, estimate the climate finance share of each project.

In contrast, development assistance provided by OECD governments reported to the OECD Development Assistance Committee (DAC)[14] classifies projects as having climate change as a 'principal' or 'significant' objective and records the total value of the project in the relevant category. This overstates the amount of climate finance provided by these projects. However, development assistance reported to the OECD DAC must be a grant or 'concessional' loan and so these projects do not cover all of the climate finance provided by OECD governments.[15] Loans, export credits and other support that does not meet the concessionality threshold can be reported as 'other official flows'.

In addition to bilateral development assistance, OECD governments report contributions to climate funds and MDBs. Thus, when aggregating data on climate finance provided by OECD governments, MDBs and climate funds, care must be exercised to avoid double counting. Finance provided by MDBs consists mainly of loans and the terms are often similar to those available to the country on the commercial market.

Some international private flows, such as foreign direct investment, are tracked but most are not. Even where data are available, estimating the share that constitutes climate finance is difficult due to the existing classification systems. Private finance typically flows to a company in the recipient country, which complicates attribution. Suppose a company in a non-OECD country obtains funds from a bank or investor in an OECD country to build a wind farm. The question then arises whether the international flow should be categorized as climate finance, or simply as finance provided to a company in the recipient country.[16] A research collaborative effort coordinated and hosted by the OECD secretariat is working to improve measurement and reporting of international private finance flows and estimation of the climate finance share of those flows.[17]

[14] See <http://www.oecd.org/dac/developmentassistancecommitteedac.htm>.

[15] See OECD, 'Development finance standards – understand how we measure and collect data', available at <http://www.oecd.org/dac/financing-sustainable-development/understanding-development-finance.htm>. The OECD DAC has agreed to count only the grant portion of concessional loans rather than the full face value.

[16] With enough information a reasonable classification may be possible. If the only activity of the non-OECD company is to build and operate a wind farm and the funds provided are secured by the wind turbines, the funds could be classified as climate finance. If the recipient company is a larger enterprise, say an electric utility, and repayment of the funds is a general obligation of the company, it becomes difficult to claim the flow as climate finance.

[17] See OECD Research Collaborative, 'Tracking Private Climate Finance', available at <http://www.oecd.org/env/researchcollaborative/> (visited 7 March 2016).

An additional issue for Annex II governments is the portion of the international private climate finance that contributes toward government commitments under the UNFCCC. Conceptually, this requires a policy or action by an Annex II government that leads to a private entity investing climate finance in a non-Annex I country. To date, estimates of the private climate finance mobilized by Annex II countries have been limited to the private co-finance for projects with public climate finance, such as the amount of private finance for a wind farm in a non-Annex I country that also receives funds from a bilateral development bank.

5 Climate finance under the UNFCCC

5.1 Introduction

As Parties to the UNFCCC, Annex II (developed) countries commit to provide financial support for various actions implemented by non-Annex I (developing) countries. Specifically, under Article 4, Annex II Parties commit to cover 'agreed full incremental costs' of mitigation measures, and to assist in 'meeting costs of adaptation to the adverse effects' of climate change and the full costs of national inventories and reporting by developing countries (non-Annex I Parties).

Article 11 of the Convention establishes a financial mechanism for the provision of financial resources on a grant or concessional basis. The Conference of the Parties determines its policies, programme priorities and eligibility criteria. Operation of the financial mechanism is entrusted to one or more existing international entities selected by the COP. At present, the operating entities of the financial mechanism are the Global Environment Facility (GEF)[18] and the Green Climate Fund (GCF).[19] GEF also manages the Least Developed Countries Fund (LDCF)[20] and the Special Climate Change Fund (SCCF).[21, 22]

Climate finance is not defined in the Convention or subsequent decisions by the COP. Article 4 specifies that the financial resources provided by Annex II Parties should be 'new and additional' to address concerns that climate finance commitments might result in diversion of development assistance. Subsequent COP decisions further specify that the financial resources be 'adequate, predictable and sustainable'.[23]

[18] See <https://www.thegef.org>.
[19] See <http://www.greenclimate.fund/home>.
[20] See <https://www.thegef.org/gef/LDCF>.
[21] See <https://www.thegef.org/gef/SCCF>.
[22] The Adaptation Fund established under the Kyoto Protocol is managed by its own board and is not part of the financial mechanism of the Convention.
[23] See, for instance, Art. 1(e)(i) of the Bali Action Plan (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).

Annex II Parties are required to report the climate finance they provide to meet commitments under the Convention in their national communications and, since 2014, in their biennial reports (BRs), though some Parties do not adhere to the specified formats and reporting periods. Each Party decides what it will report; in effect each Party uses its own definition of climate finance. Parties do not specify the types of financial support included or excluded, so the definitions used are not known. However, the amounts reported are of the same order of magnitude as the climate finance reported to the OECD DAC.

Only a small share of the climate finance provided by Annex II Parties flows through the financial mechanism. During 2011 and 2012, for instance, less than USD 0.6 billion per year was disbursed by the Global Environment Facility as the operating entity of the financial mechanism.[24] The Green Climate Fund was not yet operational at that time. Operationalization of the GCF in 2015 will increase the amount of climate finance that flows through the financial mechanism substantially, but the share will still be a small share of total UNFCCC climate finance.

Article 11 of the Convention also allows 'financial resources related to implementation of the Convention [to flow] through bilateral, regional and other multilateral channels'. The vast majority of the climate finance provided by Annex II Parties flows through such channels. During 2011 and 2012, Annex II Parties reported that they provided climate-specific finance of approximately USD 17 billion annually to developing countries.[25] In addition, they provided almost USD 12 billion per year of 'core general' funding to multilateral institutions.

Although not required to do so by the Convention, some Annex I (but not Annex II) Parties provide climate finance to developing countries through bilateral and multilateral channels and contribute to climate funds and the operating entities of the financial mechanism of the Convention. In addition, a few OECD members, such as South Korea, provide climate finance to developing countries, even though as non-Annex I Parties they are eligible to receive climate finance under the Convention. The amount of climate finance provided by such Annex I and non-Annex I Parties remains but a small share of the total.

Non-Annex I Parties report the climate finance they receive in their national communications and, beginning in 2015, in their Biennial Update Reports (BURs). The first set of BURs is not yet available, at the time of writing, but large differences are likely between the amounts of climate finance that Annex II Parties report they have provided and the amounts that non-Annex I Parties report they have received. The differences will be due to at least two factors. First, most climate finance provided by Annex II Parties goes to entities other than non-Annex I national governments,

[24] UNFCCC SCF, 'Biennial Assessment and Overview', *supra* note 5, at 7.
[25] *Ibid*. Table II-5, at 42-43.

such as international organizations and other entities in the recipient country, and the non-Annex I national government may not be aware of these flows. Second, Annex II Parties often report commitments while the non-Annex I government is better able to document receipts, with the result that the amounts and timing of the finance reported for a project can differ even if total disbursements equal the commitment.

In 2013 the COP agreed to implement a more structured process to review climate finance during the 2014–2020 period.[26] Every two years, beginning in 2014:

- all Parties report on climate finance provided/received in their BR or BUR;
- the Standing Committee on Finance prepares its biennial assessment of climate finance;
- developed country Parties submit updated strategies for scaling up the climate finance they plan to provide; and
- a High Level segment of the COP considers climate finance.

The process was only partially successful in 2014. All Annex II Parties, and some other Annex I Parties, reported the climate finance they provided during 2011 and 2012 in their BRs. These reports were compiled and summarized by the UNFCCC Secretariat. The SCF prepared its first (2014) biennial assessment and overview of climate finance flows report. Most Annex II Parties – Canada, the European Union, Japan, New Zealand, Norway, Switzerland, and the United States – submitted reports on their plans to scale up climate finance. In most cases the plans were neither comprehensive nor concrete. The Secretariat prepared a compilation and synthesis of those plans, and this was published in May 2015.[27] Thus, while COP 20 (December 2014) included a High Level segment on climate finance, it did not have good information on planned changes to provision of climate finance by Annex II Parties. Consequently, the COP requested Annex II Parties to submit climate finance plans with more quantitative and qualitative information in 2016.[28]

5.2 The Clean Development Mechanism

The Kyoto Protocol created the Clean Development Mechanism (CDM), which allows mitigation projects in non-Annex I countries to earn emission reduction credits that can be sold to developed countries for use in meeting their national emissions limitation commitments. As of October 2015, over 7,500 projects in almost 100

[26] 'Long-term climate finance', UNFCCC Dec. 3/CP.19 (2014) paras 10-13.
[27] 'Compilation and synthesis of the biennial submissions from developed country Parties on their strategies and approaches for scaling up climate finance from 2014 to 2020', UN Doc. FCCC/CP/2015/INF.1 (2015).
[28] 'Long-term climate finance', UNFCCC Dec. 5/CP.20 (2015) paras 10-11.

countries had been registered.[29] Those projects have reduced greenhouse gas emissions by almost 1.62 billion tCO_2e. The estimated investment in registered CDM projects is over USD 420 billion. Information on the shares of the investment mobilized in the host country and in developed countries is not available.

Once a project's emission reductions have been independently certified, a corresponding number of credits – certified emission reductions (CERs) – are issued by the CDM Executive Board. Of the 1.62 billion CERs issued, about 0.8 billion CERs have been purchased, approximately half by firms covered by emissions trading systems and half by Annex I governments. Firms in the European Union, New Zealand and Swiss emissions trading systems could submit CERs to the government to help meet their compliance obligations.[30] Annex I governments can use the CERs received from firms as well as CERs purchased directly to help meet their national emissions limitation commitments under the Kyoto Protocol.

Prices for individual transactions are not public, but data on market prices is available.[31] Most of the CER purchases occurred between 2009 and 2013. During that period the market price was about USD 8/CER, so the revenue from the CER sales probably exceeded USD 6 billion in total, or about USD 1.2 billion/year. In 2012, as the supply of CERs (and other compliance units) increased and participants in the EU emissions trading system began to approach the limit on compliance use, the price of CERs began to fall.

Since 2013 the market price has been well below USD 1/CER. Despite the depressed market price, most CDM projects continue to operate, generating annual emission reductions of about 750 $MtCO_2e$ per year.[32] Due to the costs involved in certification and issuance, only 270 million CERs were issued during 2014. While the CERs may be used to offset emissions in developed countries, the remaining reductions, about 480 $MtCO_2e$ or approximately 1 per cent of global emissions in 2014, represent an unintended, albeit welcome, net reduction in global emissions.

Although the CDM is not always included in a discussion of climate finance, it did lead to the implementation of a large number of projects involving significant

[29] Data on CDM projects is available from the UNEP DTU CDM Pipeline Overview, available at <http://www.cdmpipeline.org/>. Number of projects, Analysis sheet Table 1; number of countries with registered projects, Analysis sheet Table 4, line 218 column H; emission reductions, Analysis sheet Table 2, column H 'issued kCERs' which are verified reductions for which credits (CERs) have been issued; and investment, Invest sheet line 198, column K.

[30] For information of the use of CERs by emissions trading system participants, see Erik Haites, 'Experience with Linking Greenhouse Gas Emissions Trading Systems', Wiley Interdisciplinary Reviews (WIREs) Energy and Environment (2015).

[31] Market prices are reported by Tendances Carbone, available at <http://www.i4ce.org/>.

[32] Carsten Warnecke, Thomas Day and Ritika Tewari, *Impact of the Clean Development Mechanism: Quantifying the current and pre-2020 climate change mitigation impact of the CDM* (New Climate Institute, 2015), available at <http://newclimate.org/2015/11/30/impacts-of-the-clean-development-mechanism/> (visited 9 March 2016) at ii.

investment in many non-Annex I countries. Between 2009 and 2013 it led to financial flows of about USD 1.2 billion/year to non-Annex I Parties, roughly double the climate finance provided through the financial mechanism of the Convention.

5.3 The Copenhagen Pledge

In 2009, as part of the Copenhagen Accord, developed countries committed

> [i]n the context of meaningful mitigation actions and transparency on implementation, …. to a goal of mobilizing jointly USD 100 billion dollars a year by 2020 to address the needs of developing countries. This funding will come from a wide variety of sources, public and private, bilateral and multilateral, including alternative sources of finance.[33]

This commitment is not operational. It is a commitment to a 'goal of mobilizing', not a commitment to 'provide'. Contributing countries are not identified and there are no country-specific financial commitments. What types of financial commitments – which instruments and actions supported – count toward the USD 100 billion goal are not specified. How to calculate the potential contribution of private climate finance is not clear. Developing countries have been pushing, so far without success, for interim targets through the long-term finance work programme.

In October 2015, the OECD and CPI released a report on public and private climate finance mobilized by developed countries for developing countries.[34] The report estimates that such climate finance 'reached USD 61.8 billion in 2014, up from USD 52.2 billion in 2013'.[35] The 2014 estimate consists of USD 23.1 billion of bilateral assistance, USD 20.4 billion of multilateral assistance, USD 1.6 billion of export credits and USD 16.7 billion of private finance. The report develops a methodology that attributes approximately 85 per cent of the multilateral assistance to developed countries.[36] Private finance is limited to the private funding of bilateral and multilateral climate projects. Bilateral and multilateral projects each account for roughly half of the private finance.

An independent review of issues related to what kinds of flows should count toward the USD 100 billion goal is provided by Bodnar, Brown and Nakhooda.[37] A review

[33] 'Copenhagen Accord', UNFCCC Decision 2/CP.15 (2010) para. 8.

[34] OECD and Climate Policy Initiative, "Climate finance in 2013-14 and the USD 100 billion goal (OECD, 2015), available at <http://www.oecd.org/environment/cc/OECD-CPI-Climate-Finance-Report.htm> (visited 9 March 2016).

[35] *Ibid*. at 10, figure 1.

[36] *Ibid*. at 30, Part III.

[37] Paul Bodnar, Jessica Brown and Smita Nakhooda, 2015, 'What Counts: Tools to Help Define and Understand Progress Towards the $100 Billion Climate Finance Commitment' (Climate Policy Initiative, Overseas Development Institute and World Resources Institute, 2015), available at <http://www.odi.org/publications/9504-counts-tools-define-understand-100-billion-climate-finance-commitment> (visited 12 April 2016).

of the OECD/CPI report by India's Ministry of Finance questions the accuracy, methodology and verifiability of the numbers reported.[38]

Several developed countries subsequently announced plans to increase the climate finance they provide to developing countries, but it is not yet clear whether the goal of USD 100 billion in 2020 will be achieved.

6 Linkages between climate finance and development assistance

Development assistance focuses on poverty alleviation in developing countries through more education, better health care, improved infrastructure, modern energy supply and economic development of various sectors. Development assistance is provided bilaterally by developed countries, multilateral development banks and international charities. The OECD development assistance committee tracks development assistance provided by member countries. The DAC requires that development assistance exceed a concessionality threshold. Bilateral development assistance for 2011 and 2012 was USD 90 to 100 billion.[39] For the same years, MDBs provided USD 160 to 180 billion, mostly as loans.

Most climate finance provided to developing countries qualifies as development assistance and is included in the above figures. Approximately 20 to 25 per cent of bilateral development assistance and 10 to 15 per cent of MDB commitments are climate-related.[40]

Development projects can be adapted to the future climate. For example, agricultural practices can be adapted to the anticipated future climate. However, modifying a development project so that it is better suited to the anticipated future climate may not be the best adaptation strategy. A more robust adaptation strategy could include a variety of adjustments to cope with the anticipated climate, such as crop diversification, pest management, and water management measures, or an entirely different development strategy, such as switching from crops to livestock production.

Development may lead to higher greenhouse gas emissions. Expansion of cement production and electricity generation can increase emissions. Higher incomes tend to lead to greater use of private passenger vehicles which raises greenhouse gas emissions.

[38] Ministry of Finance, Climate Change Finance Unit, 'Climate Change Finance. Analysis of a Recent OECD Report: Some Credible Facts Needed' (2015). The views and analysis contained in this Discussion Paper do not necessarily reflect the views of the Government of India.

[39] Erik Haites, 'Aligning Climate Finance and Development Finance for Asia and the Pacific: Potential and Prospects', Sustainable Development Working Paper 33 (Asian Development Bank, 2014), available at <www.adb.org/sites/default/files/publication/152437/sdwp-033.pdf> (visited 12 April 2016), at 21, Table 7.

[40] *Ibid*.

Development and combatting climate change (mitigation and/or adaptation) clearly are not the same. However, development projects may, or may be modified to, contribute to mitigation and/or adaptation. Mitigation and adaptation projects likewise may have development benefits. The diversity of development projects means that the overlap ranges from negligible, treatment of HIV/AIDS for instance, to almost complete, as in the case of renewable energy supply.

Conceptually, it can be difficult to classify a project as being development or as combatting climate change. Provision of seeds for drought resistant crops, for instance, could be a development project or an adaptation project. In practice, the distinction is often easy because development and climate change projects are often managed separately. Development and climate change projects may have different funding sources with their own priorities and administrative processes, and, often, different national approval processes.

7 Climate finance post-2020

Under the Paris Agreement, adopted at COP21 in December 2015, all Parties propose national actions to address climate change. The actions are expected to become more ambitious over time in response to five yearly assessments of collective progress in limiting the global average temperature increase. As national commitments become more ambitious more countries are likely to contribute climate finance and/or fewer countries are likely to receive financial support to help implement their commitments. However, the aggregate amount of climate finance could rise over time due to the scale and cost of the mitigation, adaptation, loss and damage, technology transfer, and capacity-building efforts.

The main provisions related to climate finance are found in Article 9 of the Paris Agreement and a corresponding section of the COP decision.[41] The Agreement reaffirms the obligations of developed countries under the Convention to provide climate finance to developing countries. In addition, other countries are invited to provide climate finance voluntarily. It also states that climate finance should aim to achieve a balance between adaptation and mitigation. Parties that provide climate finance will be expected to submit biennial reports on their projected levels of public financial resources for developing countries.

The COP decision commits the COP to set a new collective quantified climate finance goal in excess of USD 100 billion per year by 2025, taking into account the needs and priorities of developing countries. The other provisions of the COP decision focus mainly on ensuring that the existing institutions and arrangements to deal with climate finance continue under the Paris Agreement.

[41] *Ibid*. paras 53-65.

Thus, climate finance under the Paris Agreement is likely to maintain the biennial cycle of reporting and assessment established for 2014–2020 but without a commitment to a High Level segment of the COP to consider climate finance. In addition, climate finance will be an element of the five yearly stock of collective progress which may lead to revisions to the collective climate finance goal although any such goal is unlikely to be more operational than the Copenhagen pledge of USD 100 billion per year by 2020. Many international funding processes, including the UN budget and GEF Trust Fund replenishment, operate on a two to four replenishment cycle. It appears that climate finance is moving to a similar structure taking into account its diverse sources and multiplicity of channels through which it flows.

8 Conclusions

Finance is essential to efforts to address climate change. The 1992 United Nations Framework Convention on Climate Change included commitments by Annex II Parties to provide financial resources to developing countries and established a financial mechanism for this purpose. Operation of the financial mechanism was delegated to the Global Environment Facility and two special funds – the LDCF and SCCF. But climate finance was not operationally defined and not systematically tracked. And the climate finance needed was not known.

That began to change about ten years ago with the UNFCCC report on *Investment and Financial Flows to Address Climate Change*.[42] That paper reviewed existing and projected investment flows and financing relevant to the development of an effective and appropriate international response to climate change. It found that the additional investment and financial flows needed to address climate change were large compared with the funding. That provided the context for the Copenhagen pledge to aim to mobilize USD 100 billion per year for climate action in developing countries.

The COP devoted the next few years, 2010 to 2013, to elaborating the Convention's institutional structure for dealing with finance. It created the Green Climate Fund and the Standing Committee on Finance and established the biennial process to review climate finance during the 2014–-2020 period. The COP also established a 'long-term finance' process to discuss possible approaches to tracking progress toward the 2020 goal of USD 100 billion.

Several initiatives outside the Convention have enhanced our understanding of climate finance over the past decade. The OECD DAC began to track aid projects with climate mitigation and adaptation objectives. The multilateral development

[42] UNFCCC, 'Investment and Financial Flows to Address Climate Change' (2007), available at <unfccc.int/resource/docs/publications/financial_flows.pdf> (visited 12 April 2016)

banks and the member institutions of the International Development Finance Club (IDFC)[43] followed a few years later. The Climate Policy Initiative initiated its annual estimates of global climate finance. Several multilateral climate funds that channel funds from developed to developing countries outside the Convention have been established.

Although there are huge gaps and uncertainties in the data, we now have a much better picture of global climate finance. Most climate finance is private and is mobilized and invested domestically in developed and developing countries. Climate finance flows from developed to developing countries are only a small share of the global total. Furthermore, the flows under the Convention are only part of those flows to developing countries.

The biennial process for climate finance review for 2014–2020, which is expected to continue under the Paris Agreement, provides the COP with an overview of climate finance through the Biennial Assessment and Overview of Climate Finance Flows prepared by the Standing Committee on Finance. The COP can use this information to address climate finance flows under the Convention through guidance to the GEF and the GCF as well as general guidance to Parties for their bilateral climate finance. Some of the institutions are new and the process is in its infancy, so it is not yet clear how well it will work.

[43] See <https://www.idfc.org/>.

The 'Securitization' of Climate Change: Relevance and Implications for the Global Climate Regime

Mohamed Behnassi[1]

1 Introduction

In 2016, a group of scientists convened by the International Union of Geological Sciences (IUGS)[2] were tasked to decide whether we have reached a new geological epoch in our planet's history. Although we have officially been in the Holocene epoch since the last major ice age 11,700 years ago, an emerging outlook has claimed that we are now in an era of human impact – the age of man, or the 'Anthropocene'. The precise start date of the Anthropocene is still under debate: was it 1610, when Antarctic ice cores demonstrated a notable dip in atmospheric carbon dioxide, likely as a consequence of European colonization and development of the Americas? Was it the late 18th century, with the start of the Industrial Revolution? Was it over the last 70 years, when industrial chemicals became pervasive and nuclear weapons testing created a rock layer with high proportions of radioactive isotopes? Or was it some 8,000 years ago at the advent of early agriculture?[3] Despite the disagreement over these details, consensus is growing regarding the fact that humans are changing the environment on a planetary scale like never before. And with our species' mounting biogeophysical impact on the Biosphere, with potential security ramifications, there is a need to explore the plausible scenarios and act accordingly.

[1] PhD (University Ibn Zohr); Associate Professor and Director of the Research Laboratory on Territorial Governance, Human Security and Sustainability (LAGOS), Ibn Zohr University of Agadir; Director of the Center for Research on Environment, Human Security and Governance (CERES), Morocco; e-mails: behnassi@gmail.com, m.behnassi@uiz.ac.ma. NOTE: This paper underwent a formal anonymous review process, through two anonymous reviewers. The reports of these reviewers, and any relevant further correspondence, are kept on file with the editors.

[2] The IUGS is the professional organization charged with defining the Earth's time scale (for more information, see <http://www.iugs.org>).

[3] Christine Croft *et al,* 'Editors' Note: The Era of Man: Environmental Security on a Changing Planet', *SAIS Review of International Affairs*, 35(1) (2015) 1-4.

According to Croft *et al*,[4] the relation between security and the environment is complex and multifaceted, ranging from population dynamics, to energy and cyber security, to rising sea levels and patterns of migration, to illegal logging, wildlife trafficking, resource security, and terrorist financing. Among these issues, this paper focuses on climate change, which is an environmental issue with far-reaching societal and geopolitical ramifications. The issue has intensely captured the attention of the scientific community, the decision-making sphere, civil society actors, and the media during the last three decades. Since 1988, with the World Conference on the Changing Atmosphere, climate change has been on the agenda of international relations. With the establishment of the Intergovernmental Panel on Climate Change (IPCC)[5] in 1988, the adoption of the United Nations Framework Convention on Climate Change (UNFCCC)[6] in 1992 and the Kyoto Protocol[7] (KP) in 1997, climate change fully entered the stage of *politicization*. In 2007, with climate change on the agenda of the UN Security Council,[8] the issue is being progressively recognized as a national and collective security concern and a '*securitization*' phase has been proclaimed.

Measured against the far-reaching measures needed to avert various climate-related risks, the global climate action has generally been perceived as frustrating during the two decades following the adoption of the UNFCCC. The primary stumbling block to taking more effective action to mitigate climate change has been agreement as to who is responsible for implementing the far-reaching, but necessary, action. [9] When the first commitment period of the Kyoto Protocol expired in 2012, the struggle to develop a replacement culminated in the adoption of the Paris Agreement.[10]

As the global climate regime is evolving in scope and complexity, with a shift from target setting to implementation and climate risk management,[11] an increased integration of climate change into broader foreign policy and geopolitical discussions, a proliferation of overlapping alliances between both state and non-state actors, and

4 *Ibid*.

5 IPCC reports available at <http://www. ipcc.ch/>.

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

7 Kyoto Protocol (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 Phillip Dane Warren, 'Climate Change and International Peace and Security: Possible Roles for the U.N. Security Council in Addressing Climate Change' (Sabin Center for Climate Change Law, 2015), available at <https://web.law.columbia.edu/sites/default/files/microsites/climate-change/warren_-_cc_and_international_peace_and_security_-_roles_for_the_un_security_council.pdf> (visited 29 October 2016) at 1.

9 Shirley V. Scott, 'The Securitization of Climate Change in World Politics: How Close have We Come and Would Full Securitization Enhance the Efficacy of Global Climate Change Policy?' 21 *RECIEL* (2012) 220-230 at 220.

10 Paris Agreement (Paris Agreement to the United Nations Framework Convention on Climate Change, Paris, 12 December 2015, in force 4 November 2016; 'Adoption of the Paris Agreement', UNFCCC Dec. 1/CP.21 (2015).

11 For instance, COP22 of the UNFCCC, held in Marrakech in November 2016, aimed primarily at proceeding from the negotiation phase to the stage of implementation of the objectives set out in the Paris Agreement.

new approaches to shaping a global dialogue and cooperation on the consequences of, and solutions to, climate change, are currently accompanying dynamics. However, in order to enhance the global climate regime, while anchoring commitment to addressing climate change at the highest level of international political agendas and raising the levels of ambition for an efficient and equitable global climate governance, the security implications of climate change – from human, economic, environmental, and geopolitical perspectives – should be widely recognized and mainstreamed. For this purpose, the climate challenge can be framed in different ways instead of considering it to be a solely environmental or political issue: firstly, the climate challenge can be perceived as a new security concern, an exogenous threat, hermetically sealed off from other risks, but this perception may confuse the nature of today's security threats, and more specifically, obscure the complex ways in which climate change affects the broader security landscape; secondly, climate change can be perceived as a 'threat multiplier',[12] since its impacts interact with other factors to make existing security risks more complicated and costly to manage. In this perspective, climate change is unique in that the risk emanates not from climate change *per se*, but from how this challenge interacts with other environmental, economic, social, technological, and political factors. [13]

Furthermore, the tendency to consider the security implications of climate change in a conflict context alone seems to be too narrow. Climate change intensifies many stresses in a way that can increase the likelihood of livelihood devastation, state fragility, human displacement, and massive loss and damage in human and economic terms. These dynamics do not always result in conflict, but they certainly represent a threat to human, national, regional, and in the right context, collective security. Therefore, if the discourse is too narrow, and focuses only on conflict, the risk of being unprepared for a range of possible scenarios will remain. From this perspective, asking questions like 'is climate change the biggest security threat?' seems more irrelevant now than ever before, both from the theoretical and the political points of view. Confusion with regard to these issues may generate the risk of failing to put policies in place that address climate risks for what they are. There is a need to move away from both 'ranking' threats to national security and focusing on just one element of the risk landscape that is easily understood. There is a need to take a closer look at how security risks are connected, and then build from there. [14]

This paper is based on the assumption that the available factual and scientific evidence, which suggests that climate change may present both direct and indirect threats to local, national, and collective security, could raise the profile of climate

[12] Caitlin E. Werrell and Francesco Femia, 'Climate Change as Threat Multiplier: Understanding the Broader Nature of the Risk', 25 *The Center for Climate and Security Briefer* (2015), available at <https://climateandsecurity.files.wordpress.com/2012/04/climate-change-as-threat-multiplier_understanding-the-broader-nature-of-the-risk_briefer-252.pdf> (visited 25 November 2016) at 1.

[13] Scott, 'The Securitization of Climate Change', *supra* note 9, at 220.

[14] Werrell and Femia, 'Climate Change as Threat Multiplier', *supra* note 12, at 1.

change on the international political agenda; anchor stronger commitment to addressing climate change on all levels instead of the 'lowest common denominator' which characterized the global climate governance during its first phase (UNFCCC and Kyoto Protocol);[15] and raise the level of ambition for an effective and equitable global climate regime.

The 'securitization' of climate change, which is the main focus of this analysis, is an evolving doctrine that refers to the process by which the climate issue is represented not only as a political problem, but also as an existential threat to humanity; thereby paving the way for exceptional actions to deal with the threat. In this perspective, climate change, the 'securitized' issue, can only be tackled if it is fully considered as a matter of urgency, not just as a matter of routine policy. This can only happen if certain facilitating conditions have been met, including the acceptance of the 'securitizing move' by actors who directly and indirectly influence climate politics.[16,17] The securitization of climate change has primarily to do with the language designed to heighten awareness since it has primarily occurred because some institutions have determined that climate change presents certain security risks. In other terms, a 'risk reality' and not a 'risk frame'.

Against this background, this paper investigates whether the framing of climate change as a security-related concern may help to enhance the priority afforded to this issue both domestically and internationally and, consequently, to boost climate governance strategies beyond the level of ambitions expressed by the international community during previous multilateral negotiations. The present author believes that this will bring about a shared appreciation of the growing and imminent 'threat' that climate change poses to all nations, organizations and individuals. This is indeed one example of the recent broadening of the concept of security beyond the traditional realm of external military threats to a nation-state.[18] Based on these assumptions, the paper is intended to address the following questions from a cross-scale and multidimensional perspective: what security implications of climate change have been identified so far? What are the dynamics supporting the securitization of climate change? Is the securitization of climate change a mere discourse or alarmist tactic, or does it reflect a growing reality? What is the useful aspect of the securitization approach

[15] The 'lowest common denominator' feature often results in adopting treaties which represent a compromise limited by the position of those least prepared to commit to far-reaching measures. For instance, the international community has been talking about climate change since the 1980s, with a continuous procession of meetings, accords, treaties, and declarations. The available framework, including Paris Agreement, is mostly composed of promises and pledges. In the meantime, global carbon emissions have continued to rise and tangible action to restrain these emissions remains vanishingly modest compared to engaged processes. Behind this situation there is a belief that an incremental process to build up a trustful and reliable climate regime may generate progressive achievements and help the negotiators to practically avoid gridlock and marginal outcomes.

[16] The worldwide acceptance of the IPCC assessment reports supports the idea that the IPCC is increasingly perceived as playing the role of a 'securitizing' actor.

[17] Scott, 'The Securitization of Climate Change', *supra* note 9, at 221.

[18] *Ibid*. at 220.

for building an effective and equitable global climate regime? What are the potential risks and benefits to global politics of linking climate change to security? To what extent would the securitization of climate change narrow or broaden the scope and scale of climate action internationally and domestically? Finally, what should be done to qualify the securitization of climate change as a referential framework for global climate and security politics?

2 Securitization of climate change as a growing paradigm with policy relevance

2.1 Security implications of climate change

Since UNFCCC COP15, held in Copenhagen in 2009, the perception of climate change implications has broadened and started to encompass a complex web of development and security issues[19] that are compounded by, *inter alia*, a shifting geopolitical landscape, population pressures, technological change, energy transition, and environmental degradation. Climate change places strain on the infrastructure and resources necessary for the viability of the nation-state system and the well-being of its populations, and causes physical changes to the geostrategic environment. In doing so, climate change poses the following direct and indirect threats to national and international security: [20]

- Climate change *directly* impacts security through its negative effects on the critical infrastructure underpinning a nation's security. Impacts include: sea-level rise, which (through its associated risks to military installations) has the potential to degrade a nation's ability to conduct military operations and, in some cases, presents an existential threat to low-lying small island states; and extreme weather events, which often devastate local governments, key energy sources, water, health, telecommunications, financial, and agricultural centres that undergird a nation's economic viability.
- Climate change *indirectly* threatens security by placing strain on the vital resources supporting a nation's security, including water, food, and energy. These pressures can reduce a nation's capacity to govern. Water, food and energy shortages can devastate livelihoods, particularly among those already vulnerable, and can contribute to a broad range of destabilizing trends, including population displacements and political instability. These pressures can, in turn, contribute to state fragility, internal conflict, and potentially

[19] Pacific Institute of Public Policy, 'Climate Security: A holistic approach to climate change, security and development', *Discussion Paper 23* (2012), available at <http://www.pacificpolicy.org/wp-content/uploads/2012/10/D23-CLI-121012c.pdf> (visited 15 June 2015) at 1.

[20] The Center for Climate and Security, 'Climate Security 101' (2012), available at <https://climateandsecurity.files.wordpress.com/2012/04/climate-security-101-2_21_15.pdf> (visited 15 June 2016), at 1.

state collapse. Global warming can also indirectly change or disrupt existing international security dynamics in geostrategic environments such as the Arctic[21] or the South China Sea.[22]

Table 1. Overview of climate change security implications

Bio-physical impacts of climate change	Selected security implications
• Extreme weather events (especially droughts, floods and storms) • Resource depletion and shortage • Biodiversity loss • Decrease in ecosystem services • Sea level rise, salt-water intrusion • Desertification and decrease in land and soil quality • Shifts in disease patterns • Ocean acidification	• Climate change may increase human and environmental insecurity with disproportionate consequences for vulnerable groups (such as women and minority indigenous groups). • Impacts of climate change on water supplies, agriculture, fishing, and livestock will result in increased food insecurity, causing malnutrition and other health problems. • Key infrastructure, such as transport systems, energy supplies and communications, will be put under stress. This may generate new economic and social risks. • Decline in economic growth due to environmental problems exacerbated by climate factors. • The tourism industry will be hit in some areas, since some destinations are expected to be submerged by sea-level rise, or rendered more vulnerable to climate shocks. • With sea-level rise and extreme weather events, key infrastructure in many coastal regions (including military ones) will be damaged or destroyed, along with human life and property. In addition to the loss of territory, sea-level rise may increase the risk of border disputes and political instability. • Potential increase in control and competition over natural resources may generate violent conflicts within and among countries. • Climate change may act as a geopolitical multiplier of current risks.

[21] Global warming affects the Arctic two to four times faster than any other region of the planet (for further discussion, see David Cappelletti *et al,* 'Environmental Changes in the Arctic: An Italian Perspective', 27 *Rendiconti Lincei Scienze Fisiche E Naturali* (2016) at 1.

[22] The claims over the contentious 1.3-million-square-mile area of the South China Seas (SCS) have become an increasing focal point for the global community. Oil and gas resources beneath the seafloor, mineral deposits in the seabed, and important fish stocks are believed to be extensive and promising. The SCS contains two major groups of features subject to overlapping sovereignty claims. The Paracel Islands in the northern half of the sea are currently controlled by China, but are claimed by Taiwan and Vietnam. The Spratly Islands, to the south, are far smaller, more dispersed and even more contested. The Spratly Islands are subject to overlapping claims by six nations, including China, Taiwan and Vietnam. Both island groups, as well as a number of smaller features, have seen their share of violence, and the tangle of disputes appears intractable. Yet, most of the atolls, banks and islands that make up the SCS are merely a few inches or feet above sea level at high tide. Frequently, they flood over during typhoon season and have to be evacuated. With environmental predictions of sea-level rise on the order of 3 to 6 feet during the second half of the 21st century, the 'dry' areas of the SCS might be submerged.

Bio-physical impacts of climate change	Selected security implications
	• Climate change may deepen marginalization and poverty[23] and feed existing social tensions in many vulnerable countries. • Potential negative consequences for human and animal health security. • Potential increase in population displacement and migration (climate refugees). • Less stable and economically resilient states will be unable to absorb climate-related stresses without foreign assistance. • Climate-related security challenges will put under increasing pressure the international security architecture that is already burdened with other security problems. This may also apply to domestic security governance.

2.2 Dynamics supporting the securitization of climate change

Given the security implications mentioned above, climate change is increasingly perceived as a potential source of conflict and disruption of peace and as one of the most pressing potential threats to global security in the 21st century. Indeed, this issue has become prominent over recent decades, growing to be seen by many in the environmental movement as a problem of apocalyptic proportions.[24] Whilst the issue was first articulated by 'green' campaigners, gradually the socioeconomic, as well as ecological, implications of global warming are coming to the fore and being picked up by other interest groups. Many development analysts and multilateral organizations[25] are convinced of the potentially catastrophic climate effects on those already living with restricted resources, with the plausible scenario that poverty and vulnerability may become difficult to eradicate if effective climate policies are not

[23] Recently, the World Bank found that, without climate-sensitive development measures, 100 million people would be pushed into extreme poverty by 2030. See Stephane Hallegatte *et al, Shock Waves - Managing the Impacts of Climate Change on Poverty,* (World Bank, 2016), available at <https://openknowledge.worldbank.org/bitstream/handle/10986/22787/9781464806735.pdf?sequence=13&isAllowed=y> (visited 25 September 2016).

[24] Geoffrey Lean, 'Global Warming: Apocalypse Now: How Mankind is Sleepwalking to the End of the Earth', *The Independent*, 6 February 2005.

[25] See, for instance, Robin Mearns and Andrew Norton, *Social Dimensions of Climate Change - Equity and Vulnerability in a Warming World*, (World Bank, 2010); and United Nations Development Programme (UNDP), *Human Development Report 2014 - Sustaining Human Progress: Reducing Vulnerabilities and Building Resilience* (UNDP, 2014).

adopted. Human rights and refugee specialists[26] are increasingly dealing with the human implications of climate change, including climate-induced displacement. Private sector and industry groups are now accepting the need to 'mainstream' climate change both as a business risk and an opportunity for growth. Furthermore, over the last decade, the security policy community has come to regard climate change as part of its brief, as have civil society groups that work on defence, conflict analysis, and peace-building. [27]

Dwindling resources, massive population shifts, natural disasters, spreading epidemics, drought, rising sea levels, plummeting agricultural yields, crashing economies, political extremism, and terrorism are some of the expected consequences of climate change, and any of these could tip the world towards conflicts and instability with potential implications for national and human security. Although initially an issue of intra-state insecurity, the ramifications could potentially be felt both at the country level and on a global scale. [28]

What is striking is that all nations are, in varying degrees since adaptive capacities differ and because climate effects will not be evenly distributed,[29] vulnerable to climate-associated risks. A combination of exposure to climate risks and governance deficiencies determines whether or not a nation is susceptible to climate-related security risks. This includes all of poor, middle-income, and wealthy nations. Nonetheless, poor nations, especially in the Global South, are expected to suffer excessively from the security implications of global warming, given their considerable vulnerability and low coping capabilities. These countries are already experiencing social, economic, political, and environmental vulnerabilities, such as stresses around water supply, agricultural productivity, poor health systems, limited employment and business opportunities, demographic pressures, limited migration pathways,[30] social and political instability, and democracy and human rights deficit. Middle-income

[26] See, for instance, Musa Shteiwi (ed.), *Migrants and Refugees: Impact and Future Policies. Case studies of Jordan, Lebanon, Turkey and Greece* (European Institute of the Mediterranean, 2016); Frank Laczko and Chris ne Aghazarm (eds), *Migration, Environment and Climate Change: Assessing the Evidence* (International Organization for Migration, 2009); Annalisa Savaresi, 'The Paris Agreement: An Equity Perspective' (2016), available at <http://www.benelexblog.law.ed.ac.uk/2016/01/29/the-paris-agreement-an-equity-perspective/>; and Center for International Environmental Law (CIEL) & CARE International, 'Climate change: Tackling the greatest human rights challenge of our time- Recommendations for effective action on climate change and human rights', (2015), available at <http://www.carefrance.org/ressources/themas/1/4566,CARE_and_CIEL_-_Climate_Change_and_.pdf> (both visited 22 June 2016).

[27] Hannah Brock, *Climate Change: Drivers of Insecurity and the Global South* (Oxford Research Group, 2012), available at <http://www.oxfordresearchgroup.org.uk/sites/default/files/Climate%20Change%20and%20Insecurity%20in%20the%20Global%20South.pdf> (visited 24 June 2016), at 3.

[28] See Berel Rodal, 'The Environment and Changing Concepts of Security', 47 Canadian Security Intelligence Service Commentary (1994); and Peter Schwartz and Doug Randall, 'An Abrupt Climate Change Scenario and Its Implications for United States National Security' (Environmental Defense, 2003), available at <http://www.climate.org/PDF/clim_change_scenario.pdf> (visited 24 June 2016).

[29] Joshua Busby, Todd G. Smith and Krishnan Nisha, 'Climate Security Vulnerability in Africa Mapping 3.0: An Update', *Political Geography* (2014) 51-67, available at <https://www.strausscenter.org/ccaps/publications/articles.html?download=541> (visited 30 June 2016), at 1.

[30] Pacific Institute of Public Policy, *Climate Security*, *supra* note 19, at 1.

and wealthy countries are also susceptible to the security risks of a changing climate. For instance, states in the Middle East and North Africa (MENA) region, though mostly middle-income countries, are already facing declining water availability as a result of climate change, and the consequences of this are already fueling current instability dynamics.[31] Many of these countries are also highly dependent on wheat imports from the global food market, which is in turn highly vulnerable to climate shocks. As the provision of basic services becomes less reliable, the social contract between citizen and government can rapidly erode in countries experiencing situations of this nature. This can lead to unrest, as well as a greater incidence of authoritarian responses. Sea-level rise, and an increase in the severity and intensity of extreme weather events, can also threaten wealthy nations that have vulnerable energy, military, and agriculture infrastructures, both inland and along the coasts. Cascading disasters have the potential to place such enormous strain on even wealthy nations that economies and critical infrastructure can be severely disrupted.

It is increasingly perceived that climate change is not only a long-term risk. While the long-term security risks are projected to be very severe, climate change is already having an impact on security.[32] According to the US National Aeronautics and Space Administration (NASA), 'the globe is warming at a faster rate than it ever has before'.[33] The US Department of Defense Climate Change Adaptation Roadmap[34] noted that climate change 'represents a complex homeland security challenge with strategic implications for the Department'.[35] In addition, many studies have already showed that climate change was likely responsible for the significant decline in winter precipitation across the MENA region during the last four decades.[36] Significant Arctic ice melt[37] is already changing the geopolitical landscape of the high North. The IPCC 5th Assessment Report's Human Security chapter[38] highlighted the fact that climate change can indirectly increase risks of violent conflict.

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[31] Caitlin E. Werrell and Francesco Femia (eds), 'The Arab Spring and Climate Change' (The Stimson Center, 2013), available at <https://climateandsecurity.files.wordpress.com/2012/04/climatechangearab-spring-ccs-cap-stimson.pdf> (visited 24 September 2016).

[32] Pacific Institute of Public Policy, *Climate Security*, *supra* note 19, at 6.

[33] NASA, 'How is the global Earth system changing?', available at <http://science.nasa.gov/earth-science/big-questions/is-the-global-earth-system-changing-and-what-are-the-consequences/> (visited 24 June 2016).

[34] US Department of Homeland Security, 'Climate Change Adaptation Roadmap 2012', available at <https://www.dhs.gov/sites/default/files/publications/Appendix%20A%20DHS%20FY2012%20Climate%20Change%20Adaptation%20Plan_0.pdf> (visited 5 September 2016).

[35] *Ibid*. at IV.

[36] See, for instance, Mohamed Behnassi, 'Geostrategic Implications of Climate Change in the Mediterranean', *IEMED Yearbook* (2014), available at <http://www.iemed.org/publicacions/historic-de-publicacions/anuari-de-la-mediterrania/sumaris/avancaments-anuari-2013/Anuari_ClimateChange_Behnassi.pdf> (visited 6 September 2016), at 3-7; and Werrell and Femia (eds.), 'The Arab Spring and Climate Change', *supra* note 31.

[37] Cappelletti *et al*, 'Environmental Changes', *supra* note 21.

[38] W. Neil Adger *et al*, 'Human security' in Christopher B. Field *et al,* (eds), *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (*Cambridge University Press, 2014) 755-791.

In short, climate change impacts are already generating many consequences for human societies and ecosystems and their security implications should be managed. The alarming picture of the future, when climate change will force the world's powers into a desperate struggle for advantage and even survival, thus endangering collective security, is already perceived by many actors, including governments, multilateral institutions, scientists, and civil society actors. Indeed, given the growing perception of climate change as a security concern, this issue is now on the agenda of a number of national, regional and international security institutions.[39]

The interrelation between climate change and security has been investigated by an increasing number of scholars in recent times, resulting in a growing conviction that the distribution of dwindling natural resources, due to environmental changes, can represent points of stress and conflict, especially when vulnerable layers of society are involved (cases studies from many countries like Syria, Egypt, Soudan, Sahel, etc. support this conviction).[40] Climate change impacts are increasingly and clearly challenging resource access, availability, and quality – mainly water, food, land, and energy – as major factors limiting socioeconomic development and fueling political instability. While there remains academic debate concerning how the reactions to these challenges will spill over into traditional security concerns (i.e. conflicts and global instability), recent studies seem to confirm these trends.[41] These studies have generally re-conceptualized and redefined 'security' through a widening of its dimensions from the narrow political and military focus towards an inclusion of economic, societal, and environmental concerns. In addition, environmental issues have been increasingly recognized as major variables in regional instability and conflict, since they have the potential to exacerbate tensions resulting from forced population displacement and ethnic, religious, and other local differences, such as socio-economic disparities between urban and rural areas, rapid economic development, and border disputes.

[39] Scott, 'The Securitization of Climate Change', *supra* note 9, at 1.

[40] See, for instance, Christopher K. Butler and Scott Gates, 'African range wars: Climate, conflict, and property rights', 49 *Journal of Peace Research* (2012) 23-34; Cullen S. Hendrix and Idean Salehyan, 'Climate change, rainfall, and social conflict in Africa', 49 *Journal of Peace Research* (2012) 35-50; Clionadh Raleigh and Dominic Kniveton, 'Come rain or shine: An analysis of conflict and climate variability in East Africa', 49 *Journal of Peace Research* (2012) 51-64; and Caitlin E. Werrell, Francesco Femia and Troy Sternberg, 'Did We See It Coming?: State Fragility, Climate Vulnerability, and the Uprisings in Syria and Egypt', 35(1) *SAIS Review of International Affairs* (2015) 29-46.

[41] See Des Gasper, 'Securing Humanity: Situating "Human Security" as Concept and Discourse', *Journal of Human Development* (2005) 221–245; Nils Petter Gleditsch, 'Whither the weather? Climate change and conflict', 49 *Journal of Peace Research* (2012) 3-9; Conor Devitt and Richard S. J. Tol, 'Civil war, climate change, and development: A scenario study for sub-Saharan Africa', 49 *Journal of Peace Research* (2012) 129-145; Patrick Regan and Matthew Sisk, 'Climate Change, Water Scarcity and Armed Conflict', ND-GAIN Working Paper Series 54 (undated), available at <http://gain.org/sites/default/files/WorkingPaper54.pdf> (visited 15 September 2016); Tim Forsyth and Mareike Schomerus, 'Climate Change and Conflict: A systematic evidence review', Justice and Security Research Programme Paper 8 (2013) available at <http://eprints.lse.ac.uk/56352/1/JSRP_Paper8_Climate_change_and_conflict_Forsyth_Schomerus_2013.pdf> (visited 6 September 2016); Dumaine Carol and Irving Mintzer, 'Confronting Climate Change and Reframing Security', 35(1) *SAIS Review of International Affairs* (2015) 15-16; Werrell, Femia and Sternberg, 'Did We See It Coming?', *supra* note 40; and Michael Werz and Max Hoffman, 'Climate Change, Migration, and the Demand for Greater Resources: Challenges and Responses', 35(1) *SAIS Review of International Affairs* (2015) 99-108.

However, in practice, the links between climate change and security are not always clearly established because the climate aspect is rarely the only contributing factor in many conflict situations. For this reason, it is still challenging for decision-making processes to perceive climate change judiciously as a potential security threat and to deliberate accordingly. This seems to indicate that the gap between what is necessary from the scientific community's point of view and what is possible from a political point of view is still wide.

In addition there are likely to be increased demands around the world for the deployment of armed forces as part of crisis management efforts, due to the increase in frequency and severity of climate change related extreme events.[42] Indeed, it is believed that internationally the security concerns associated with climate change are likely to engage the military sooner rather than later. Nevertheless, the securitization of climate change does not mean an automatic 'militarization' of the issue, such as through the adoption of military actions based on the threat or use of force in response to a changing climate. Some scholars who are skeptic about the securitization discourse, such as Buckland,[43] have argued that climate-related security implications may lead, among other things, to the military responding to issues for which a military response is unnecessary and potentially even detrimental. The Non-aligned Movement and the Group of 77 have resisted the securitization of climate change during the two Security Council debates on climate change (2007, 2011); in part because of the perceived potential, and even risk, that Council members may abuse this approach by relying on it as an excuse for using military intervention to enforce legal obligations in respect of climate change.[44]

Despite this resistance and skepticism, the security implications of climate change are already playing a large and increasing role in military planning processes: for instance, the national security establishment in the United States, including the US military and the US intelligence community, have already understood that climate change is a domestic security threat, and that they cannot wait for full certainty before acting via mitigation and adaptation efforts.[45] As a result of this understanding, the security implications of climate change have been considered in strategic documents like the Quadrennial Defense Review, and a Center for Climate Change

[42] Institute for Environmental Security, *Climate Change and Security at Copenhagen – II: The Contribution of the Global Security Community to Success*, Summary Report of IES Conference (2009), available at <http://www.envirosecurity.org/CCSC/CCSCIISummaryReport.pdf> (visited 24 June 2016), at 6.

[43] Ben Buckland, *A Climate of War? Stopping the Securitization of Global Climate Change* (International Peace Bureau, 2007), available at <http://www.ipb.org/uploads/tbl_contingut_web/176/documents/paper.pdf> (visited 24 June 2015), at 1.

[44] Scott, 'The Securitization of Climate Change', *supra* note 9, at 228.

[45] See, for instance, US Department of Defense (2010), *Quadrennial Defense Review Report 2010*, available at <https://www.fas.org/sgp/crs/natsec/R41250.pdf> (visited 24 September 2016); and US Department of Homeland Security, *Climate Change Adaptation*, *supra* note 34.

and National Security has been established within the CIA.[46] Femia and Werrell[47] explain that security implications of climate change may affect three elements of military effectiveness: *Readiness*, which refers to the ability of a military to carry out operations in a timely manner and involves having a stable and secure military infrastructure that is increasingly stressed by sea level rise and extreme weather events, such as droughts and flooding; *operations*, since climate change effects may have impacts on military operations, whether these be war-fighting operations or humanitarian missions; and *strategy*, since climate change can have impacts on military strategy through increasing the possibility of destabilizing conditions in strategically significant regions of the world.[48] In addition, Rogers[49] makes the following observations:

> much of the analysis on climate change coming from military sources produces results that coincide with the ideas of radical environmental analysts, pointing to the social and political consequences, the risks of state failure and the rise of radical oppositional movements. However, when it comes to responses, the primary military focus is on maintaining the security of the state, either on its own or in alliance with others. This is to be expected and is legitimate from the perspective of a military organization – its reason for being is to keep the state secure. Thus, the emphasis may be on increased border security and the patrolling of potential migratory routes, and the intervention capabilities necessary to stabilize failing states and ungoverned space that may be a consequence of the impact of climate change. What this almost never involves, is advocating the primary preventative measure that is required for responding to climate change – a rapid move towards an ultra-low carbon economy.

[46] Francesco Femia and Caitlin E. Werrell, 'Climate and Security 101: Why the U.S. National Security Establishment Takes Climate Change Seriously', 14 *The Center for Climate and Security Briefer* (2012), available at <https://climateandsecurity.files.wordpress.com/2012/04/update_climate-and-security-101_why-the-u-s-national-security-establishment-takes-climate-change-seriously_briefer-232.pdf> (visited 4 September 2016).

[47] *Ibid*.

[48] The following risks and scenarios might increase the likelihood of militaries being called on to resolve conflicts, or provide post-conflict assistance, which has the potential of putting increased strain on military strategies: the geopolitical implications of reduced river flow in India and Pakistan might create increased tension between these two nuclear-armed states (Gwynne Dyer, *Climate Wars* (Scribe Press, 2010); in the Arctic, a melting ice cap, coupled with increasing tensions between Russia and other Arctic nations, could increase the likelihood of conflict; in the MENA region, climate change effects on water security may increase the probability of instability in the future; in Central Asia, increases in glacial melt and flooding, coupled with existing security dynamics (such as terrorism and nuclear materials proliferation), can create a volatile mix; in the broader Asia-Pacific region, rainfall variability will interact with a growing urban and coastal population, as well as an increasing demand for energy, to present enormous challenges to security in this increasingly important part of the world; migrating fish stocks in the South China Sea may place pressure on the fishing industry to move into contested waters, leading to increased tensions between China, its neighbors and the United States. For more details, see the Center for Climate and Security, 'Climate Security 101', *supra* note 20, at 4.

[49] Paul Rogers, 'Climate Change and Security', Oxford Research Group International Security Monthly Briefing (September 2010), available at <http://www.oxfordresearchgroup.org.uk/sites/default/files/Sept10En.pdf> (visited 24 June 2016) at 3.

2.3 Securitization of climate change: a discourse, an alarmist tactic or a growing reality?

There has been a significant evolution of climate and security literature in recent years,[50] in addition to many reports on related concerns issued by numerous national and international organizations. This growing body of literature also covers how climate security is defined and perceived, specifically in relation to conflict. Therefore, the idea that the securitization of climate change is currently shifting from a mere discourse to a perceived reality is advanced in this analysis. The following arguments support this opinion:

- The climate and security discourse is evolving. Theoretical and empirical research is being carried out to investigate the connections between climate change, security and conflict, especially as additional regional and local climate data become available. In many recent works, the security implications of climate change are considered as a well-analyzed reality and probability.[51] While more needs to be done to incorporate non-environmental variables into such works (such as the numerous locally-specific social, political, and economic drivers of conflicts), the field has come a long way since the phrase 'climate change is a security threat' was expressed late last century.[52]
- Scholars and practitioners in the climate-security sphere do not usually refer to climate change as the key threat to the immediate security of countries experiencing, or likely to experience, conflict. Climate change, therefore, is not considered to be an independent variable and will unlikely be the only, or even primary, cause of any conflict.[53] However, the impacts of climate change may increase the likelihood of a conflict and instability by interacting with other existing stressors – such as food, water, and energy insecurity. These stresses can contribute to unrest, the displacement of populations, and other dynamics that can increase the likelihood of a conflict. Unstable,

[50] See, for instance, Gleditsch, 'Whither the weather?', *supra* note 41; Devitt and Tol, 'Civil war', *supra* note 41; Regan and Sisk, 'Climate Change, Water', *supra* note 41; Forsyth and Schomerus, 'Climate Change and Conflict', *supra* note 41; Behnassi, 'Geostrategic Implications', *supra* note 36; and Werrell and Femia, 'The Arab Spring and', *supra* note 31; Dumaine and Mintzer, 'Confronting Climate Change', *supra* note 41; Werrell, Femia and Sternberg, 'Did We See It Coming?', *supra* note 40; and Werz and Hoffman, 'Climate Change, Migration', *supra* note 41.

[51] See, for instance, Hans Günter Brauch, 'Securitizing Climate Change', Paper presented at the 50th ISA Annual Convention, New York, 15-18 February 2008, available at <http://www.afes-press.de/html/Brauch_ISA_NY_2.2.2009.pdf> (visited 24 June 2015); Scott, 'The Securitization of Climate Change', *supra* note 9; Pacific Institute of Public Policy, *Climate Security*, *supra* note 19; Tim Forsyth and Mareike Schomerus, 'Climate Change and Conflict: A systematic evidence review', Justice and Security Research Programme, Paper 8 (2013), available at <http://eprints.lse.ac.uk/56352/1/JSRP_Paper8_Climate_change_and_conflict_Forsyth_Schomerus_2013.pdf> (visited 6 September 2016); Behnassi, 'Geostrategic Implications', *supra* note 36; Carol Dumaine and Irving Mintzer, 'Confronting Climate Change and Reframing Security', 35(1) *SAIS Review of International Affairs* (2015) 5-16 at 15-16.

[52] Femia and Werrell, 'Climate and Security 101', *supra* note 46.

[53] *Ibid*.

conflict-prone, and strategically significant regions are mostly concerned.[54] A nation's capacity to manage climate impacts also determines whether it is or is not vulnerable and exposed to the risk of conflict. Although there is growing evidence to suggest that climate change has been a factor in many sub-national conflicts, more research is needed to determine the correlation and causality between climate change and security implications, namely conflict. However, given the unprecedented changes to the climate that are currently underway, the historical record is not a sufficient foundation for predicting the role that climate change might play in future conflicts. In this context, future simulations and other foresight exercises, and a more nuanced understanding of the interconnections between demographic pressures, natural resources and state stability, will be increasingly important to effectively address the climate change effects on security. Moreover, a better integration of climate and natural resources stresses into the analyses of state fragility is needed, especially when identifying future climate-security 'hotspots'.[55]

- According to the Center for Climate and Security,[56] the similarity between climate change and other transnational risks to security is currently perceptible; many scholars, experts and institutions do not hesitate to identify it as a high probability and consequence risk. This means that climate change is happening, and has potentially expansive effects for collective security. However, the response measures from governments have not yet been proportionate to the risk. For instance, the possibility of a nuclear detonation is seen by experts as being a low probability, yet high consequence, risk. This means that although the likelihood of a nuclear weapon being detonated is considered low, such an occurrence would be catastrophic. As such, there is a regime of international laws and resources in place to monitor and

[54] Political and demographic realities, combined with climate change and food and water insecurity, suggest that the Middle East, North, East and Central Africa, as well as certain nations in Central Asia, will in the near-to-medium term face the most significant security risks from a changing climate. However, a growing coastal and urban population in the broader Asia-Pacific region, coupled with projected climate change exacerbated stresses on water security, mean that the nations of the Asia-Pacific are also particularly vulnerable to climate change effects. A rapidly-melting Arctic, and shifting geopolitical dynamics in the area (including a worsening relationship between Russia and its Arctic neighbors) could combine to increase geopolitical tensions in a relatively stable area. Sea-level rise also constitutes an existential threat to low-lying island nations. See Center for Climate and Security, 'Climate Security 101', *supra* note 21, at 3.

[55] *Ibid*.

[56] *Ibid*.

prevent the proliferation and detonation of nuclear weapons.[57] Despite the significant, intolerable risks associated with climate change, a comparable approach to nuclear non-proliferation has not yet materialized.

In recognition of these findings, the perception of climate change as a security concern internationally, regionally, and nationally is growing (see Table 2). This emerging securitization process has contributed to the mobilization of political support and public and private funds for the post-2015 climate change regime. Since 2007, especially with the release of the fourth IPCC Assessment Report (AR4), many multilateral organizations have upgraded their activities aimed at addressing climate change (for instance, the World Bank,[58] UNDP,[59] UN Environment,[60] and OECD[61]). The outcome of these dynamics has potentially improved our knowledge base and further enhanced the public concern over the urgency of these new security threats, challenges, vulnerabilities, and risks posed by climate change.[62]

[57] Such as: The Vienna Convention on Civil Liability for Nuclear Damage (Vienna, 23 May 1963, in force 12 November 1977, 1063 *UN Treaty Series* 265) adopted within the framework of the International Atomic Energy Agency (IAEA); the Convention on Early Notification of a Nuclear Accident (Vienna, 26 September 1986, into force 27 October 1986, 1439 *United Nations Treaty Series* 275) adopted within the framework of the IAEA; the Treaty on the Non-Proliferation of Nuclear Weapons (Vienna, 12 June 1968, in force 5 March 1970, 729 *United Nations Treaty Series* 161) adopted within the framework of the IAEA; the Convention on Nuclear Safety (Vienna, 20 September 1994, in force 24 October 1996, 33 *International Legal Materials* (1994) 153) adopted within the framework of the IAEA; and the International Convention on the Suppression of Acts of Nuclear Terrorism, Nuclear Threat Initiative adopted in 2005 during the 91st plenary meeting of the UN General Assembly by resolution 59/290, came into force 7 July 2007.

[58] See <http://www.worldbank.org>.

[59] See <http://www.undp.org>.

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

[61] See <http://www.oecd.org>.

[62] Brauch, 'Securitizing Climate Change', *supra* note 51, at 29.

Table 2. Key steps taken so far towards the securitization of climate change

Initiative	Focus/Outcome
The 2007 and 2009 Security Council debates on climate change and security	• The informal debate revealed divergent views on two interrelated questions: the validity of conceptualizing climate change as a security concern and the question as to whether the Council is the appropriate forum to deal with this issue. • The divisions within the debate largely echoed the broader political divide on climate change policy between the Global North and South. • The Non-Aligned Movement and the Group of 77 did not consider the Council to be the appropriate forum in which to address climate change and tended to downplay climate change as a security threat in favor of an emphasis on sustainable development and the principle of 'common but differentiated responsibilities'. • No formal decision was taken.
The first UN General Assembly (UNGA) debate on climate change and security (2009)	• On 3 June 2009, following a year-long campaign by a coalition of the Pacific Small Island Developing States (PSIDS), the UNGA passed Resolution 63/281[63] in which it: acknowledged that climate change could have possible security implications while at the same time reaffirming the UNFCCC as the key instrument for addressing this issue; and invited the relevant UN organs 'as appropriate and within their respective mandates, to intensify their efforts in considering and addressing climate change, including its possible security implications'.[64]
The 2011 UN Security Council debate on climate change and security	• Under German leadership, Europeans took a lead role in advocating both that climate change is appropriately referred to in terms of security and that the Security Council should be part of the global response. The United States was supportive of this position. Again, the G77 and the Non-Aligned Movement remained reluctant to accept that climate change is usefully seen as a security threat and did not accept a role for the Council on the matter.[65] • A Presidential statement (this being a non-legally binding document) was adopted by consensus. The statement expressed concern that possible adverse effects of climate change may, in the long run, aggravate certain existing threats to international peace and security.[66]

[63] 'Climate change and its possible security implications, UNGA Res. 63/281 of 11 June 2009.
[64] *Ibid.* at preamble.
[65] Scott, 'The Securitization of Climate Change', *supra* note 9, at 226.
[66] UN Security Council, *Statement by the President of the Security Council,* UN Doc. S/PRST/2011/15 (2011), available at <http://www.securitycouncilreport.org/atf/cf/%7B65BFCF9B-6D27-4E9C-8CD3-CF6E4FF96FF9%7D/CC%20SPRST%202011%205.pdf> (visited 24 September 2016).

Initiative	Focus/Outcome
The 2015 UN Security Council debate on climate change and security	• In 2015, Spain and Malaysia hosted an Arria Formula dialogue, the concept note for which began with the declaration that 'Climate Change represents a global challenge with both direct and indirect effects on sustainable development and international peace and security'.[67] Inspired by the efforts of other UN member states to integrate climate change concerns into their foreign policy and national security planning, both Malaysia and Spain called on the subsequent debate to consider how the UN could 'develop more structured means of addressing this issue from an international perspective'.[68] To the extent that the Security Council is the body responsible for dealing with threats to international peace and security, its relevance as a venue for discussing climate change should be readily apparent.
Developments within national and regional security institutions	• In Europe and North America, the ongoing generation of reports and debate is increasingly being accompanied by more detailed analyses and scenario planning. • European governments and civil society have maintained momentum towards the full securitization of climate change. • National security organizations in many developed and developing countries have clearly begun planning for the era of climate change effects. • Some international and regional forums are increasingly calling for climate change to be considered a security threat, and for issues affecting the environment to be mainstreamed in national security policy-making.
Initiatives taken during 2015 and beyond	Recently, commitments were made to better tackle climate and resource risks through many initiatives, such as: • The Sendai Framework for Disaster Risk Reduction 2015-2030,[69] which is the successor instrument to the Hyogo Framework for Action (HFA) 2005-2015: Building the Resilience of Nations and Communities to Disasters.[70] • The adoption of Sustainable Development Goals (SDGs).[71] • The adoption of the Paris Agreement[72] and its implementation process.

[67] Permanent Mission of Malaysia to the United Nations and Permanent Mission of Spain to the United Nations, 'Open Arria-formula meeting on the role of Climate Change as a threat multiplier for Global Security', 30 June 2015, available at <http://www.spainun.org/wp-content/uploads/2015/06/Concept-Note_ClimateChange_20150630.pdf> (visited 25 September 2016), at 1.

[68] *Ibid.* at 3.

[69] United Nations, *Sendai Framework for Disaster Risk Reduction 2015-2030,* available at <http://www.unisdr.org/we/inform/publications/43291> (visited 25 November 2016).

[70] 'Hyogo Framework for Action (2005-2015), Building the Resilience of Nations and Communities to Disasters', UN Doc. A/CONF.206/6 (2005).

[71] Transforming our world: the 2030 Agenda for Sustainable Development', UNGA Res. 70/1 of 25 September 2015.

[72] Paris Agreement (Paris Agreement to the United Nations Framework Convention on Climate Change, Paris, 12 December 2015, in force 4 November 2016; 'Adoption of the Paris Agreement', UNFCCC Dec. 1/CP.21 (2015).

According to Werrell and Femia,[73] despite the growing recognition of the security implications of climate change, many works and risk assessments examining global, regional, national, and subnational risks still fail to appropriately consider the 'multiplier' effect of climate change. The climate challenge is generally either perceived as a policy failure problem (i.e. a deficit in terms of mitigation and adaptation actions), or as an 'environmental' factor, with very little connection with other risk factors in the socio-political, economic and security spheres. Many influential studies and risk assessments[74] are illustrative of how climate change, a highly complex problem that interacts with a range of other global risks, is still artificially narrowed.

Ranking climate change in comparison with other security risks may contribute to a false separation of these risks; and may result in a potential underestimation of the broader risk landscape. For this reason, Werrell and Femia have criticized many assessment studies for ironing out complexities and creating arbitrary dividing lines just for the sake of clarity. For instance, the Global Risks 2014 and Global Risks 2015 reports, arguably,

> represent an important step forward in understanding and addressing systemic global risks such as climate change. However, continuing to view climate change as an environmental risk, rather than as a broader societal, economic and geopolitical risk, and disaggregating it from other stresses, such as water, food security and extreme weather events, means that societies and governments may be severely underestimating the scope and scale of the risks. Of course, the nature of survey research dictates that complexities must sometimes be ironed out, and arbitrary dividing lines created for clarity. A perfect risk assessment of climate change is unattainable, but one that frees climate change from its environmental box, and better captures the 'multiplier' nature of the threat, is overdue.[75]

Indeed, the categorization of climate risk as a mere 'environmental' concern may obscure the broader implications of a changing climate, lessen the overall perception of the risk, and consequently prevent the development of a holistic assessment of climate change and its impacts, with the probability of generating far-reaching consequences for climate politics and governance. The interconnection between climate change and other stressors means that addressing security risks as part of a comprehensive security matrix is more relevant and useful (both for public perception and policy making) than ranking these risks. To do so, there is a need to upscale risk assessments concerning climate change and to fully consider the ways in which climate change interacts with a range of other risk factors. This approach helps to

[73] Femia and Werrell, 'Climate and Security 101', *supra* note 46, at 1.

[74] Such as the *Fragile States Index 2014, 2015* and *2016* published by the Fund for Peace and the *Global Risks 2014* and *2015* published by the World Economic Forum in order to measure perceptions of global risks among its multi-stakeholder community of global leaders in the business, government and non-profit sectors.

[75] Werrell and Femia, 'Climate Change as Threat Multiplier', *supra* note 12, at 3.

ensure that policy and governance responses are commensurate to the actual risks involved. If not, these assessments could present a seemingly authoritative, yet false, sense of security.

3 Securitizing climate change: relevance for climate politics and governance

3.1 Securitizing climate change: overview of risks and opportunities

Various questions are often raised when it comes to the securitization of climate change. For instance, are there any risks involved in linking climate change to security? Does the perception of climate change as a security issue and the engagement of a limited pool of security institutions in addressing this challenge have the potential to overshadow other important climate-related social, economic, and environmental concerns – thus sidelining or completely omitting issues such as adaptation, mitigation, development, equity, justice, human rights, and resilience, which do not figure as common priorities on the conventional security agenda even if they are integral to addressing climate change? Does such linkage entail the risk of inaccurately communicating disturbing or misguiding messages to relevant decision-making processes?

In response to these questions, Femia and Werrell[76] argue that, while the risk of half-measures in response to climate change exists, placing this challenge in a security context does not seem inappropriate and useless. The implicit assumption behind the questions is that framing climate change as a security threat will ultimately lead to a narrowing of the scope of responses to traditional security solutions through traditional security institutions. However, claiming that the security agenda is primarily concerned with traditional, so-called 'hard security' threats (such as conflict, war, and international terrorism) and does not prioritize 'soft security' threats (such as economic stagnation, lack of resilience, absence of justice, and environmental degradation) remains highly controversial and questionable. This perception seems to stem from a misreading (or a mistrust) of the modern security discourse, which in recent years has enlarged its scope to cover new security concerns in addition to traditional hard security threats. On the ground, even national and international security strategies and agendas are fast evolving to incorporate soft security concerns (mainly human security elements). For instance, the 2010 US National Security Strategy[77] includes a major section devoted to the advancement of 'prosperity', including 'accelerating sustainable development', achieving 'balanced and sustainable

[76] Francesco Femia and Caitlin E. Werrell, 'If Climate Change is a Security Threat, Who's Qualified to Fight It? Hint: Everyone', 4 *Center for Climate Change and Security Briefer*, (2011), available at <https://climateandsecurity.files.wordpress.com/2012/04/if-climate-change-is-a-security-threat-whos-qualified-to-fight-it-hint-everyone_briefer-04.pdf> (visited 26 November 2016), at 1.

[77] White House, *The National Security Strategy*, (2010), available at <https://www.whitehouse.gov/sites/default/files/rss_viewer/national_security_strategy.pdf> (visited 24 September 2016).

growth', strengthening 'education and human capital', and supporting 'the resilience of the poorest nations to the effects of climate change'.[78]

Furthermore, there is little basis on which to conclude that the inclusion of an issue in the security agenda will automatically involve the primary intervention of military institutions. The international and national security agendas are gradually evolving in a way that recognizes the crucial role of civilian entities in combating non-conventional security threats – including poor governance, human rights violations, poverty, water scarcity, food insecurity, and climate change. For instance, in July 2011, at its 6587th meeting,[79] the UN Security Council identified the UNFCCC as a non-security intergovernmental institution and key instrument for addressing climate change. Similarly, in the 2010 US Department of Defense's Quadrennial Defense Review Report, a major section on climate change suggests that civilian agencies, including the Department of State, the Department of Energy, and the Environmental Protection Agency (EPA), should play leading roles in addressing climate risks.[80] These examples show that it is increasingly accepted both nationally and internationally that some security threats are best mitigated by non-military entities. Therefore, rather than narrowing the field of action, the securitization discourse broadens the scope and scale of action on all governance levels. Of course, this broadening and involvement of many different actors is accompanied by the risk of overlapping and uncoordinated actions. This may pose additional risks to human security and should be prudently managed.

The growing literature on the securitization of climate change is also trying to provide an answer to the following question: when can we know that an issue has been fully securitized?[81] It is commonly believed that once an issue is successfully securitized, it moves out of the sphere of ordinary politics to be dealt with as an emergency issue without the normal democratic processes being brought to bear; and the securitizing actor can, through this process, infuse the concept of 'security' with any meaning desired. [82] At the international level, full 'securitization' entails moving an issue outside the normal multilateral treaty framework used to manage political issues of mutual concern to the body with primary responsibility for the maintenance of international peace and security. Among the key actors with a role to play in coordinating a global response to the security risks of climate change, the United Nations stands front and centre, particularly its Secretariat and the Security Council. It is true that the multilateral treaty-making process is not democratic *per se*, but it is still more democratic than the Security Council's decision-making.

[78] *Ibid*. at 28-34.
[79] UN Security Council, *Statement by the President*, *supra* note 66.
[80] US Department of Defense, *Quadrennial Defense Review Report 2010*, *supra* note 45.
[81] Scott, 'The Securitization of Climate Change', *supra* note 9, at 220.
[82] Rita Taureck, 'Securitization Theory and Securitization Studies', 9 *Journal of International Relations and Development* (2006) 53-61 at 54, cited in Scott, 'The Securitization of Climate Change', *supra* note 9, at 222.

According to the Vienna Convention on the Law of Treaties (1969),[83] all states can theoretically contribute to the negotiation of large-scale multilateral treaties and a treaty text is adopted at an international conference by a vote of two-thirds of the states present and voting, unless the same majority decides to apply a different rule. Nevertheless, observers have pointed to the limitations imposed on the multilateral treaty approach to climate change (UNFCCC) by its inclusivity – in particular its 'lowest common denominator' feature by which the resulting treaty represents a compromise limited by the position of those least prepared to commit to far-reaching measures.[84]

Moving decision-making on climate change to the Security Council would constitute extraordinary measures beyond normal politics, not only because of the less democratic process of decision-making by the Council in comparison with that of multilateral treaty regimes, but also because of the enforcement powers accorded to the Council under Chapter VII of the UN Charter.[85] It is generally believed among the international law community[86] that it is at the Council's political discretion to define what constitutes a threat to the peace for the purposes of Chapter VII. In addition, according to Scott,[87] it is possible that the Council has already passed a Chapter VII Resolution in response to a conflict caused, or at least exacerbated, by climate change: 'Operation Restore Hope' (called UNITAF - Unified Task Force), a joint and multinational operation led by the US based on the 1992 UN Security Council Resolution (S/RES/794),[88] was a response to the crisis in Somalia caused at least in part by drought.[89] The physical and social consequences of climate change do not necessarily come with a label attached, and therefore it may not even be apparent when the Council is addressing a climate change consequence. It may simply seem to be responding to a cross-border conflict or other event that threatens the peace and security. Action by the Council to mitigate hostilities resulting directly or indirectly from the consequences of climate change would not necessarily be controversial, particularly if the link between that specific scenario and climate change were not universally recognized or accepted.

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83 Vienna Convention on the Law of Treaties, Vienna, 23 May 1969, in force 27 January 1980, 1155 *United Nations Treaty Series* 331; 8 *International Legal Materials* (1969) 679.

84 Aynsley Kellow, 'A New Process for Negotiating Multilateral Environmental Agreements? The Asia-Pacific Partnership beyond Kyoto', 60(2) *Australian Journal of International Affairs* (2006) 287-303 at 290.

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

86 See, for instance, Michael Wood, 'The UN Security Council and International Law', Hersch Lauterpacht Memorial Lecture, Cambridge (9 November 2006), available at <http://www.lcil.cam.ac.uk/sites/default/files/LCIL/documents/lectures/2006_hersch_lecture_3.pdf> (visited 29 October 2016); and Ian Hurd, 'The UN Security Council and the International Rule of Law', 7(3) *Chinese Journal of International Politics* (2014) 361-379.

87 Scott, 'The Securitization of Climate Change', *supra* note 9, at 223.

88 UN Security Council Res. 794 of 3 December 1992.

89 Michael K. Murphy, 'Achieving Economic Security with Swords and Ploughshares: The Modern Use of Force to Combat Environmental Degradation', 39(4) *Virginia Journal of International Law,* (1999) 1181-1219, at 1184.

If those predicting increased conflict are correct, then the Security Council could be expected to have an increased peacekeeping load in the future. During recent years, there has been considerable discussion of the idea of a 'green helmets' environmental peacekeeping force.[90] The difficulty with this idea in practice is, of course, that the links between climate change and specific events are generally going to be complex and indirect. In addition, climate change is not purely an environmental issue to be managed solely by green helmets. Many peacekeeping operations have already been mandated by the Council in response to resource depletion-induced conflicts, and if these kinds of conflicts increase in the future, then the need for such operations is also likely to grow. This is significant both for the United Nations itself, and for those countries that contribute most to peacekeeping operations. Such recognition is important for planning purposes, including financial forecasting, and the ordering of priorities, particularly in terms of preventing – as opposed to responding to – the impacts of climate change on both humans and ecosystems. [91]

Scott[92] asserts that

> widespread association of climate change with security means that in the most general, colloquial, sense climate change has already been 'securitized' […] Early reports linking security and climate change were received with considerable skepticism as dooms-day scenarios dealing with a remote future, but in a relatively short space of time the link has come much closer to being accepted as part of mainstream thinking […] If, however, one applies to climate change the theoretical postulate of the Copenhagen School that 'securitization' has not occurred until extraordinary measures have been adopted, this would suggest that climate change will not have been fully securitized until international security institutions […] assume a lead role in the global policy response […] If climate change were to be fully securitized and the Security Council to take a lead role in the global response to climate change mitigation and adaptation, we may well witness a far more streamlined and efficient response. We already know what needs to be done in terms of minimizing the rupture in the carbon cycle and adapting to the changes already in train. The governance problem with which the world is struggling is that of how to bring it about, particularly when the action required of wealthy countries is politically unpalatable to domestic constituencies, certainly within the timeframe needed to avert catastrophic environmental change. The problem would be if action by the Security Council were perceived as favoring some to the disadvantage of others; the potential for increasing political divides and tensions is very real.

[90] Suzanne Goldenberg, 'UN Security Council to Consider Climate Change Peacekeeping', *The Guardian* (20 July 2011), available at <https://www.theguardian.com/environment/2011/jul/20/un-climate-change-peacekeeping> (visited 29 October 2016).
[91] Scott, 'The Securitization of Climate Change', *supra* note 9, at 224.
[92] *Ibid*. at 228.

At present, there are indications that we may reach a position somewhat short of the full securitization of climate change, in which governments and international institutions regularly and routinely take action premised on climate change being a threat to national and/or human security, but do so in response to the consequences of climate change rather than addressing climate change mitigation and adaption itself. However, this situation requires the resolution of many pending problems among proponents[93] and opponents.[94]

There have been few calls as yet for the UNFCCC regime to be supplanted. The emphasis has instead been on retaining the Convention's status as the primary vehicle for coordinating climate actions globally. When introducing the climate change – security nexus to the Security Council, the United Kingdom was adamant that the objective was not for the Council to grab power from elsewhere in the UN but simply to send a message to other UN organs that they needed to act efficiently and urgently.[95] At a domestic level (especially in the American context), reference is increasingly being made to the need for a 'whole of government' response to climate change.[96] Similarly, at the international level, the involvement of an increased number of international institutions (such as the World Trade Organization (WTO),[97] the World Health Organization (WHO),[98] the International Migration Organization (IMO),[99] the UN Human Rights Council (UNHCR),[100] etc.) in climate policy and governance may seem useful. These institutions may mainstream climate security in their decision-making processes with the aim to promote member states' respective policies. Above all, climate change is a multifaceted issue, which, if disaggregated, leaves scope for a wide range of institutional actors to integrate relevant considerations into the formulation and implementation of policy in their respective areas of responsibility.[101]

[93] Key proponents have been the United Kingdom and the EU, as well as Small Island Developing States in the Pacific.

[94] Many concerned nations (through negotiation groups such as the G77 and the Non-aligned Movement) have expressed reservations about the 'securitization' of climate change policy and did not accept a role for the Security Council on the matter. They are worried that developed nations will not only continue to ignore their obligations to address climate change as a development issue, but also opt for fighting it as a security issue. These countries have expressed fears that major powers would use their overwhelming military capabilities to dictate to others how to manage their resources (for example, by using the US naval forces to manage migrant flows or using coercive diplomacy against states who are perceived as laggards) while imposing new forms of environmental conditionality.

[95] Scott, 'The Securitization of Climate Change', *supra* note 9, at 228.

[96] Nick Mabey, 'Facing the Climate Security Threat: Why the Security Community Needs a 'Whole of Government' Response to Global Climate Change', German Marshall Fund of the United States Policy Brief (2010), available at <http://www.gmfus.org/publications/facing-climate-security-threat-why-security-community-needs-whole-government-response> (visited 24 June 2016), at 5.

[97] See <https://www.wto.org>.

[98] See <http://www.who.int/en/>.

[99] See <http://www.iom.int>.

[100] See <http://www.ohchr.org/EN/Pages/Home.aspx>.

[101] Scott, 'The Securitization of Climate Change', *supra* note 9, at 230.

Ultimately, and in line with the position of Femia and Werrell,[102] framing climate change as a security concern is not necessarily an alarmist tactic since the objective is about the exploration of a very probable reality in the light of various facts and considerations mentioned in this analysis. Moreover, exploring climate-related risks to security may be seen as a useful approach for cooperation and jointly developing solutions. However, in order to foster the potential for action, it is important to fully interpret the climate–security risks that such cooperation must address. Continuous research on the climate–security nexus, more work on further incorporating the non-environmental drivers of conflict into climate and security studies, and a continuous promotion of the work done so far, will be key for managing emerging challenges in a smart and efficient manner. Furthermore, the next step will be to engage the world's security institutions in order to improve the political discourse on climate and security, and to ensure that efforts to combat climate change are responsive to the full range of unprecedented risks that we currently face.

3.2 Securitizing climate change: implications for the global climate regime

It is commonly accepted that the current world is deeply interconnected and interdependent with nation-states and societies increasingly sharing similar concerns and challenges. However, when it comes to adopting responses to some global challenges, such as climate change, there is often a deep divide among countries, which prevents the efficient management of the issue concerned. Despite the fact that the climate change which we are currently experiencing is the responsibility of developed countries, as past carbon emitters, it has recently become clear that the involvement of these countries alone will be insufficient to solve this problem. This is arguably why the adoption and ratification of the Paris Agreement has occurred more easily and quickly than was the case for the Kyoto Protocol.[103] The majority of countries have understood that tackling the climate risk will not be possible without joining forces to develop robust understanding of the impact and drivers of future climate change scenarios and cooperate on political, financial, scientific, and technological levels. Countries and governments have understood that a global response is essential to face all the threats of climate change, especially the ones with human and collective security implications.

[102] Femia and Werrell, 'Climate and Security 101', *supra* note 46, at 2.

[103] The main challenge for developing countries, particularly in Africa, is to address their under-development and widespread poverty. Climate change makes this challenge even more formidable. Their limited and fragile productive capacities will be further tested and their objective of 'trading out of poverty' undermined. Their need has been for an agreement with adequate mitigation targets based on respective responsibilities and capacities of countries, adaptation efforts at the same level as the mitigation targets, sufficient provisions for financing and technology transfer to assist them in transitioning to greener economies while meeting their developmental and poverty-reduction goals, and effective safeguards against disguised protectionism on their trade prospects. The Paris Agreement addresses these elements though not always in the manner and to the extent that developing countries wanted and needed. This is why the majority of emerging and developing countries accepted to voluntarily joining the international climate action, hence facilitating the quick adoption, ratification, and entry into force of the Paris agreement.

To deal with the internal and external challenges facing the global climate regime, multilateral climate diplomacy must draw on the best practices of modern diplomacy, as well as adopt innovative new approaches. This is especially so given the evolving scope and complexity of the climate regime, which is shifting its focus from target setting to implementation and climate risk management. This shift has prompted better integration of climate change into broader foreign policy and geopolitical discussions, a proliferation of overlapping alliances between both state and non-state actors, and new approaches to shaping a global dialogue on the consequences of, and solutions to, climate change. However, in order to promote the evolution of climate diplomacy within this perspective, while anchoring commitment to climate change at the highest level of international political agendas and raising the level of ambition for an efficient and equitable global climate governance, the security implications of climate change – from the human, economic, environmental, and geopolitical perspectives – should be widely recognized and mainstreamed.

So, how will the full or partial 'securitization' of climate change be likely to contribute to the advancement of the global climate regime? According to Scott,[104] the primary way in which the securitization of climate change could be expected to enhance the global climate response would be by heightening the sense of urgency surrounding the issue, and thereby giving impetus to greater commitment and prioritization (i.e. beyond the ambitions showed by countries in their recent Intended Nationally Determined Contributions (INDCs) submitted before the COP21). Framing climate change as a security issue, given its potential to threaten the survival and peace of nations, could serve to enhance and broaden the policy response at various governance levels by facilitating policy makers' and their publics' recognition of the common origins of what may otherwise appear as unconnected phenomena. Debate about climate change is often expressed in terms of a hypothetical future: by how much the temperature will rise, by how much countries should reduce their emissions, and the nightmare scenarios that may come into play if they fail to do so. This focus on what may appear a hypothetical future renders climate change a particularly daunting and difficult policy arena for governments. Once, however, various issues of contemporary security are all perceived as interrelated and amplified via climate change, the need to respond as urgently as possible might appear even more obvious and imposing.

Framing climate change as a security-related concern may, therefore, contribute to raising the political priority placed on the issue both domestically and globally. This may have various effects due to bringing about a shared appreciation of the growing and imminent 'threat' that climate change poses to the security of all nations, organizations, and individuals. For instance, this approach presumably has the potential to promote the following:

[104] Scott, 'The Securitization of Climate Change', *supra* note 9, at 229.

- The development of a 'whole of government' approach,[105] which is needed to foster effective climate diplomacy.[106] In particular, the management of climate change risk will require construction of an effective, complex, and multi-layered international regime grounded in national action – this regime can only work if it rests on strong national climate change policies which are rooted in broad domestic political consensus and integrated into national development processes.
- Cooperative efforts by the international community may be justified and promoted in developed, emerging and developing nations alike, since no country can manage the climate-related security risks it faces on its own. Therefore, the securitization of climate change may generate greater motivation for international cooperation.
- Within the framework of the Paris Agreement, even though provision is not made for legally binding emissions targets and engagements are based on countries' ambitions, as expressed in INDCs, stronger domestic and foreign pressures may grow for emissions restrictions to be placed on key carbon emitting nations – whether developed or emerging – as awareness of climate-related security risks becomes better recognized.

In addition, security implications of climate change are likely to place stresses on global politics and governance. As climate change interacts with state fragility, places strain on global food, water and energy supplies, and alters geopolitical dynamics, nations and intergovernmental institutions will need to develop more sophisticated means of addressing these issues. This may include incorporating climate concerns into existing multilateral institutions, creating new international institutions to address climate-related challenges, and elevating climate security as a priority in bilateral and regional cooperation. Disputes over addressing climate change can also spill over into other areas of international security cooperation, potentially fraying relationships between states and within intergovernmental institutions. However, and given the security implications of climate change, responding to the threat also provides opportunities for increasing international cooperation on climate change and a broader array of issues.[107]

Similarly, these security implications are likely to place stresses on development politics. As highlighted earlier in this paper, fragile nations which are already experiencing conflicts, extreme levels of poverty, weak governance, and food, water and health insecurity are the most vulnerable to climate change impacts. In this context, agencies and international institutions concerned with development will need to ensure that assistance to these nations is climate-sensitive, including sensitive to the possible effects of climate change on instability and conflict. Ensuring that climate policies and investments are conflict-sensitive will also be important.[108]

[105] A 'whole-of-government' approach (also known as interagency approach) aims at integrating the collaborative efforts of the departments and agencies of a government to achieve unity of effort toward a shared goal.
[106] Mabey, Facing the Climate Security Threat, *supra* note 96, at 5.
[107] Femia and Werrell, 'Climate and Security 101', *supra* note 46, at 5.
[108] *Ibid*.

Since climate change will have impacts both immediately and in the long-term, the global climate regime should focus on mitigation and adaptation while prioritizing actions to alleviate pressing threats to security. Both adaptation and mitigation strategies are important from a security perspective: adaptation will help to manage unavoidable effects on security, while mitigation will help to avoid future scenarios that will make it difficult for governments and societies to manage climate-related security risks. Also, the primary means through which to mitigate conflicts around climate change is by mitigating the effects of climate change itself. Whilst there must be conflict-sensitive adaptation and diplomatic preparations for the impacts of climate change that we already know are likely to occur (such as forced displacement of populations and increased competition over scarce natural resources), the most significant response to the security impacts of this issue should be action to reduce carbon emissions and protect existing 'carbon sinks'.[109] These steps will prevent the catastrophic expected scenarios of climate change, and thus prevent the most dangerous conflicts. In addition to these strategies, boosting international cooperation and devoting resources to the development of technologies that will help address the security implications of climate change is a critical component of a comprehensive risk management strategy. The recent adoption of the Sustainable Development Goals (SDGs) can be also seen as a move forward,[110] despite the fact that the implementation process should be perceived as a new challenge for the international community, which will require substantial cooperation.

4 Qualifying 'climate security' as a framework referential for global climate and security politics: Recommendations

What adjustments are needed to make the securitization of climate change relevant and effective for climate and security politics? According to Abbott *et al*, [111] a new way of approaching security is currently needed, one that addresses the drivers of conflict, 'curing the disease' rather than 'fighting the symptoms'. In other words, a preventive approach that addresses the likely causes of conflict and instability well before their effects are felt. For Brock,[112] among the long-term trends in global se-

[109] A 'carbon sink' is every process (natural or artificial) by which carbon dioxide is removed from the atmosphere and held in solid or liquid form. A forest, ocean, or other natural environment can be perceived as a carbon sink when its ability to absorb the carbon dioxide from the atmosphere is established.

[110] In the 2030 Agenda for Sustainable Development, Member States express their commitment to protect the planet from degradation and take urgent action on climate change. The Agenda also identifies, in its paragraph 14, climate change as 'one of the greatest challenges of our time' and worries about its adverse impacts which

> undermine the ability of all countries to achieve sustainable development. Increases in global temperature, sea level rise, ocean acidification and other climate change impacts are seriously affecting coastal areas and low-lying coastal countries, including many least developed countries and Small Island developing States. The survival of many societies, and of the biological support systems of the planet, is at risk.

Ibid.

[111] Chris Abbott, Paul Rogers and John Sloboda, 'Global Responses to Global Threats. Sustainable Security for the 21st Century', Oxford Research Group Briefing Paper (2006), available at <http://www.oxfordresearchgroup.org.uk/sites/default/files/globalthreats.pdf> (visited 25 June 2015).

[112] Brock, *Climate Change: Drivers, supra* note 27, at 2.

curity that are likely to cause unprecedented international tension and loss of life in the coming decades, the four most important underlying drivers and interconnected triggers of insecurity are climate change, increasing competition over resources, global militarization, and the phenomenon of marginalization across many regions. Additionally, these likely future drivers of insecurity do not respect national boundaries, and will not be sustainably addressed by unilateral approaches. In a globalized era, in which no nation's security is independent of its region or of the wider international community, the opinions of the majority of nations and societies can no longer be neglected by the major powers which currently dominate the development of global security priorities. Hence, the engagement of all countries in the process, without exception, is essential if sustainable and equitable solutions are to be found.

Therefore, any effective response to global insecurity should be based on global justice and equity. However, voices from the Global South are still on the periphery of discussions around global political and security issues, and particularly at the negotiating tables of international institutions. This must be addressed. Western organizations can contribute to the building of an egalitarian approach to international relations by adopting a close and meaningful engagement with the concerns expressed by the majority of countries. Security analysts and policy-makers must also continue to engage and collaborate with counterparts in the Global South, thus ensuring truly inclusive global politics. Many future security problems, and the solutions thereto, will be found in the Global South (given their intimate and intuitive understanding of those problems and solutions), within the very populations whose marginalization has resulted in much contemporary insecurity. For example, whilst climate change will hit the poorest communities hardest, it is with emerging economies like China, India and Brazil that the West must engage if mitigating climate chaos is to have any success at all.

In addition, non-Western perspectives must be recognized and addressed in concrete policies in the powerful countries of the global North. Such policies should be focused on transforming tensions at their root rather than solely attempting to control violent conflicts[113] or even exacerbate them through interventions. In addition, since climate change has the potential to reshape our economic, social, energy, technological, and ecological systems, it can be perceived as an opportunity to promote collaboration and co-existence between Northern and Southern states, pushing all actors to work jointly to find solutions and seize opportunities. This scenario would foster mutual dependence, solidarity and trust; developed nations independently securing themselves against the adverse effects of climate change will only exacerbate the sense of 'the West versus the rest'. [114]

Climate change is a global phenomenon that will have consequences for the future

[113] *Ibid*. at 3.
[114] *Ibid*. at 14.

security architecture of our planet. To address the security risks of climate change better, and to avoid worst-case climate scenarios that may be very difficult and costly to manage effectively in the future, a myriad of measures should be taken, such as:

- Developing climate mitigation and adaptation strategies that are consistent with international security priorities.
- Overcoming the short-term thinking that dominates policy-making processes and thinking with the idea of limits and urgency when managing many climate concerns.
- Allocating significant resources to enhance climate resilience in unstable parts of the world and to manage and reduce climate impacts on human security, as well as the implications of climate change for geopolitical dynamics in strategically significant parts of the world, such as the Arctic, the South China Sea, and the MENA region.
- Mainstreaming climate change concerns into national security, defense, diplomatic and development strategies while systematically addressing climate change through collective security institutions.
- Taking regional and local specificities and imperatives into account when elaborating and implementing potential responses (given that there is no clear-cut solution for all climate-related security risks).
- Integrating climate concerns into military-military and civilian-military cooperation on disaster risk reduction and enhancing the role of military during climate disasters.
- Enhancing the involvement of bilateral and multilateral donor institutions in climate-related investments, including post-disaster actions and programs.
- Carrying out climate-proofing efforts to enhance food, water, and energy security and ensure the existence of critical infrastructure that is able to withstand future pressures from more frequent and intense extreme weather events.
- Developing legal and institutional structures to manage migration as a climate adaptation strategy, including the formulation of a legal status for the 'climate refuge'.
- Improving understanding of how climate change pressures interact with state stability and state legitimacy in order to reduce the resistance of many countries to the securitization of climate change. It is, in other words, essential for the UN and its Security Council to begin processing information about the nature of the potential impact of climate change on peace and security, rather than simply proscribing a particular course of action.
- The UN, through the Human Rights Council, should appoint a special rapporteur for climate change and human security, with a flexible mandate to investigate, catalogue, analyze, and draw attention to areas in which climate change can negatively impact livelihoods and potentially lead to political instability, especially in conflict-afflicted states.

In addition, it is useful to recall that the rapid and unprecedented changes which are currently happening, and are likely to worsen in the future, make planning for climate risks more difficult and complicated. For this reason, climate models, advancements in science and research on the links between climate change and social pressures, and foresight exercises can help to set the stage for most likely scenarios. However, low probability events happen all the time, and these must be planned for as well. Abrupt climatic changes, as well as gradual climatic changes that instigate abrupt shifts in food, water, and energy security, could potentially have serious destabilizing consequences.

Though we have good predictive models for climate change, there remain a number of unknowns. According to Brock,[115] public understanding of climate change – including understanding of the reasons behind it, the likely results, and methods of mitigation and adaptation – needs to improve on an international scale. Even with the release of the IPCC 5th Assessment Report (AR5) in 2013 and 2014, current levels of knowledge are still insufficient in many areas. Additional investigations are thus needed to feed into decision- and policy-making processes. For instance, with regard to assumed, claimed, and projected links between climate change and conflicts, there is still a lack of systematic statistical data (on small-scale conflicts between non-state actors) and of statistical analyses based on a high number of cases on past linkages. A large proportion of the case studies produced thus far have resulted from commissioned studies for ministries and inter- and non-governmental organizations, and were intended to satisfy specific policy needs. In most cases, however, these studies are not comparable and have not contributed to an accumulation of systematic knowledge.[116] This situation hampers both the response of citizens – which is ultimately what creates the momentum for serious change on other scales – who often lack relevant, useful information, and decision-makers, who may lack sufficient environmental knowledge to back long-term, sustainable policy changes.

In addition, building governance institutions, including international security institutions, that are climate-resilient, will be critical for enhancing the ability of nations to deal with risks and abrupt changes related to global warming.[117] Regional

[115] *Ibid*. at 12.
[116] *Ibid*.
[117] Femia and Werrell, 'Climate and Security 101', *supra* note 46, at 7.

frameworks and organizations may also play a key role in this process.[118] According to Glantz,[119] regional organizations are created by states because they find it increasingly difficult to deal effectively with numerous international issues of varying levels of national importance that require constant attention. Such entities have some advantages such as the flexibility of collective action, and the capability to initiate policy, negotiation, and exchange of views. All these qualities have the potential to facilitate cooperation in respect of climate change. Indeed, a 2008–2010 series of consultations, which the Oxford Research Group undertook with non-Western security analysts, have already identified effective regional architectures as significant in addressing shared security challenges, such as climate change. Such organizational structures should be strengthened, and focus particularly on the need for greater clarity on the security implications of climate change. In many areas, unilateral climate policies may drive insecurity further.[120] It is therefore important that these regional policies address power relations. Where climate measures are unilateral, rather than cooperative, conflict is more likely to occur.

Other key actions that could be realized to try to reach successful results include: overcoming short-term thinking; enhancing the present approach based on mitigation and adaptation; fostering a robust collaboration among states; and considering climate change as a shared risk for all countries. There is no clear-cut solution for the

[118] In Asia and Australasia, strong regional groupings would provide space for the formulation of negotiated settlements to pre-existing disputes, and to agree pan-regional responses to the problem of environmental refugees. Similarly, the MENA countries would profit from regional institutions that include all key players, as dialogue around climate-induced resource scarcity is desperately needed (such as the Union for the Mediterranean (UFM) (see <http://ufmsecretariat.org/>) or the Dialogue 5+5 (see <http://westmediterraneanforum.org/about-the-55-dialogue/>). In other regions, the Organization of American States (OAS) (see <http://www.oas.org>) works together closely, as does CARICOM (the 'Caribbean Community'). The OAS issued the Santo Domingo Declaration (Declaration of Santo Domingo for the Sustainable Development of the Americas, 19 November 2010, Doc. CIDI/RIMDS-II/DEC.1/10, available at <https://www.oas.org/DSD/MinisterialMeeting/Documents/Declaracion_Santo_Domingo_eng.pdf> (visited 25 November 2016) in November 2010 calling for 'deep cuts in emissions of GHGs' (para. 16) and citing the use of Inter-American networks established through the OAS to 'promote cooperation, and the exchange of experiences with respect to integrated water resources management, renewable energy, biodiversity information, disaster risk management, climate change adaptation, and environmental law and to promote synergies with other pertinent sub regional mechanisms' (para. 17). The African Ministerial Conference on the Environment (AMCEN) (see <http://www.unep.org/roa/amcen/About_AMCEN/>) is another example of such cooperation. Founded in 1985, it aims to strengthen cooperation between African governments on issues relating to environmental degradation and the food and energy needs of the continent's people. For more details, see Brock, *Climate Change: Drivers, supra* note 27.

[119] Lynton K. Caldwell, 'Transnational regional responses to global climate change: Options, obstacles and opportunities' in Michael H. Glantz (ed.), *The Role of Regional Organizations in the Context of Climate Change* (Springer, 1994) 73-79 at 79.

[120] For example, Iran has constructed a dam on the Khabour River that cuts off vital supplies to the wetlands and marshes of southern Iraq. Both nations can be expected to divert water from their rivers over coming years, particularly through extended periods of drought – this will accentuate water scarcity in neighboring Syria. Policies like this, which hinder other nations' access to water (particularly nations already living with water insecurity) will increase tensions. See, for instance, Brock, *Climate Change: Drivers*, *supra* note 27; and Ed Couzens, 'Water-related Conflict and Security in Southern Africa: The SADC Protocol on Shared Watercourses', in Melissa Lewis, Ed Couzens and Tuula Honkonen (eds), *International Environmental Law-making and Diplomacy Review* 2014, University of Eastern Finland – UNEP Course Series 14 (University of Eastern Finland, 2015) 91-126.

problem, but it is necessary to act and to do it now because whatever we do today will only have a positive effect in 20-25 years. Many politicians are still not facing this problem, waiting for others to act first, but there is no more time to waste. We are not able to predict precisely what is going to happen, and therefore it is necessary to devise an adaptation program that could evoke a global response regarding a possible crisis situation in the future. The challenges raised by climate change are also hurdles faced by the existing system of international security governance. This is a global phenomenon that will have consequences for the future security architecture of our planet. It is vital that all international institutions perform at their best and cooperate closely in addressing this crucial challenge.[121]

In addition, civil society organizations have an important role to play in driving governments and communities to act in mitigating climate change, exploring and disseminating adaptation techniques and good practices, and also highlighting marginalized voices in climate-related debates. This may be done through lobbying, active contribution in parallel climate forums (i.e. during the COPs), shaping and reinforcing public opinion and support for proactive climate actions, contributing to research, investigation, and innovation, etc. Sometimes, civil society actors can even work alongside local governance initiatives to encourage the use of traditional conflict resolution mechanisms in dealing with newly constrained circumstances, such as competition over natural resources. Supporting such actors and strengthening their international legal status is thus integral to the progress of the global climate regime. At the grassroots levels, public education programs should be fostered in order to prepare populations, and mitigate the likelihood of unplanned reactions to environmental and social changes. Education will also provide people with greater capacity to be involved in participatory climate policies. Particular efforts should be made to include vulnerable and excluded groups in decision-making processes to minimize social and political tensions. Explicitly addressing unequal power relations – for example by focusing on gender equality and human rights – and promoting fair access to resources and services should underpin all climate actions, thus also improving security.

5 Conclusion

The analysis presented in this paper has attempted to demonstrate how, and to what extent, the 'securitization' of climate change is relevant, as well as to explore the different implications it entails for the global climate regime. The analysis has showed a progressive move towards the securitization of climate change, but that additional research and empirical investigation is still needed to assist in building a solid 'climate security' paradigm. We should move a step further from understanding and facing these new security issues for the well-being, security and survival of future generations to concrete political, economic and societal strategies, specific policies

[121] Institute for Environmental Security, *Climate Change and Security*, *supra* note 42, at 6.

and measures for coping with these new security dangers. Indeed, without a solid climate security referential, it will remain difficult to translate this new knowledge into action, such as through mainstreaming climate security in global and domestic climate and security politics, and moving from elaboration to implementation.

As the IPCC – a knowledge-based epistemic community – has indirectly become a new securitizing actor with its recently released assessments (AR5), the response to climate change as a new security risk must be knowledge-based, but it must also be backed with the policy commitment and the financial resources of states as well as societal and economic actors. This emerging securitization process has already been instrumental for mobilizing political support and public and private funds for the post-2012 and 2015 climate change regime. During the coming negotiations, the overall circumstances for additional achievement seems generally favorable. On closer inspection, however, it becomes apparent that the Paris Agreement is fragile and that future negotiations might be complicated. An agreement that mainly consists of a colorful array of self-determined national commitments stands and falls with their implementation. Regarding some issues, such as pledged climate finance, developing countries are making financial assistance a condition for ambitious climate protection measures, with clear distinctions between what they can implement alone and what will require external assistance.[122] As everything is interdependently intertwined, the Paris Agreement resembles a carefully constructed house of cards that could quickly collapse at any moment.[123]

Fuhr *et al*[124] note that the COP21 in Paris

> was able to shine as brightly as it did because numerous controversial issues were postponed to future climate negotiations. COP21 only established the main points and the countries will have to thrash out what they mean and how they will be implemented in Morocco and at the following conferences. Many highly political conflicts are thus being deferred to committees of technical experts. It remains to be seen how serious the world really is about climate protection.

Overall, the success of the international community in tackling climate change will depend largely on the will of different countries to implement their engagement within the Paris Agreement and on the capacity to develop solutions to pending controversial issues. Nevertheless, linking climate and security may have the potential to boost this process, and to improve the capacity of the global climate regime to manage divergent interests and reverse the direction of global warming.

[122] Morocco, for example, has made its goal of reducing greenhouse gas emissions by 32 per cent by 2030 dependent on USD35 billion in foreign investment (in addition to USD10 billion in domestic efforts) in projects such as its ambitious solar and wind energy programs.

[123] Lili Fuhr, Liane Schalatek and Simon Ilse, 'Morocco must breathe life into the Paris Agreement', (Heinrich Böll Stiftung North America, 2016), available at <https://translate.google.com/#auto/en/Lili%20Fuhr%20Liane%20Schalatek%20Simon%20Ilse> (visited 1 November 2016).

[124] *Ibid*.

Governance and Disaster Risk Reduction

Karen Mrema[1]

1 Introduction

In the past several years, the world has experienced a multitude of crises, and intense disasters (whether natural or technological) that have devastated communities from Haiti to Japan.[2] Concerns about rapid climate change have heightened, and as the global temperatures continue to increase, extreme weather events – such as floods, droughts, landslides, and storms – may become more erratic and uncertain, often resulting in disasters. Making the situation even worse is the general drive for economic growth, which leaves countries more vulnerable to risks. Rapid urbanization and increasing populations have combined to concentrate people and property in areas exposed to the very hazards that climate change has now intensified.[3] In its 4th Assessment Report of Working Group II, the Inter-governmental Panel on Climate Change (IPCC)[4] projected that the rising global temperature will cause increased drought and thus increased water stress in many parts of the world, increased damage from storms, and coastal flooding affecting millions of additional people each year.[5] Disasters have devastating effects on countries' economies, taking back years of development and costing governments enormous sums in reconstruction and recovery.

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[1] BSc Env Sc (Dalhousie) MSc Env Sc (Toronto) Dipl Proj Man (Fitzwilliam Institute); Regional Programme Specialist, Community Resilience for Environment and Disaster Risk Reduction, United Nations Volunteers (UNV), Nairobi, Kenya; e-mail: karen.mrema@gmail.com.

[2] World Bank, *Risk and Opportunity. Managing Risk for Development* (World Bank, 2013), available at <http://siteresources.worldbank.org/EXTNWDR2013/Resources/8258024-1352909193861/8936935-1356011448215/8986901-1380046989056/WDR-2014_Complete_Report.pdf> (visited 1 October 2016).

[3] UNISDR, 'Towards the Post-2015 Framework for Disaster Risk Reduction Tackling Future Risks, Economic Losses and Exposure' (UNISDR, 2013), available at <http://www.unisdr.org/files/35713_tacklingfuturerisk.pdf> (visited 1 October 2016).

[4] See <http://www.ipcc.ch>.

[5] Adger *et al*, 'Summary for Policymakers' in Parry *et al,* (eds), *Climate Change 2007: Impacts, Adaptation and Vulnerability.* Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (Cambridge University Press, 2007) 7-22.

Climate change is an extremely important driver of disaster risks. According to the latest IPCC report, it is clear that climates are changing worldwide and that these changes will have significant impacts on the planet, especially on our natural systems. For example, as the temperatures get warmer, glaciers melt, thus altering our hydrological systems and affecting water resources. Sea level rises increase the likelihood and frequency of flooding. Many terrestrial, freshwater and marine species are being forced to shift their geographic ranges, seasonal activities, and migration patterns, in response to ongoing climate change.[6]

Changes in climate are expected to exacerbate food insecurity (since agricultural production and marine biodiversity etc. will be affected). Climate change will equally affect availability of water, thus intensifying water competition and enhancing poverty due to projected decrease in economic growth. It will thus escalate risks of violent conflicts and increase the spread of diseases associated with natural disasters. These are some of the areas where the effects of climate change could potentially result in disaster risks further undermining countries' development.

According to the United Nations, disasters have over the past two decades affected more than 4.4 billion people – killed more than 1.3 million people, rendered more than 22 million people homeless, and caused over USD2 trillion in economic losses.[7] Moreover, 95 per cent of those affected during this period lived in developing countries. According to the OFDA/CRED International Disaster Database (EM-DAT), in 2015 alone there were over 350 natural disasters globally, about 65 of which occurred in Africa,[8] having negative impacts on millions of people and causing huge damage-related costs. The world's poorest nations, like those found on the African continent, are disproportionately affected and most vulnerable to disasters.[9]

The development challenge posed by disaster risks has received significant attention on the world stage, with increasing reference to disasters across various policy arenas and in various international instruments and reports, such as the Rio+20 Outcome Document,[10] IPCC Special Reports,[11] the World Bank report on Managing Risk for Development,[12] and the recent UNFCCC decision to establish an international

6 Core Writing Team, Rajendra Pachauri and Leo Meyer (eds), *Climate Change 2014: Synthesis Report.* Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC, 2014).

7 *Ibid.*

8 See EM-DAT, 'Disaster Trends', available at <http://www.emdat.be/disaster_trends/index.html> (visited 30 October 2016).

9 Geoff O'Brien *et al*, 'Climate change and disaster management', 30(1) *Disasters* (2006) 64-80.

10 Rio +20 Outcome Document 'The Future We Want', UNGA Res. 66/288 of 11 September 2012, available at <https://sustainabledevelopment.un.org/content/documents/733FutureWeWant.pdf> (visited 2 October 2016).

11 See <https://www.ipcc.ch/publications_and_data/publications_and_data_reports.shtml>.

12 See World Bank, *Risk and Opportunity*, *supra* note 2.

mechanism on loss and damage,[13] to mention a few.[14] A prominent policy document on disaster risk is the Sendai Framework for Disaster Risk,[15] which lays out seven targets and four priorities for action, aimed at preventing new and reducing existing disaster risks. Also important are the Sustainable Development Goals (SDGs)[16] with 17 aspirational goals and 169 targets that build on the Millennium Development Goals[17] and covers a broad range of sustainable development issues.

Nonetheless, the existence of national laws and policies does not necessarily equate to action being taken on the ground. To realize the SDGs on the ground, more effort therefore needs to be taken to ensure effective implementation of existing policies at the local, national, regional, and international levels. Governance, whether good or bad, is a fundamental aspect of disaster risk reduction (DRR). Good governance ensures that governments – through their institutional, policy, administrative and regulatory mechanisms – remain accountable for reducing the exposure and vulnerability to disasters and for enhancing the management of risks. This paper aims to highlight the importance of good and effective governance in the management and reduction of disaster risks in the national context, as well as the roles and responsibilities of regional and international bodies in supporting governments. Examples will be drawn from lessons learned from past disasters and the impacts of strong governance in managing and reducing disasters.

2 Understanding disaster risk reduction and governance

2.1 Basic concepts

Before delving into the substance of the paper, it is important to establish a common understanding of the concepts of disaster risk reduction and governance in relation to disaster risks. These concepts are not new and a wide range of definitions

[13] 'Warsaw international mechanism for loss and damage associated with climate change impacts' UNFCCC Dec. 2/CP.19 (2013).

[14] Debbie Hillier and Katherine Nightingale, 'How Disasters Disrupt Development: Recommendations for the post-2015 Development Framework' (Oxfam GB for Oxfam International, 2013), available at <https://www.oxfam.org/en/research/how-disasters-disrupt-development> (visited 1 October 2016).

[15] See Sendai Framework for Disaster Risk Reduction available at <http://www.unisdr.org/we/inform/publications/43291> (visited 25 November 2016).

[16] 'Transforming our world: the 2030 Agenda for Sustainable Development', UNGA Res. 70/1 of 25 September 2015.

[17] 'United Nations Millennium Declaration', UNGA Res.55/2 of 18 September 2000.

is provided by the existing literature.[18] However, for the purposes of this paper, a brief overview of the general concept of disaster risk reduction and governance is provided below.

Disaster risk reduction, as defined by the United Nations International Strategy for Disaster Risk Reduction (UNISDR),[19] is

> the concept and practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.[20]

Disaster risk reduction also involves the development and implementation of policies and strategies that are geared towards reducing vulnerabilities within a society to the adverse effects of disasters. It is commonly based on the premise that the integration of disaster risk reduction into development plans and the effective execution of these plans will ultimately lead to the reduction of the negative impacts of disasters. In doing so, it will enhance the coping strategies and preparedness of the society regarding disasters.

Governance, as defined by the United Nations Development Programme (UNDP),[21] is

> the exercise of political, economic and administrative authority in the management of a country's affairs at all levels. It comprises mechanisms, processes and institutions through which citizens and groups articulate their interests, exercise their legal rights, meet their obligations and mediate their differences. Governance encompasses, but also transcends, government. It encompasses all relevant groups, including the private sector and civil society organizations.[22]

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[18] See UNISDR, *Global Assessment Report on Disaster Risk Reduction 2015. Making Development Sustainable: The Future of Disaster Risk Management* (UN, 2015), available at <http://www.preventionweb.net/english/hyogo/gar/2015/en/home/index.html>; Christopher B. Field *et al,* (eds), *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*. A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change' (Cambridge University Press, Cambridge, 2012), 17; Riyanti Djalante, 'Adaptive governance and resilience: the role of multi-stakeholder platforms in disaster risk reduction', 12 *Natural Hazards and Earth System Sciences* (2012) 2923–2942; Saburo Ikeda and Toshinari Nagasaka, 'An Emergent Framework of Disaster Risk Governance towards Innovating Coping Capability for Reducing Disaster Risks in Local Communities', 3 *International Journal of Disaster Risk Science* (2011) 1-9); Henry N. Bang, Governance of disaster risk reduction in Cameroon: The need to empower local government, 5(2) *Jàmbá: Journal of Disaster Risk Studies* (2013).

[19] See <https://www.unisdr.org>.

[20] UNISDR. 'Terminology of Disaster Risk Reduction', available at <https://www.unisdr.org/we/inform/terminologyz> (visited 30 October 2016).

[21] See <http://www.undp.org>.

[22] UNDP, 'Disaster Risk Reduction, Governance and Mainstreaming' (UNDP, 2013), available at <http://www.undp.org/content/dam/undp/library/crisis%20prevention/disaster/Strengthening%20Disaster%20Risk%20Governance-Full-Report.pdf> (visited 13 September 2016).

UNDP defines disaster risk governance as

> the way in which public authorities, civil servants, media, private sector, and civil society at community, national and regional levels cooperate in order to manage and reduce disaster and climate related risks. This means ensuring that sufficient levels of capacity and resources are made available to prevent, prepare for, manage and recover from disasters. It also entails mechanisms, institutions and processes for citizens to articulate their interests, exercise their legal rights and obligations, and mediate their differences.[23]

Governance is facilitated by well-organized and coordinated institutions at the national and local levels that streamline the ways access to information, communications themselves, and decisions are made. Good governance is essential in building resilient communities[24] against disasters. Good governance should translate to effective and efficient policies and institutions, a favorable political environment that supports public participation and ownership as well as empowers the community to participate in decision making, and establishing systems of accountability.

2.2 The role of good governance in disaster risk reduction

Disasters, if not effectively managed, have the potential to undo decades of development investments and gains in a country. However, disasters can themselves be a result of poor decision-making and non-inclusive development planning.[25] For example, constructing a new road in order to improve local transportation could force new settlements to an area that is flood-prone, thus increasing exposure to flooding.

Good governance is a fundamental factor in disaster risk reduction. The existence of strong political will, coupled with public awareness and participation and sufficient resources and capacity, are key ingredients in supporting disaster risk reduction efforts and enhancing coping capacities in societies. Natural hazards on their own do not result in disasters.[26] Rather, disasters occur as a result of a society's vulnerabilities to risks caused by poor actions and decisions.

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[23] UNDP, 'Disaster Risk Governance: Issue Brief' (UNDP, 2012), available at <http://www.undp.org/content/dam/undp/library/crisis%20prevention/20121112_Issue_brief_disasterriskgovernance.pdf> (visited 1 October 2016).

[24] According to the American Red Cross, a resilient community is 'one that possesses the physical, psychological, social and economic capacity to withstand, quickly adapt to, and successfully recover from a disaster'. American Red Cross, 'Disaster Preparedness' (2013), available at <http://www.redcross.org/images/MEDIA_CustomProductCatalog/m16740811_Fact_Sheet_-_Disaster_preparedness_Feb_2013.pdf> (visited 24 October 2016).

[25] Alexandra Galperin and Emily Wilkinson, *Strengthening Disaster Risk Governance: UNDP Support during the HFA Implementation Period 2005-2015* (UNDP, 2015), available at <http://www.undp.org/content/dam/undp/library/crisis%20prevention/disaster/Strengthening%20Disaster%20Risk%20Governance-Full-Report.pdf> (visited 13 September 2016).

[26] UNDP, 'Disaster Risk Reduction', *supra* note 22.

Good governance plays a key role in influencing different stakeholders – governments, public sector, private sector, civil society, media, etc. – to prioritize and coordinate their actions to manage and reduce disaster-related risks. Countries with strong governance systems are better able to prepare for and mitigate the negative impacts of disasters. Although most types of major disasters (for instance, earthquakes or floods) may cause unavoidable casualties, especially if the disaster occurred in a populated area, the number of deaths can be decreased if a country is well-governed. For example, a 2010 Chilean earthquake which was reported as being one of the strongest quakes in decades, measuring 8.8 on the Richter scale, saw about 300 casualties reported. Also in 2010, a Haitian earthquake, on the other hand, measured 7.0 on the Richter scale and had a death toll of over 220,000 people. Likewise, the 7.9 magnitude earthquake which occurred in China in 2008 resulted in a death toll of about 90,000 people.[27]

The obvious question to be asked here is why such a mega-earthquake as that which occurred in Chile had a death toll so significantly lower than that in the other countries. Kaufmann and Tessada note that Chile's good governance – for instance, the government's effective development and implementation of building codes and its investment and innovation in modern technologies – provides a prominent explanation for such a discrepancy.[28] Another example is the category four cyclone that hit Bangladesh in 1991, which killed more than 135,000 people[29] and had serious impacts on all important sectors of the economy, including but not limited to, health, agriculture, education.[30] Up until this point, Bangladesh's approach to disasters has been reactive – focused on recovery and relief, however, following the 1991 disaster, it was clear that a more proactive approach focusing on preparedness and reduction was necessary. As a result, the government developed a Comprehensive Disaster Management Programme that aims to support this shift in approach.[31] The government has also invested significantly in embankments, early warning systems, and construction of cyclone shelters.[32] In 2008, a category 5 cyclone hit Bangladesh, and as a result of their good governance, the death toll was comparatively light at 10,000 people.[33]

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[27] Daniel Kaufmann and José Tessada, 'Natural Disasters, National Diligence: The Chilean Earthquake in Perspective', Brookings 5 March 2010, available at <https://www.brookings.edu/opinions/natural-disasters-national-diligence-the-chilean-earthquake-in-perspective/> (visited 27 September 2016).

[28] *Ibid.*

[29] History.com, 'Bangladesh Cyclone of 1991' (2009), available at <http://www.history.com/topics/bangladesh-cyclone-of-1991> (visited 22 October, 2016).

[30] Katie Hapeman, 'The effects of politics on natural disasters: Lessons from Bangladesh', (University of Denver, 2012), available at <http://www.du.edu/korbel/crric/media/documents/katie_hapeman1.pdf> (visited 22 October, 2016).

[31] Kirsten Luxbacher and Abu Mostafa Kamal Uddin, 'World Resources Report Case Study. Bangladesh's Comprehensive Approach to Disaster Management' World Resources Report (n.d.), available at <http://www.wri.org/our-work/project/world-resources-report/bangladeshs-comprehensive-approach-disaster-management> (visited 22 October, 2016).

[32] UNDP, 'Disaster risk reduction makes development sustainable' (2014) available at <http://www.undp.org/content/dam/undp/library/crisis%20prevention/UNDP_CPR_CTA_20140901.pdf> (visited 13 October, 2016).

[33] *Ibid.*

At the heart of good governance is prioritizing disaster risk reduction in relevant policies, laws and regulations and ensuring adequate allocation of resources for reducing disaster risks and their management. Furthermore, public awareness and participation and ensuring that civil society are part and parcel of the decision-making, planning, programming and implementation processes in regards to disaster risk reduction is crucial.[34] Given that communities are usually the first responders in times of disasters, their participation is of utmost importance, and a favorable environment needs to be created to facilitate and promote their participation. This in itself can be a challenge, especially in terms of getting the community to shift their mindset from a culture of recovery towards a culture of prevention. The Sendai Framework stresses the importance of engaging communities in strengthening disaster governance by 'assigning, as appropriate, clear roles and tasks to community representatives within disaster risk management institutions and processes and decision-making through relevant legal frameworks, and undertake comprehensive public and community consultations during the development of such laws and regulations to support their implementation'.[35]

This formal support for DRR at the community level has not always translated into concrete actions on the ground. Many countries have Acts and other laws in place which recognize and promote community participation, but these are often more symbolic than effective. Reasons vary depending on economic/social standing of the country and political will, but it is largely due to a lack of resources, both financial and human capacity, to establish structures necessary to implement community-level DRR.[36]

3 Disaster risk reduction on the international agenda

Support from the international community constitutes a crucial aspect of disaster risk reduction, especially in developing countries. On 11 December 1987, the United Nations General Assembly declared the 1990s as the 'International Decade for Natural Disaster Reduction'. This move was intended to raise the profile of disaster risk reduction to the international stage and to assist in promoting internationally coordinated efforts to reduce risks from disasters, especially in developing countries. Various international institutions have played important and supportive roles in ensuring that disaster risk reduction receives the attention it deserves. The United Nations Volunteer (UNV) Programme, for example, through its first and current Strategic Framework (2014–2017), recognizes the role that volunteers and

[34] See UNDP, 'Disaster Risk Reduction', *supra* note 22.

[35] Sendai Framework, para. 27(f).

[36] Maria Giovanna Pietropaolo, 'Observations on strengthening community participation in disaster risk reduction in disaster law and policy', Disaster Law Working Paper Series Paper No. 5 (International Federation of Red Cross and Red Crescent Societies, 2015), available at <http://www.ifrc.org/Global/Photos/Secretariat/201506/Observations%20on%20strengthening%20community%20participation%20in%20DRR%20(final).pdf> (visited 26 September 2016).

volunteerism play in enhancing disaster resilience. The Framework has directed its efforts and programmatic resources into five Global Programmes, of which one is on community resilience for environment and disaster risk reduction.[37] With renewed calls for sustainable development and a stronger focus on the 2030 Sustainable Development Agenda, it is clear that addressing the increasing challenges that disasters pose to communities and development as a whole is a priority for the international community. Two key frameworks that will be discussed in this section, along with their relevance to disaster risk reduction, are the Sendai Framework for Disaster Risk Reduction 2015–2030 and the 2030 Sustainable Development Agenda through its 17 Sustainable Development Goals.

3.1 Sendai Framework for Disaster Risk Reduction

Building on the Yokohama Strategy for a Safer World[38] and the Hyogo Framework for Action (2005–2015),[39] the Sendai Framework for Disaster Risk Reduction (2015–2030) was adopted at the 3rd UN World Conference on Disaster Risk Reduction in Sendai, Japan, in March 2015. The non-binding agreement serves as a global guiding instrument that exerts a strong emphasis on preventing new risks, reducing existing risks, and building global resilience. The Framework recognizes that states hold the primary responsibility for taking action to reduce disaster risks. However, support and cooperation are required from the international community. With 7 targets, 4 priority actions, and 13 guiding principles, the Sendai Framework aims to achieve '[t]he substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries', with the goal being to:

> prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience.

Focused actions at all levels (national, regional and global) within the Framework are guided by four priority actions:[40]

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[37] United Nations Volunteers, 'Programme Document for Community Resilience for Environment and Disaster Risk Reduction' (2014), available at <http://www.unv.org/fileadmin/docdb/pdf/2015/Corporate/Partners/Community_Resilience_for_Environment_and_Disaster_Risk_Reduction_Global_Programme.pdf> (visited 2 October 2016).

[38] Yokohama Strategy and Plan of Action for a Safer World: guidelines for natural disaster prevention, preparedness and mitigation, World Conference on Natural Disasters Reduction, Yokohama, Japan, 23-27 May 1994, available at <http://www.unisdr.org/files/8241_doc6841contenido1.pdf> (visited 3 October 2016).

[39] 'Hyogo Framework for Action (2005-2015), Building the Resilience of Nations and Communities to Disasters', UN Doc. A/CONF.206/6 (2005).

[40] Extracted from the Sendai Framework, part IV.

Priority 1: Understanding disaster risk.
Disaster risk management needs to be based on an understanding of disaster risk in all its dimensions of vulnerability, capacity, exposure of persons and assets, hazard characteristics and the environment.

Priority 2: Strengthening disaster risk governance to manage disaster risk.
Disaster risk governance at the national, regional and global levels is vital to the management of disaster risk reduction in all sectors and ensuring the coherence of national and local frameworks of laws, regulations and public policies that, by defining roles and responsibilities, guide, encourage and incentivize the public and private sectors to take action and address disaster risk.

Priority 3: Investing in disaster risk reduction for resilience.
Public and private investment in disaster risk prevention and reduction through structural and non-structural measures are essential to enhance the economic, social, health and cultural resilience of persons, communities, countries and their assets, as well as the environment.

Priority 4: Enhancing disaster preparedness for effective response and to 'Build Back Better' in recovery, rehabilitation and reconstruction.
Experience indicates that disaster preparedness needs to be strengthened for more effective response and for ensuring capacities are in place for effective recovery. Disasters have also demonstrated that the recovery, rehabilitation and reconstruction phase, which needs to be prepared ahead of the disaster, is an opportunity to Build Back Better through integrating disaster risk reduction measures. Women and persons with disabilities should publicly lead and promote gender-equitable and universally accessible approaches during the response and reconstruction phases.

As evident in Priority 2, disaster risk governance is an important aspect of disaster risk reduction for the mainstreaming and integration of disaster risk reduction in all sectors at global, regional, national, and local levels.

The Framework also noted the importance of relevant international bodies, such as the UN and the International Red Cross and Red Crescent Movement, and financial institutions, such as the World Bank, in providing support to, and enhancing coordination with, developing countries and least developed countries in their efforts to enhance their resilience against disasters. For example, in 2012, the American Red Cross and International Federation of Red Cross and Red Crescent Societies launched a centre focusing on building disaster preparedness globally through promoting innovation and providing a platform for knowledge sharing amongst disaster practitioners.[41] The United Nations Development Programme (UNDP) has supported countries in developing their risk management plans such as Honduras

[41] See <http://www.preparecenter.org/>.

and the Dominic Republic[42] as well as integrating disaster risk reduction into development plans such as in Pakistan and Indonesia.[43] Over the past several years, the World Bank has emerged as a leading partner in disaster risk management (DRM). From its Community Housing Project in Bangladesh that aims to improve shelter and living conditions in selected low income settlements through involvement of communities in the planning, improvements and upgrading of community housing and the environs,[44] to its Vulnerability Reduction Project in Jamaica,[45] the World Bank continues to support countries to assess hazards and address risks. Its DRM portfolio has almost doubled in the past five years, from USD3.7billion to USD5. 5billion.[46] Recognizing that the mobilization and management of volunteers is an important component of any disaster risk management strategy,[47] and given that volunteers are usually the first responders in times of disasters, the United Nations Volunteer Programme (UNV) focuses its efforts on fostering community recovery, strength and resilience in vulnerable areas. UNV is supporting several countries such as Ethiopia, Zimbabwe, the Philippines, and Sri Lanka, to name a few to strengthen the resilience of select communities through the integration of volunteerism and volunteer action.

3.2 Sustainable Development Goals: a framework for action

The document *Transforming Our World: The 2030 Agenda for Sustainable Development*, also known as the Sustainable Development Goals, adopted in September 2015 with the pledge to 'Leave No-One Behind', is a transformative and universal agenda intended to define the global development landscape for the next fifteen years. As a successor to the Millennium Development Goals (MDGs) and aiming to complete what had not been achieved thereunder, the Agenda includes 17 Sustainable Development Goals, with quantitative objectives across the social, economic and environmental dimensions of sustainable development, accompanied by 169 targets.

The 2030 Agenda for Sustainable Development reaffirms the need to address and reduce the risks of disasters.[48] Disaster risk reduction has received significant attention

[42] UNDP, 'Disaster Risk Governance: Issue Brief' (UNDP, 2012), available at <http://www.undp.org/content/dam/undp/library/crisis%20prevention/20121112_Issue_brief_disasterriskgovernance.pdf> (visited 1 October 2016).

[43] *Ibid.*

[44] For more information, see <http://www.projects.worldbank.org/P130710/pro-poor-slums-integration-project?lang=en> (visited 20 October 2016).

[45] For more information, see <http://www.projects.worldbank.org/P146965?lang=en> (visited 20 October 2016).

[46] World Bank, 'Overview' (2016), available at <http://www.worldbank.org/en/topic/disasterriskmanagement/overview#2> (visited 20 October 2016)

[47] United Nations Volunteers, 'Community Resilience for Environment and Disaster Risk Reduction, 2014-2017 Strategic Framework' (2014), available at <https://www.unv.org/sites/default/files/01-Community_Resilience.pdf> (visited 20 October, 2016).

[48] UNISDR, 'Disaster Risk Reduction and Resilience in the 2030 Agenda for Sustainable Development' (2015), available at <http://www.unisdr.org/files/46052_disasterriskreductioninthe2030agend.pdf> (visited 15 September 2015).

in the Agenda 2030, with several goals and targets that contribute to the reduction of disaster risk and to building resilience. Linkages to disaster risk reduction can be seen in the Agenda's goals and targets that address poverty, ending hunger, ensuring healthy lives, education, sustainable management of water, building resilient infrastructure, resilient cities, climate change and marine and terrestrial ecosystems, to name a few.[49] It is clear that disasters span various development sectors, with 25 targets related to disaster risk reduction in 10 of the 17 SDGs.[50]

Goal 1: End poverty in all its forms everywhere.
Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture.
Goal 3: Ensure healthy lives and promote well-being for all at all ages.
Goal 4: Ensure inclusive and equitable quality education and promote life-long learning opportunities for all.
Goal 6: Ensure availability and sustainable management of water and sanitation for all.
Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.
Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable.
Goal 13: Take urgent action to combat climate change and its impacts.
Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development.
Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

It has been assessed that '[t]he global targets and priorities for action set in the Sendai Framework can contribute substantially to the achievement of the SDGs and targets through its stronger focus on resilience-building and risk reduction measures'.[51] For example, target 4 in the Sendai Framework, which aims to promote resilient infrastructure and thus access to basic social services such as health and education, contributes to the achievement of SDG 9 (building resilient infrastructure), SDG 3 (promoting well-being for all ages), and SDG 4 (promoting life-long learning opportunities for all).

As can be seen, there are clear links between disaster risk reduction and development in the context of the 2030 Agenda for Sustainable Development and the Sendai Framework for Disaster Risk Reduction. The 2010 earthquake that devastated Port-au-Prince, Haiti, left more than 300,000 people dead and caused estimated total

[49] See World Bank, *Risk and Opportunity*, *supra* note 2.
[50] *Ibid.*
[51] See Sendai Framework for Disaster Risk Reduction, available at <http://www.unisdr.org/we/inform/publications/43291>.

losses of USD7.8 billion, equivalent to 120 per cent of the country's 2009 GDP.[52] Hurricane Tomas, which hit St. Lucia in 2010, wiped out an equivalent of 43 per cent of the country's GDP,[53] whereas the 2004 Hurricane Ivan in Grenada cost the country 200 per cent of its GDP.[54] Within minutes of the tsunami that struck the Maldives in 2004, the country was setback 20 years in development gains. Total damages were estimated to be USD470 million, 62 per cent of the GDP.[55] The tourism industry, the country's main source of income (accounting for 70 per cent of the economy), suffered significant impacts with over 20,000 jobs lost.[56] In the reconstruction following the 2010 Haitian earthquake, the Government enhanced its efforts to provide for disaster risk management, leading to the establishment of the National Construction Code and subsequent guideline documents.[57] Nevertheless, international funding for disaster risk reduction has been inadequate compared to the total funding spent on development aid. Over the past 20 years, USD3trillion was committed in development aid, USD106.7 billion of which was allocated to disasters, with USD13.5 billion for risk reduction compared to USD69.9 billion for response.[58] Moreover, in this same period, disasters that occurred in developing countries alone caused direct financial losses of over USD800billion.[59]

4 Conclusion

Natural hazards are part of the world we live in. Their occurrences are inevitable and we have no control over such. Nonetheless, waiting for the inevitable to occur is not a plan of action. The magnitude of human suffering in times of disasters is substantial and thus it is important to lay the groundwork and establish response and recovery strategies for natural disasters before they strike. Disasters are unpredictable. However, even with the challenges to adequately plan for and mitigate them, a lot can be done to prevent and mitigate their effects as well as to strengthen the response capacity and resilience of those communities at risk.

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[52] World Bank, 'Managing Disaster Risks for a Resilient Future: The Sendai Report' (2012), available at http://siteresources.worldbank.org/DEVCOMMINT/Documentation/23283830/DC2012-0013(E)DRM.pdf> (visited 15 October, 2016).

[53] *Ibid.*

[54] UNISDR and WMO, 'UN System Task Team on the Post-2015 UN Development Agenda: Disaster Risk and Resilience' (2012), available at <http://www.un.org/en/development/desa/policy/untaskteam_undf/thinkpieces/3_disaster_risk_resilience.pdf> (visited 18 October, 2016).

[55] ADB, UN and World Bank, 'Tsunami: Impact and Recovery', Joint Needs Assessment (2005), available at <http://siteresources.worldbank.org/INTMALDIVES/Resources/mv-na-full-02-14-05.pdf> (visited 26 October, 2016).

[56] *Ibid.*

[57] Ministry of Interior, 'Haiti facing risks together: achievements in disaster risk management since 2010' (2014), available at <http://www.preventionweb.net/go/44137> (visited 21 October, 2016).

[58] Jan Kellett and Alice Caravani, 'Financing Disaster Risk Reduction: A 20year story of international aid' (2014), available at <https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/8574.pdf> (visited 17 October, 2016).

[59] *Ibid.*

With disasters rising at an alarming rate and continuing to devastate many nations, both in the developed and developing worlds, this paper has examined the important issue of governance and its role in disaster risk reduction. It is clear that merely having disaster-related laws and policies in place is not enough, and what matters most is their effective implementation. Good governance is a fundamental aspect of disaster risk reduction. Good governance is driven by public awareness and participation, as well as sufficient resources and capacity in supporting disaster risk reduction efforts and enhancing coping capacities in societies. Countries with strong governance systems are better able to prepare for and mitigate negative impacts of disasters. Within the last few decades, with support from the international community, there has been an increasing shift from a culture of response and recovery to giving more attention to preparedness and prevention.

The international community continues to play a crucial role in promoting good governance for disaster risk reduction. International instruments like the Sendai Framework for Disaster Risk Reduction, which are shaping global efforts in addressing the underlying drivers of risk and future levels of risk and resilience, provide guidance on how to meet the challenge of being prepared to respond to the priorities set out in the Framework, at the local, national, regional and international levels. Effort should continue escalating at all levels to enhance preparedness and resilience to disasters.

Part III

Climate Change-related Issues of Specific Relevance

South-South Cooperation on Climate Change: UNEP-China Collaboration as an Example

Chao Fu[1]

1 Introduction

The term 'South-South cooperation' originally referred to economic and technical cooperation among countries of the developing world (Africa, developing Asia, Latin America, and the Middle East).[2] Such cooperation began in the 1950s and was approached under a strategic framework, namely the Buenos Aires Plan of Action, in 1978.[3, 4] Since then, its scope has expanded beyond government-to-government exchanges to include businesses as well as civil society, educational institutions, multilateral financial mechanisms, regional banks and research centers, on a broad range of economic, social, and environmental issues.[5] The increasing scale of South-South

[1] PhD (Graduate University of Chinese Academy of Sciences); Assistant Professor, Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences; Head of Research Unit, UNEP International Ecosystem Management Partnership (UNEP-IEMP); email: chao.fu@unep-iemp.org.

[2] UNCTAD, 'Economic Cooperation and Integration among Developing Countries: A Brief History', available at <http://unctad.org/en/pages/gds/Economic%20Cooperation%20and%20Integration%20among%20Developing%20Countries/Economic-Cooperation-and-Integration-among-Developing-Countries-A-Brief-History.aspx> (visited 28 April 2016).

[3] Plan of Action for Promoting and Implementing Technical Cooperation among Developing Countries, Buenos Aires, 12 September 1978, available at <http://ssc.undp.org/content/dam/ssc/documents/Key%20Policy%20Documents/BAPA.pdf> (visited 1 May 2016).

[4] Report of the Secretary-General on Promotion of South-South cooperation for development: a thirty-year perspective, UN Doc. A/64/504 (2009).

[5] Review of progress made in implementing the Buenos Aires Plan of Action, the new directions strategy for South-South cooperation and the Nairobi outcome document of the High-level United Nations Conference on South-South Cooperation, UN Doc. SSC/17/1 (2012).

cooperation can not only complement the traditional North-South cooperation,[6] but also enhance the implementation of actions to achieve the objective of the United Nations Conference on Sustainable Development (UNCSD), which took place in Rio de Janeiro, Brazil, in June 2012 (Rio+20).[7]

Climate change is one of the most serious threats the world faces today, and is widely expected to have huge impacts on both the natural world and human societies, especially those of developing countries.[8] Estimates indicate that developing countries will bear some 75 to 80 per cent of the costs of damages caused by the changing climate.[9] Most developing countries depend directly on climate-sensitive natural resources for income and well-being and still lack sufficient financial and technical capacities to manage increasing climate risks. South-South cooperation potentially has a critical ameliorative role to play in this regard, as it seeks to capitalize on shared expertise, knowledge, and South-specific technologies which have the potential to generate the skills and resources necessary to address climate change.

Officially launched in Beijing, China in November 2011, the United Nations Environment Programme International Ecosystem Management Partnership (UNEP-IEMP) is a joint venture of the UN Environment Programme and the Chinese Academy of Sciences (CAS).[10] In 2013, this Partnership was recognized by the UNEP Governing Council as the global centre on ecosystem management, the first UNEP Collaborating Centre in the South and for the South, which mobilizes science to support policy development for sustainable ecosystem management in developing countries.[11] Its niche rests on ecosystem management and encompasses science-policy interface and South-South cooperation. In the past five years, UNEP-IEMP has been successful in delivering its outcomes across major thematic areas: ecosystem services, biodiversity, climate change adaptation and REDD+.[12] Successful projects include, for instance, several initiatives that assist vulnerable developing countries to build climate resilience through South-South cooperation.

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6 United Nations Economic and Social Council (ECOSOC), *Trends in South-South and triangular development cooperation* (2008), available at <http://www.un.org/en/ecosoc/docs/pdfs/south-south_cooperation.pdf> (visited 28 April 2016), at 35.

7 The objective of the Conference is namely to secure renewed political commitment to sustainable development, as well as to address the themes of green economy in the context of sustainable development and poverty eradication and the institutional framework for sustainable development. See Para. 104 of the Rio +20 Outcome Document 'The Future We Want', UNGA Res. 66/288 of 11 September 2012.

8 UNFCCC, *Impacts, Vulnerabilities & Adaptation in Developing Countries* (2008), available at <http://unfccc.int/resource/docs/publications/impacts.pdf> (visited 28 April 2016), at 18–26.

9 World Bank, *World Development Report 2010: Development and Climate Change* (2010), available at <http://openknowledge.worldbank.org/handle/10986/4387> (visited 28 April 2016), at 4-6.

10 UNEP-IEMP, *Annual Report 2012* (2013), available at <http://www.unep-iemp.org/publications> (visited 28 April 2016), at 6-7.

11 'International Ecosystem Management Partnership: Note by the Executive Director', UN Doc. UNEP/GC.27/INF/17 (2013).

12 'REDD' stands for Reducing Emissions from Deforestation and Forest Degradation and '+' for enhancing carbon stocks through conservation and sustainable management of forests.

This paper highlights the role that South-South cooperation can play in the global response to climate change. After the introduction, Part 2 provides a brief background of South-South cooperation as a new dimension of the global response to climate change. Part 3 provides an overview of China's initiatives to support South-South cooperation on climate change (SSCCC). Part 4 provides several examples of how the UNEP-IEMP has provided a platform to advance collaboration between UNEP and the Chinese government on SSCCC. Part 5 explores how to promote SSCCC in the context of the Paris Agreement,[13] proposing concrete initiatives in this regard. The paper ends with a concluding Part, in which the findings are summed up.

2 The emergence of South-South cooperation as a new dimension of the global response to climate change

Since 1992, the United Nations Framework Convention on Climate Change (UNFCCC)[14] has held an essential position in stepping up the global response to climate change. The Convention includes commitments (in particular in Articles 4 and 11) for developed countries to provide financial assistance and transfer technology to developing countries so as to enhance their capacity to address climate change. In 2014, developed country governments directed an estimated USD 12–19 billion to climate projects in developing countries.[15] More recently, in the Paris Agreement, developed countries have committed to a goal of jointly providing USD 100 billion annually by 2020 for mitigation and adaptation while significantly increasing adaptation finance from current levels; and to provide, further, appropriate technology and capacity-building support.[16] However, this funding commitment is far below estimates of what is needed to meet the projected mitigation and adaptation requirements of developing countries.[17]

Against this backdrop, South-South cooperation has emerged as a new dimension of the global response to climate change and is an increasingly important complement to the traditional North-South cooperation. In 2014, world leaders at the United Nations Secretary-General's Climate Summit brought 'bold announcements and actions that would reduce emissions, strengthen climate resilience, and mobilize political will for a meaningful legal agreement in 2015'.[18] They also saw 'significant new

[13] Paris Agreement to the United Nations Framework Convention on Climate Change, Paris, 12 December 2015, in force 4 November 2016; 'Adoption of the Paris Agreement', UNFCCC Dec. 1/CP.21 (2015).

[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] Barbara K. Buchner *et al*, *The Global Landscape of Climate Finance 2015* (Climate Policy Initiative, 2015), available at <climatepolicyinitiative.org/publication/global-landscape-of-climate-finance-2015/> (visited 28 April 2016), at 4.

[16] See para. 115 of Dec. 1/CP.21, *supra* note 13.

[17] World Bank, *World Development Report 2010*, *supra* note 9, at 259-260.

[18] UN Secretary-General Ban Ki-moon, '2014 Climate Change Summary – Chair's Summary' (23 September 2014), available at <http://www.un.org/climatechange/summit/2014/09/2014-climate-change-summary-chairs-summary/> (visited 28 April 2016).

announcements made in support of South-South Cooperation on climate change',[19] including China's announcement that it would increase its support for South-South cooperation (see Part 3 below). The global momentum to address climate change was recently built with South-South cooperation as a driving force during the negotiations toward the Paris Agreement.

South-South cooperation builds on and complements current financial mechanisms and cooperation initiatives, and bridges policy, financial and institutional gaps under the UNFCCC. Many emerging economies are moving to the frontline of international climate policy, taking a lead in defining and implementing low-carbon, climate resilient and sustainable development pathways.[20] South-to-South cross-border financing for climate change mitigation (for instance, renewable energy projects) and adaptation has increased in recent years.[21] New institutions have been created with a view to supporting policy cooperation and cross-border financing within the global South. Prominent examples include the Global Green Growth Institute (GGGI),[22] hosted by the Republic of Korea; the International Renewable Energy Agency (IRENA),[23] established in Abu Dhabi, the United Arab Emirates; and the New Development Bank of the BRICS,[24] hosted by Shanghai, China.

As a result, recent years have seen the development of growing networks in developing countries to promote climate actions in many dimensions.[25] These networks help actors of developing countries to conduct research, share knowledge, enhance capacity, and support policy-setting for implementing low-carbon and climate resilient development pathways. Relevant actors include the African Climate Policy Centre (ACPC),[26] the Climate and Development Knowledge Network (CDKN),[27] and the Global Adaptation Network (GAN)[28] and its regional networks in Africa, Asia-Pacific, Latin America and the Caribbean. These networks have demonstrated the potential of South-South cooperation to contribute to all building blocks of climate change responses.

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[19] *Ibid*.

[20] Michal Nachmany *et al*, *The 2015 Global Climate Legislation Study – summary for policymakers* (The Grantham Research Institute on Climate Change and the Environment, GLOBE and the Inter-Parliamentary Union, 2015), available at <http://www.lse.ac.uk/GranthamInstitute/publication/2015-global-climate-legislation-study/> (visited 28 April 2016), at 16–21.

[21] Anja von Moltke, 'South-South Trade Powers Greener Economies' (3 September 2014), available at <sustainability.thomsonreuters.com/2014/09/03/executive-perspective-china-trade-energy-surging-developing-world/> (visited 28 April 2016).

[22] See <http://gggi.org/>.

[23] See <http://www.irena.org/home/index.aspx?PriMenuID=12&mnu=Pri>.

[24] See <http://ndbbrics.org/>.

[25] Stephen Minas, *FPC Briefing: Climate change cooperation within the global south: Finance, policy and institutions* (the Foreign Policy Centre, 2014), available at <http://fpc.org.uk/fsblob/1628.pdf> (visited 1 May 2016), at 1-6.

[26] See <http://www.uneca.org/acpc>.

[27] See <http://cdkn.org/?loclang=en_gb>.

[28] See <https://sustainabledevelopment.un.org/partnership/?p=7387>.

3 China's SSCCC initiatives

China is an active advocate and practitioner of South-South cooperation. Over the past 60 years, China has supported and participated in South-South cooperation in various fields, providing significant support to other developing countries in terms of capital, technology and capacity.[29] Since the late 1990s, China has sponsored regional cooperation mechanisms and platforms, such as the China-ASEAN Summit,[30] the Forum on China-Africa Cooperation (FOCAC)[31] and the China-Community of Latin American and Caribbean States Forum (China-CELAC Forum),[32] to strengthen group consultation in response to the development needs of various regions.

Climate change has been introduced as a rather new area of Chinese foreign aid overseen by the Ministry of Commerce (MOFCOM). Since the 1980s, China has undertaken biogas, small-scale hydro, solar and wind power projects in many countries; in addition to training programmes on climate change, forest management and desertification treatment and prevention. China has 'steadily increased' the scope and volume of its support to other developing countries in addressing climate change following the worsening of global warming in recent years.[33] For example, in 2009 China announced eight new assistance measures under the FOCAC, including assistance for climate change.[34]

China's growing support for SSCCC has been oriented by the Outline of the 12th Five-Year Plan for National Economic and Social Development. Released in March 2011, this Plan states that China will 'increase economic and technical aid to developing countries in the areas of livelihood and social welfare, public facilities, and self-development capacity building' and 'provide help and support to developing countries in confronting the challenges of climate change'.[35] Currently, the National Development and Reform Commission (NDRC), as the leading agency on climate change in China, takes leadership in SSCCC. Meanwhile, a number of other Ministries of the Chinese State Council, including, *inter alia*, MOFCOM, the Ministry of Science and Technology (MOST), the Ministry of Agriculture (MOA), the

[29] China's Information Office of the State Council (IOSC), 'White papers on China's Foreign Aid' (2011), available at <http://www.gov.cn/english/official/2011-04/21/content_1849913.htm> (visited 28 April 2016).

[30] See <http://www.asean.org/asean/external-relations/china/>.

[31] See <http://www.focac.org/eng/>. See also Agi Veres, 'FOCAC – A Special Means to Support Africa's Development Priorities' (UNDP, 2015), available at <http://www.cn.undp.org/content/china/en/home/presscenter/op-eds/2015/12/focac-_-a-special-means-to-support-africas-development-prioritie.html> (visited 28 April 2016).

[32] See <http://www.chinacelacforum.org/eng/>.

[33] IOSC, 'White papers on China's Foreign Aid', *supra* note 29.

[34] FOCAC, 'Forum on China-Africa Cooperation Sharm El Sheikh Action Plan' (2009), available at <http://www.focac.org/eng/ltda/dsjbzjhy/hywj/t626387.htm> (visited 28 April 2016).

[35] Xinhua News Agency, 'China's 12th Five-Year Plan for National Economic and Social Development' (issued in Chinese 16 March 2011), available at <http://www.gov.cn/2011lh/content_1825838.htm> (visited 28 April 2016).

State Forestry Administration (SFA) and the Ministry of Environmental Protection (MEP), have also been engaged with aspects of SSCCC within their specialist work areas.

In 2013, China initiated its ambitious 'One Belt One Road' initiative, comprising the overland 'Silk Road Economic Belt' and the '21st Century Maritime Silk Road', which revitalises historic trade routes from China through central Asia to Europe and through sea routes to many other countries. Although the 'One Belt One Road' founding documents contain no specific mention of environmental issues, it has been claimed that this initiative will, *inter alia*, 'highlight the concept of ecological civilization in investment and trade, strengthen the cooperation on ecological environment, biodiversity and climate change, so as to build with joint efforts a green silk road'.[36] It is likely to provide numerous opportunities for SSCCC, through the building of climate-proof infrastructure, green international trade and technology transfer, especially with support from the newly established Asian Infrastructure Investment Bank (AIIB).[37]

China has truly become a global leader in promoting and supporting SSCCC, with recent commitments announced on more than one occasion.[38] These include the following:

- In 2011, at the 17th session of the Conference of the Parties (COP17) to the United Nations Framework Convention on Climate Change (UNFCCC) in Durban, South Africa, the then Vice-Chairman of the National Development and Reform Commission (NDRC), Xie Zhenhua, announced that China would allocate support of USD 31 million (CNY 200 million) to assist the Least Developed Countries (LDCs),[39] Small Island Developing States (SIDS)[40] and African countries in addressing climate change over the next three years. This pledge was reiterated by the then Premier, Wen Jiabao, at the UNCSD (the Rio+20 Earth Summit) in June 2012.
- In September 2014, at the UN Climate Summit in New York, USA, Vice-Premier Zhang Gaoli pledged to double China's annual financial support to SSCCC, set up the South-South Cooperation Fund on Climate

[36] National Development and Reform Commission, Ministry of Foreign Affairs, and Ministry of Commerce of the People's Republic of China, 'Vision and Actions on Jointly Building Silk Road Economic Belt and 21st-Century Maritime Silk Road' (1st ed. issued with State Council authorization, 2015), available at <en.ndrc.gov.cn/newsrelease/201503/t20150330_669367.html> (visited 28 April 2016).

[37] See <http://www.aiib.org/>.

[38] Moritz Weigel, 'More money, more impact? China's Climate Change South-South Cooperation to date and future trends' (United Nations Development Programme in China, 2016), available at <http://www.cn.undp.org/content/china/en/home/presscenter/articles/2016/04/22/undp-china-releases-pioneering-study-on-china-s-south-south-cooperation-on-climate-change-mitigation-and-adaptation.html> (visited 28 April 2016).

[39] See <http://www.un.org/en/development/desa/policy/cdp/ldc/ldc_list.pdf>.

[40] See <https://sustainabledevelopment.un.org/topics/sids>.

Change and provide USD 6 million (CNY 38 million) to the UN Secretary General for advancing SSCCC within the UN System.[41]

- In December 2014, at a high-level forum on SSCCC held in Lima, Peru, in the margins of UNFCCC COP20, the then Vice-Chairman of NDRC, Xie Zhenhua, officially initiated China's South-South Cooperation Climate Fund, pledging USD 20 million per year.[42]
- In June 2015, China submitted its Intended Nationally Determined Contribution (INDC) under the UNFCCC, which outlines China's planned actions on climate change to be taken by 2030. China commits to establish the Fund for SSCCC, providing assistance and support, within its means, to other developing countries to address climate change.[43]
- In September 2015, during his first state visit to the United States, President Xi Jinping announced that China will make available USD 3.1 billion (CNY 20 billion) for setting up the China South-South Climate Cooperation Fund to support other developing countries to combat climate change.[44]
- On 30 November 2015, at UNFCCC COP21 in Paris, France, President Xi Jinping reiterated the establishment of an CNY 20 billion South-South Climate Cooperation Fund and announced that China will launch cooperation projects to set up 10 pilot low-carbon industrial parks and start 100 mitigation and adaptation programs in other developing countries and provide them with 1,000 training opportunities on climate change.[45]

The above commitments have been incorporated into China's current (13th) Five-Year Plan and will steer China's development path in the next five years (2016–2020). The Plan provides a substantive framework for the implementation of China's INDC under the UNFCCC, but also indicates that '[China will] play the full role of the South-South Climate Cooperation Fund in supporting other developing countries to address climate change'.[46]

41 Ministry of Foreign Affairs, 'Zhang Gaoli Attends UN Climate Summit and Delivers Speech' (24 September 2014), available at <http://www.fmprc.gov.cn/mfa_eng/zxxx_662805/t1194544.shtml> (visited 28 April 2016).

42 Liu Hongqiao, 'China pledges USD20 million a year to its new South-South Cooperation Fund' (12 December 2014), available at <https://www.chinadialogue.net/blog/7596-China-pledges-US-2-million-a-year-to-its-new-South-South-Cooperation-Fund/en> (visited 28 April 2016).

43 National Development and Reform Commission, 'Enhanced Actions on Climate Change: China's Intended Nationally Determined Contribution' (June 2015), available at <www4.unfccc.int/submissions/INDC/Published%20Documents/China/1/China's%20INDC%20-%20on%2030%20June%202015.pdf> (visited 28 April 2016), at 16.

44 White House, 'U.S.-China Joint Presidential Statement on Climate Change' (25 September 2015), available at <http://www.whitehouse.gov/the-press-office/2015/09/25/us-china-joint-presidential-statement-climate-change> (visited 28 April 2016).

45 *China Daily*, 'Full text of President Xi's speech at opening ceremony of Paris climate summit', 1 December 2015, available at <http://www.chinadaily.com.cn/world/XiattendsParisclimateconference/2015-12/01/content_22592469.htm> (visited 28 April 2016).

46 Xinhua News Agency, 'China's 13th Five-Year Plan for National Economic and Social Development' (issued in Chinese 17 March 2015), available at <news.xinhuanet.com/2016-03/17/c_1118366322.htm> (visited 28 April 2016).

4 Demonstration through the UN Environment Programme-China collaboration

4.1 Introduction

The UN Environment is the leading programme within the UN system in the field of environment. As one of the key UN partners to China, UN Environment has been collaborating closely with NDRC and other agencies in support of China's SSCCC efforts. In May 2014, during Chinese Premier Li Keqiang's visit to Kenya, a Memorandum of Understanding (MoU) was signed for the Enhancement of Collaboration on South-South Cooperation in Addressing Climate Change between UNEP and NDRC. UNEP and China agreed to harness their 'complementary strengths, capacities and resources' to assist countries of the global South to combat climate change. This MoU serves as an overarching framework and guiding principles for the UN Environment to support China's SSCCC initiatives. The following presents three major examples of initiatives within the framework of the UNEP–China collaboration.

4.2 Ecosystem-based Adaptation through South-South Cooperation (EbA South project)

Ecosystem-based Adaptation (EbA) integrates the use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people to adapt to the adverse effects of climate change. It may include sustainable management, conservation and restoration of ecosystems as part of an overall adaptation strategy that takes into account the multiple social, economic and cultural co-benefits for local communities.[47] Funded through the Global Environment Facility Special Climate Change Fund (GEF-SCCF),[48] the project on 'Enhancing capacity, knowledge and technology support to build climate resilience of vulnerable developing countries' (EbA South) is being implemented by the UN Environment and executed by NDRC through CAS over the years 2013–2017, with project management services from UNEP-IEMP.[49] It aims to build climate resilience in vulnerable African and Asia-Pacific developing countries by providing support for planning, financing and implementing EbA through effective capacity-building, knowledge support and transfer of EbA technologies. In addition to inter-regional activities, the project is leading concrete, on-the-ground adaptation interventions in three pilot countries: Mauritania, Nepal and the Seychelles, representing three types of vulnerable eco-

[47] Secretariat of the Convention on Biological Diversity, 'Connecting Biodiversity and Climate Change Mitigation and Adaptation: Report of the Second Ad Hoc Technical Expert Group on Biodiversity and Climate Change', CBD Technical Series No. 41 (2009), available at <https://www.cbd.int/doc/publications/cbd-ts-41-en.pdf> (visited 1 may 2016), at 9-10.

[48] See <https://www.thegef.org/gef/sccf>.

[49] EbA South, 'About EbA South', available at <http://www.ebasouth.org/overview/about-eba-south> (visited 30 April 2016).

systems (dryland, mountain and coastal ecosystems, respectively). The South-South cooperation feature of this project is demonstrated by co-funding by GEF-SCCF and NDRC through China's SSCCC initiatives. The project has been recognized as a 'first mover' in catalyzing global and regional collaboration on EbA under GEF guidelines, in particular within the framework of South-South cooperation.[50]

4.3 SSCCC Forum

The SSCCC Forum has been an annual event organized by UNEP-IEMP in the margins of UNFCCC COPs, with participation of governments, intergovernmental organizations, academia, civil society and the private sector. The first Forum was co-organized by UNEP-IEMP, NDRC and UNDP in December 2014 in Lima, Peru.[51] It brought together more than 200 participants, including a dozen ministers and principals of UN agencies and other international organizations. Commencing with an opening ceremony and ministerial dialogue, the Forum proceeded with five high-level interactive Panels covering a wide range of critical issues that reflected perspectives of practitioners, policy-makers and academics. Together, they discussed the importance of South-South cooperation as a key element of the global response to climate change, identified its enablers and constraints, and outlined options and mechanisms for its promotion. China described the establishment of a South-South Cooperation Fund and the doubling of its financial contribution to South-South cooperation. The UNFCCC Secretariat announced the creation of a window under the UNFCCC Trust Fund for South-South cooperation. Other participating panelists from such organizations as UNDP, UNEP and the GEF reiterated their commitment to support and enlarge South-South cooperation.[52] The Forum contributed to integrating South-South cooperation into discussions towards a new climate change agreement in Paris. The second Forum was organized by UNEP-IEMP in collaboration with NDRC in December 2015 in Paris, France, with the theme 'from political commitment to action'.[53]

4.4 UNEP-NSFC Cooperative Research Programme

In March 2013, following the MoU signed between UNEP and the National Natu-

[50] 2(2) *UNEP-IEMP Bulletin* (2013), available at <http://www.unep-iemp.org/sites/default/files/publication/6.%20UNEP-IEMP%20Bulletin%20-%20Oct%20-%20Dec%202013.pdf> (visited 30 April 2016), at 1.

[51] UNEP-IEMP, 'Forum Promotes Climate Action through South-South Cooperation' (10 December 2014), available at <http://www.unep-iemp.org/content/forum-promotes-climate-action-through-south-south-cooperation> (visited 30 April 2016).

[52] IISD, 'Forum Promotes Climate Action through South-South Cooperation' (8 December 2016), available at <climate-l.iisd.org/news/forum-promotes-climate-action-through-south-south-cooperation/> (visited 30 April 2016).

[53] UNEP-IEMP, 'Second SSCCC Forum in Paris' (7 December 2015), available at <http://www.unep-iemp.org/content/second-ssccc-forum-paris> (visited 30 April 2016).

ral Science Foundation of China (NSFC) on 11 November 2010,[54] NSFC released a Five-Year Guideline of Call for Proposals of Collaborative Research between the institutions in the domain of ecosystem management, climate change and chemicals, with a focus on collaborating with developing countries in Africa and Asia-Pacific. NSFC also announced its investment of USD 8 million (CNY 50 million) in the next five years.[55] At the time of writing, about ten projects under this programme are at different levels of implementation. As an example, the project on Coupling Conservation and Livelihood in Protected Areas of East Africa is being piloted in the Maasai Mara National Park, Kenya, as a joint initiative by the Kenya Wildlife Service (KWS), CAS and UNEP during 2014–2018. It aims to look into the success stories and failures in addressing the balance between conservation and livelihoods in the context of climate change, through deploying cutting-edge, and multi-disciplinary sciences to understand the dynamics of ecosystem services affected by the impacts of climate change and human activities.[56] The team of UNEP-IEMP is the executing institution of the project, in close collaboration with KWS. At the end of 2015, according to an interim stocktaking on the implementation of their collaborative programme, UNEP and NSFC agreed to pursue and enhance this programme after 2018.

5 Promoting SSCCC in the context of the Paris Agreement

The historic Paris Agreement on Climate Change was adopted during COP21, hosted by France at the end of 2015. The Agreement aims to strengthen the global response to climate change in the context of sustainable development and efforts to eradicate poverty.[57] All Parties are required to implement commitments set out in their INDCs.[58] Finance, technology and capacity-building support shall be provided to developing countries to implement their commitments.[59] SSCCC can play a crucial role in preparing partner countries for their implementation of the Paris Agreement.

Fully to tap the great potential of SSCCC in the context of the Paris Agreement, there is a need for enhanced knowledge sharing, capacity-building, technology

[54] NSFC, 'MOU between NSFC and UNEP signed in Beijing' (10 December 2010), available at <http://www.nsfc.gov.cn/publish/portal1/tab158/info39310.htm> (visited 30 April 2016).

[55] UNEP-IEMP, *Annual Report 2013*, available at <http://www.unep.org/ecosystemmanagement/Portals/7/Documents/UNEP-IEMP/UNEP-IEMP%20Annual%20Report%202013.pdf> (visited 30 April 2016), at 21-22.

[56] 'East Africa Project Field Mission to Maasai Mara', 3(2) *UNEP-IEMP Bulletin* (2014), available at <http://www.unep-iemp.org/sites/default/files/UNEP-IEMP%20Bulletin%20-%20Apr-Jun%202014.pdf> (visited 30 April 2016), at 4. 'Coupling Conservation and Livelihood in Protected Areas of East Africa Workshop', 3(3) *UNEP-IEMP Bulletin (2014),* available at <http://www.unep-iemp.org/sites/default/files/9.%20UNEP-IEMP%20Bulletin%20-%20Jul-Sep%202014.pdf> (visited 30 April 2016), at 2-3.

[57] Art. 2(1) of the Paris Agreement.

[58] Art. 3 of the Paris Agreement.

[59] Art. 4(5) of the Paris Agreement.

transfer and support for policy development, as well as to catalyze new resources in the South and for the South. This warranted a call (at the Lima SSCCC Forum in 2014) for the establishment of a Platform for Promotion of SSCCC (PPSSCCC) as a long-term UN-led mechanism. The scope, objectives and functions of SSCCC are being further delineated in preparation for the establishment of the PPSSCCC. The Platform may build upon China's newly established South-South Climate Cooperation Fund and the UN Secretary-General's Southern Climate Partnership Incubator (SCPI).[60]

The Paris Agreement is essential for limiting global warming to 2°C by 2100, but it is also key to achieving the Sustainable Development Goals (SDGs)[61] by 2030.[62] In 2015, shortly before the birth of the Paris Agreement, the world adopted the 2030 Agenda for Sustainable Development[63] with 17 Sustainable Development Goals (SDGs). These SDGs are integrated and indivisible and balance the three dimensions of sustainable development: the economic, social and environmental. Among them are goals to end poverty and hunger, to combat climate change and its impacts and to restore, conserve and sustainably manage ecosystems.

With a view to promoting the value of synergies arising from combating climate change, ecosystem management and improving livelihoods in developing countries, UNEP-IEMP is planning to launch its Flagship Programme on Climate, Ecosystems and Livelihoods (CEL) in 2016. The proposed programme will aim to assist developing countries to improve livelihoods by restoring and conserving key ecosystems in the context of climate change. Geographically, the programme will focus on fragile ecosystems, including dryland, river basin and coastal zone, in Asia, West Asia and Africa. It will be the main pillar of UNEP-IEMP's 10 year strategy (2016–2025) to promote long-term cooperation between China and the UN Environment, and will endeavor to evolve into a South-South cooperation initiative with global implications.

6 Conclusion

South-South cooperation has emerged as a new dimension of the global response to climate change, an increasingly important complement to the traditional North-South cooperation. South-South cooperation builds on and complements current financial mechanisms and cooperation initiatives, and bridges policy, finance and institutional

[60] Dan Shepard, 'UN launches partnership initiative to promote South-South cooperation on climate change' (27 April 2016), available at <http://www.un.org/sustainabledevelopment/blog/2016/04/the-united-nations-launches-new-partnership-initiative-to-promote-south-south-cooperation-on-climate-change/> (visited 30 April 2016).

[61] See <https://sustainabledevelopment.un.org/?menu=1300>.

[62] Valerie Houlden *et al, How a high-ambition global climate deal will help achieve the Sustainable Development Goals* (2nd ed, Climate and Development Knowledge Network, 2015), available at <r4d.dfid.gov.uk/pdf/outputs/CDKN/CDKN_SDG-and-climate-change-policy-brief_Final_WEB.pdf> (visited 30 April 2016).

[63] See <https://sustainabledevelopment.un.org/post2015/transformingourworld>.

gaps under the UNFCCC. Recent years have seen the development of growing networks in developing countries to promote climate actions in many dimensions.

China is an active advocate for, and practitioner of, South-South cooperation. There is growing support for measures to address climate change in Chinese foreign aid, national development plans, and the recently-launched 'One Belt One Road' Initiative. China has truly become a global leader in promoting and supporting SSCCC, with new commitments announced on many recent occasions.

As one of the key UN partners to China, the UN Environment has been collaborating closely with NDRC and other agencies in support of China's SSCCC efforts. Three major examples have been presented within the framework of UNEP-China collaboration, including the EbA South project, the SSCCC Forum and the UNEP-NSFC Cooperative Research Programme.

SSCCC can play a crucial role in preparing partner countries for the implementation of the Paris Agreement. To promote SSCCC in the context of the Paris Agreement, it has been proposed that a Platform for Promotion of SSCCC be established, along with the launch of the 10-year Flagship Programme on Climate, Ecosystems and Livelihoods. With these initiatives, UNEP-IEMP hopes to contribute to achieving the targets set in the Paris Climate Agreement and to the realization of the SDGs.

It should be noted that this paper has only provided examples of UNEP-China collaboration so as to demonstrate China's SSCCC to date. It therefore does not fully reflect the landscape of country-level SSCCC by China, let alone SSCCC at the global level. However, substantial experience and lessons have been drawn by UNEP-IEMP from its track record of delivering on SSCCC. This experience has shown that it is important, *inter alia*:

- for SSCCC to be driven by the capacity needs of developing countries and priorities set out in their national development plans or strategies;
- to ensure the matching of needs and offers by thorough assessment of the evolving needs of partner countries, constant communication on information available, and timely coordination between the technical focal points of the departments in charge of climate change matters; and
- to promote SSCCC with the involvement of both bilateral development agencies and intergovernmental organizations, or triangular cooperation, to amplify resources offered to developing countries.

It is recommended that these principles and approaches be used further to enhance SSCCC at all levels, as well as to increase the impact of SSC in other MEA clusters.

South-South Cooperation: An Emerging Dimension of the Global Response to Climate Change

Silvia Cazzetta[1]

1 Introduction

1.1 South-South Cooperation

Over the past few decades,[2] South-South Cooperation (SSC) has increasingly been recognized as an important dimension of international collaboration. It has become an important expression of cooperation and partnership among countries in the global South, particularly in sharing knowledge, skills and resources to achieve their development goals.[3]

Since the turn of the century, emerging markets have been growing rapidly, bringing about a tremendous transformation of the world economy. Outward foreign direct investment from developing countries has been rising to unprecedented levels, with most investments directed towards other countries in the South.[4] United Nations

[1] M. Urban Studies (jointly Universities of Brussels, Vienna, Copenhagen and Madrid) M Cultural Economics (Erasmus University, Rotterdam); International research fellow, UNEP-IEMP (International Ecosystem Management Partnership), Beijing; Head of Secretariat, the South-South Cooperation on Climate Change (SSCCC) Forum Secretariat, hosted by UNEP-IEMP; e-mail: silvia.cazzetta@unep-iemp.org. The author would like to thank Jian Liu (Director of UNEP-IEMP) and Anand Patwardhan (Professor, University of Maryland & Indian Institute of Technology-Bombay) for their valuable suggestions and detailed review.

[2] The establishment of a Special Unit to promote, coordinate and support South-South and triangular cooperation globally and within the UN system dates back to the 1970s. United Nations Office for South-South Cooperation, 'FAQ', available at <http://ssc.undp.org/content/ssc/about/faq.html> (visited 31 March 2016).

[3] *Ibid.*

[4] UNCTAD, *World Investment Report 2011. Non-equity modes of international production and development* (2011), available at <http://unctad.org/en/PublicationsLibrary/wir2011_en.pdf> (visited 31 March 2016).

Conference on Trade and Development (UNCTAD) statistics show that South-South trade continues to increase;[5] some predictions indicate that it may reach and even surpass North-North trade in the near future.[6] Within this context, it is clear that SSC has a greater role to play than ever before.

South-to-South collaboration has shown its benefits in various areas. By exploring their complementary strengths and 'moving beyond their traditional role as aid recipients',[7] developing countries have increasingly demonstrated their ability to support each other both tangibly (capital and technology) and intangibly (knowledge and solutions) to meet their development goals.[8] All countries, regardless of their size and current economic development status, have unique experiences to offer and stand to gain through various types of knowledge exchanges.[9] These achievements and prospects demonstrate the potential strength of SSC; a potential yet to be fully tapped.

1.2 South-South Cooperation on Climate Change (SSCCC)

The devastating impacts of climate change cannot be emphasized enough. The problem is real and the consequences are real – on livelihoods, the economy, infrastructure and the environment. As the world is facing these unprecedented challenges, South-South cooperation is emerging as a new dimension of the global response to climate change, an essential complement to traditional North-South cooperation.

In recent years SSC has demonstrated its potential to contribute to all building blocks of climate change responses: capacity-building, finance, knowledge, policy, technology, etc., covering both adaptation and mitigation. Developing countries have increasingly engaged in concerted efforts to share lessons and experiences, and some of them have taken the lead in defining and implementing low-carbon, climate resilient development pathways. Countries like Brazil, China, India[10] and Mexico are not only becoming global economic powers in their own right, but also positioning themselves in the frontline of international climate policy.

5 UNCTAD, *UNCTAD Handbook of Statistics* (2013), available at <http://unctad.org/en/pages/PublicationWebflyer.aspx?publicationid=759> (visited 31 March 2016).

6 UNDP, *Evaluation of UNDP Contribution to South-South and Triangular Cooperation (2008-2011)* (2013), available at <http://web.undp.org/evaluation/evaluations/thematic/ssc-2013.shtml> (visited 31 March 2016) at 9.

7 TTSSC, *Unlocking the potential of south-south cooperation. Policy recommendations from the Task Team on South-South Cooperation* (2011), available at <https://www.oecd.org/dac/effectiveness/TT-SSC%20Policy%20Recommendations.pdf> (visited 31 March 2016) at 00.

8 Draft fourth cooperation framework for South-South cooperation (2009-2011), UN Doc. DP/CF/SSC/4/Rev.1 (2008) 4.

9 Karin Vazquez, Enhancing Management Practices in South-South and Triangular Cooperation. Study on Country-led Practices (United Nations Office for South-South Cooperation and Japan International Cooperation Agency, 2013), available at <https://www.cbd.int/financial/southsouth/undp-enhancing.pdf> (visited 31 March 2016) at 29

10 Since 2008, Brazil, China and India, together with Russia (the so-called BRIC countries, or BRICS since South Africa joined the group in 2011) have organized annual meetings to discuss issues of global significance, including energy and climate change. See: BRICS Information Center, available at <http://www.brics.utoronto.ca/about.html#bricsinfo> (visited 31 March 2016).

China in particular has shown a very strong political will to promote an 'ecological civilization'[11] and has committed substantial resources to support other developing countries facing the threat of a changing climate (see also Box 1). Brazil is the country that has arguably achieved the most impressive results in reducing emissions from deforestation and forest degradation (the deforestation rate in the Brazilian Amazon was reduced by over 80 per cent in the last decade[12]); and its energy mix consists of 40 per cent renewables, which is three times the world average.[13]

In its Intended Nationally Determined Contribution (INDC), India provides an interesting reflection on the country's history and tradition of 'harmonious co-existence between man and nature' and provides details of a very ambitious and comprehensive strategy to address climate change, combining development and ecological goals.[14] Mexico's INDC is also worth mentioning, particularly for its emphasis on the potential co-benefits of climate action in terms of health and well-being.[15] Further to these examples, some African countries (e.g. Ethiopia[16] and Rwanda[17]) have developed regulatory frameworks that support the development of climate resilient, low carbon economies. These cases illustrate that in many instances countries in the global South have much to offer to their Southern counterparts, underscoring the possibilities for what SSCCC might have to offer.

The importance of South-South Cooperation on Climate Change was acknowledged by ministers and senior government representatives of developing countries, principals of UN agencies and other prominent international organizations, scientists and

[11] The China Council for International Cooperation on Environment and Development (CCICED) provides more information on the concept of ecological civilization in China. See <http://www.cciced.net/encciced/aboutus/overview/> (visited 31 March 2016).

[12] EBC Agência Brasil, 'Deforestation in Legal Amazon 82% lower in last decade' (14 August 2015), available at <http://agenciabrasil.ebc.com.br/en/geral/noticia/2015-08/deforestation-legal-amazon-82-lower-last-decade> (visited 31 March 2016).

[13] Federative Republic Of Brazil, 'Intended Nationally Determined Contribution Towards Achieving The Objective Of The United Nations Framework Convention On Climate Change' (28 September 2015), available at <http://www4.unfccc.int/submissions/INDC/Published%20Documents/Brazil/1/BRAZIL%20iNDC%20english%20FINAL.pdf> (visited 31 March 2016).

[14] India's Intended Nationally Determined Contribution: Working Towards Climate Justice (1 October 2015), available at <http://www4.unfccc.int/submissions/INDC/Published%20Documents/India/1/INDIA%20INDC%20TO%20UNFCCC.pdf> (visited 31 March 2016).

[15] Mexico's Intended Nationally Determined Contribution (30 March 2015), available at <http://www4.unfccc.int/submissions/INDC/Published%20Documents/Mexico/1/MEXICO%20INDC%2003.30.2015.pdf> (visited 31 March 2016).

[16] In recent years, the Ethiopian government has established environmental protection agencies at the national level and in all federal states and has actively promoted environmental investments. See Emelie César and Anders Ekbom, 'Ethiopia Environmental and Climate Change Policy Brief', Sida›s Helpdesk for Environment and Climate Change (2013), available at <http://sidaenvironmenthelpdesk.se/wordpress3/wp-content/uploads/2013/05/Ethiopia-Environmental-and-Climate-Change-policy-20130527.pdf> (visited 31 March 2016).

[17] Rwanda has developed an ambitious Green Growth and Climate Resilience Strategy and is one of the few countries to have developed a national climate change and environment fund. See Republic of Rwanda, Green Growth and Climate Resilience. National Strategy for Climate Change and Low Carbon Development (2011), available at <http://cdkn.org/wp-content/uploads/2010/12/Rwanda-Green-Growth-Strategy-FINAL1.pdf> (visited 31 March 2016).

business leaders, who gathered in 2014 in Lima for the first SSCCC Forum, held in the margins of the 20th Conference of the Parties to the UNFCCC (COP20). On that occasion, the necessity to promote SSC as an integral part of global action on combating climate change was emphasized. These messages were reiterated at the second session of the SSCCC Forum, held at the COP21 Climate Conference in Paris, on 6 December 2015, where the value proposition, future directions and mechanisms of South-South cooperation as 'an integral part of the future climate architecture'[18] were discussed.

Based on the work conducted under the SSCCC initiative,[19] – particularly the key messages emerging from high-level *fora* and expert consultations – this paper aims to propose a conceptual framework for South-South cooperation in the context of climate change, reflecting on its niche, functions and strategic directions. Enabling conditions and implementation modalities for enhanced climate action in the global South are also discussed.

[18] UNEP, 'South-South Cooperation Will Be Crucial to Fighting Effects of Climate Change in Developing Countries' (6 December 2015), available at <http://web.unep.org/climatechange/cop21/south-south-cooperation-will-be-crucial-fighting-effects-climate-change-developing-countries> (visited 31 March 2016).

[19] South-South Cooperation on Climate Change (SSCCC) is a broad initiative jointly promoted by China and the United Nations as part of their mutual commitment and concerted effort to support green growth and climate resilience in the global South.

Box 1. **UNEP and China on SSCCC**

In recent years, China has started working with organizations in the United Nations system and has developed various initiatives to support other developing countries in addressing climate change impacts. Concrete actions have been taken to assist vulnerable communities in the South, including capacity-building, knowledge sharing and technology transfer. With China as a driving force, South-South cooperation has increasingly been promoted.

In May 2014, during the visit of Chinese Premier Li Keqiang to Kenya, a Memorandum of Understanding (MoU) was signed between China's National Development and Reform Commission (NDRC) Chairman, Xu Shaoshi, and the United Nations Environment Programme (UNEP) Executive Director, Achim Steiner, for the enhancement of collaboration on SSCCC. Through this landmark agreement, UNEP and China agreed to harness their 'strengths, capacities and resources' to assist countries in the global South to combat climate change.[20] A few months later at the UN Climate Summit, China pledged 6 million USD to support the UN in advancing SSCCC.

At the Ministerial Session of the first SSCCC Forum, held in Lima in December 2014, Minister Xie of the NDRC announced the creation of a new 'South-South' fund, by doubling China's contribution to SSCCC. On that occasion, China's leadership in committing finance and technology transfer to the SSC mechanism was highly commended by developing countries' Ministers and other prominent delegates, including the heads of UNEP, the UN Development Programme (UNDP) and the UN Framework Convention on Climate Change (UNFCCC). More recently, China reiterated its determination to mobilize financial resources to support green growth and climate resilience across the developing world. In September 2015, Chinese President Xi Jinping announced a fund of USD 3.1 billion for SSCCC. This pledge attracted political and media attention worldwide.[21]

In December 2015 the second session of the SSCCC Forum was organized at the UNFCCC COP21 in Paris, with the theme 'from political commitment to action'. Co-sponsored by UNEP and NDRC, the Forum highlighted the benefits from acting on climate in synergy and from catalyzing and pooling new resources in the South and for the South.[22] Event delegates also recognized the SSCCC Forum as the appropriate setting for bringing together policy-makers to exchange their views on SSCCC and provide strategic directions.

In 2016, the SSCCC Forum was re-launched as a *standing policy advisory mechan*ism. Besides the annual Forum series in the context of the UNFCCC COPs, which will continue, new streams of activity will be developed to strengthen engagement with policy processes and enhance dialogue among SSCCC stakeholders.

[20] UNEP News Centre, 'New China-UNEP Agreement to Boost South-South Cooperation on Climate Change Adaptation' (10 May 2014), available at <http://www.unep.org/newscentre/Default.aspx?DocumentID=2788&ArticleID=10854&l=en> (visited 31 March 2016).

[21] *China Daily,* 'UN chief hails China's role in promoting South-South cooperation' (27 September 2015), available at <http://usa.chinadaily.com.cn/2015xivixitus/2015-09/27/content_21991290.htm> (visited 31 March 2016).

[22] UNEP-IEMP, Second SSCCC Forum Meeting Report (2016).

2 The niche and strategic directions of SSCCC

2.1 SSCCC positioning: key sectors and functions

South-South Cooperation could build on and complement existing processes and mechanisms under the UNFCCC that enable and support actions by developing countries.[23] Along with exploring possible complementarities between North-South, South-South and triangular cooperation, to define the niche and positioning of SSCCC it is important to identify remaining gaps in the present climate finance architecture, which a South-South dimension could help to fill.

One of the needs which appears most urgent in developing countries today is that of enhancing capacity for readiness. Developing countries need support in negotiating and implementing climate agreements, particularly insofar as finance is concerned.[24] In recent years, the need to build adequate institutional capacity for developing countries to make an effective demand for climate finance has been widely recognized; supporting programmes are being developed – notably the Climate Finance Readiness Programme.[25] Through the exchange of information and good practices, SSC can complement these efforts; it could play a crucial role in strengthening countries' capacity for accessing new flows of resources for climate change adaptation and mitigation. SSCCC could also help the global South make a stronger case for availability of, and simpler access to, scaled-up resources.

Experts convened at a Scoping Meeting (held in Beijing in August 2015) to discuss the niche and value proposition of SSCCC underlined the importance of South-South cooperation as 'a catalyst of change' towards green development and a climate resilient future;[26] and iterated that policy and decision-makers need to be sensitized to the risks of 'business-as-usual' and to the multiple benefits of innovative green solutions. To delineate the main functions of SSCCC, it was recommended that specific areas of activity be identified where there is a distinctive comparative advantage in South-South

[23] One example is the activities of the LEG – the Least Developed Countries (LDC) Expert Group – that provides technical advice for climate change adaptation in LDCs. For more information, see UNFCCC, 'LDC Expert Group (LEG)', available at <http://unfccc.int/adaptation/groups_committees/ldc_expert_group/items/4727.php> (visited 31 March 2016).

[24] A framework for understanding climate finance readiness has been developed by the Overseas Development Institute (ODI) and the African Climate Finance Hub in a study on readiness needs in Southern Africa. See ODI and African Climate Finance Hub, 'Climate Finance Readiness. Preliminary approach and insights from efforts in Southern Africa', Advanced discussion draft, available at <https://unfccc.int/files/cooperation_and_support/financial_mechanism/standing_committee/application/pdf/odi-giz_climate_finance_readiness_-_approach_and_insights_-_southern_africa.pdf> (visited 31 March 2016).

[25] The Climate Finance Readiness programme (CF Ready) is implemented jointly by KfW (Kreditanstalt für Wiederaufbau) Development Bank and GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit) on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ). It supports developing countries in accessing and making effective use of climate finance. The programme cooperates with the secretariats of major climate funds such as the GCF and the Adaptation Fund. See GIZ, 'Climate Finance Readiness Programme (CF Ready)', available at <https://www.giz.de/expertise/html/19694.html> (visited 31 March 2016).

[26] UNEP-IEMP, Strategic Dialogue on South-South Cooperation on Climate Change, Meeting report (2015).

cooperation, when compared to traditional North-South cooperation. In other words, sectors where enhancing South-South exchanges would bring decisive benefits, taking into account the countries' economic, cultural and institutional context.[27]

The ranking of strategic options could be organized in a matrix, listing on one side key areas or sectors of intervention which are of particular significance (and urgency) to developing countries; and enumerating on the other side the kinds of intervention required, focusing on the particularities, and on the needs and opportunities of the South.[28] The compilation of such a matrix would require a detailed assessment of concrete needs, based on direct consultations with the end-users of SSCCC – i.e. through a bottom-up, demand-driven approach. This exercise falls beyond the scope of the present paper. However, it is possible to reflect on the methodology and selection criteria that could be used.

To identify the key sectors, one possible approach could be aligning climate change with the Sustainable Development Goals (SDGs).[29] That is, selecting the areas in which development priorities overlap with climate change adaptation and/or mitigation. A preliminary list could include topics such as i) food security, water and sanitation; ii) energy access, particularly in the context of poverty alleviation; iii) disaster risk reduction, focusing on climate resilience; iv) green industrial development and sustainable urbanization; and v) natural resource management for developmental and ecological benefits.

To classify the kind of interventions required, consideration of the needs and circumstances of the global South could prove useful. For example, a large and expanding young population (the 'demographic dividend') is one of the distinctive features of countries in the South.[30] Consequently, approaches that encourage green youth entrepreneurship and create new employment opportunities would undoubtedly be beneficial. South-South cooperation could enhance the scaling up of successful initiatives that promote an entrepreneurship culture in the field of sustainable development.[31] In light of the crucial role that gender considerations ought to

[27] *Ibid*.

[28] Statement by Dr Rajendra Pachauri, former IPCC Chair, at the Strategic Dialogue on South-South Cooperation on Climate Change held in Beijing on 27 August 2015. See UNEP-IEMP, Strategic Dialogue on South-South Cooperation on Climate Change. Meeting report (2015).

[29] SDGs are a set of goals adopted by the United Nations General Assembly in September 2015 to protect the planet and ensure prosperity for all. "Transforming Our World: The 2030 Agenda for Sustainable Development', UNGA Res. 70/1 of 25 September 2015. For interesting resources (including a policy brief and a technical report) developed by the Climate and Development Knowledge Network (CDKN) on the impact of climate change on the achievement of the post-2015 SDGs, see Climate & Development Knowledge Network (CDKN), 'Climate change and the post-2015 sustainable development goals', available at <http://cdkn.org/climate-and-sdgs/> (visited 31 March 2016).

[30] UNFCCC, 'LDC Expert Group (LEG)', *supra* note 23.

[31] One example of such an initiative is the Green Jobs Programme & the Youth Entrepreneurship Facility for Eastern Africa. More information is available at International Labour Organization (ILO), 'The Green Jobs Programme & the Youth Entrepreneurship Facility for Eastern Africa kicks off an exciting partnership' (16 April 2010), available at <http://www.ilo.org/integration/resources/infores/WCMS_125997/lang--en/index.htm> (visited 31 March 2016).

play in climate change adaptation and mitigation efforts,[32] particularly within the most vulnerable communities, a second intervention type could be empowering women, strengthening their role not only in climate action, but also with regard to decision-making processes. Other advantageous actions that would benefit from enhanced South-South exchanges could involve identifying, validating and disseminating developing countries' wealth of traditional knowledge and practices, many of which are based on sophisticated knowledge and are inherently sustainable.[33] As countries in the global South are generally more dependent on ecosystems and the services they provide,[34] mainstreaming ecosystem-based approaches and strengthening natural resource management through sustainable land management could yield both climate and developmental benefits. Ecosystem-based approaches that link the climate and development agendas are described in further detail in Box 2.

Strategic functions of SSCCC and areas of interventions would further emerge by looking at possible matrix intersections. Actions that generate multiple benefits could be prioritized.

BOX 2. **Ecosystem-based approaches to climate change adaptation and mitigation – linking the climate and the development agenda**

The conservation and sustainable use of biodiversity, together with the correct management of ecosystem services, can contribute to both climate change mitigation and adaptation in a synergistic manner, with direct and indirect benefits for economic development and community livelihoods.

Since the central role of ecosystem management in climate change adaptation and disaster risk reduction started to be recognized by Parties to the UNFCCC in 2008 (COP14),[35] ecosystem-based approaches[36] have become important pillars of the adaptation portfolio for both national actions and international cooperation. Ecosystem-based Adaptation (EbA), broadly defined as 'a way to work with nature to cushion the impacts of climate change', is now widely acknowledged as one of the most appropriate adaptation options, particularly in developing countries.

[32] For more information on the links between gender and climate change and why this is important, see UNFCCC, 'Gender and Climate', available at <http://unfccc.int/gender_and_climate_change/items/7516.php> (visited 31 March 2016).

[33] Posey, Darrell Addison and Kristina Plenderleith, *Indigenous Knowledge and Ethics: A Darrell Posey Reader* (Routledge, 2004).

[34] UNEP-IEMP, 'Roundtable on Ecosystem-Based Adaptation in the context of South-South Cooperation – Discussion Paper' (2013), available at <http://www.ebasouth.org/sites/default/files/attachments/Discussion%20Paper%20-%20Roundtable%20on%20EBA%20-%20FINAL(带横线)(1).pdf> (visited 31 March 2016).

[35] UNFCCC, 'Ecosystem-based approaches to adaptation: compilation of information' (2011), available at <http://unfccc.int/resource/docs/2011/sbsta/eng/inf08.pdf> (visited 31 March 2016).

[36] An ecosystem approach can be defined as 'a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way'. Convention on Biological Diversity (CBD), 'Ecosystem Approach', available at <https://www.cbd.int/ecosystem/> (visited 31 March 2016).

On the mitigation side, the agenda item on 'reducing emissions from deforestation in developing countries' (REDD) made its first appearance under the UNFCCC process in 2005 (COP11).[37] The REDD+ (or REDD-plus) mechanism, referring to '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'[38] was adopted two years later. REDD and REDD+ create an incentive[39] for developing countries to protect their forest resources, while contributing to conserving biodiversity and to the global fight against climate change.

The effectiveness of ecosystem-based approaches is increasingly acknowledged, particularly for their potential to support social, economic, cultural and ecological objectives, in addition to climate change adaptation and mitigation.[40] Multiple benefits include, among others, wildlife habitat protection, opportunities for livelihood diversification and carbon sequestration. Ecosystem-based approaches deliver cost-effective, durable and pro-poor climate change solutions, applicable in both rural and urban settings and over a wide range of implementation scales. For these reasons, the sharing of knowledge and experiences on a South-South basis is particularly appropriate.

Some recent initiatives, such as those promoted under the EbA Flagship (EbA South and Mountain EbA projects are notable examples[41]) and under the UN-REDD Programme, have underlined the potential of South-South cooperation in the delivery of both ecosystem-based adaptation and mitigation.

To date, EbA and REDD+ remain two distinct concepts in the UNFCCC discourse. The substantial potential of ecosystem-based approaches to, in a synergized manner, bring together adaptation and mitigation considerations, as well as the various ancillary and co-benefits of both EbA and REDD+, is yet to be tapped.

[37] UNFCCC, 'Land Use and Climate Change, REDD+, Background', available at <https://unfccc.int/land_use_and_climate_change/redd/items/4547.php> (visited 31 March 2016).

[38] *Ibid.*

[39] Developing countries can receive results-based finance for results from the implementation of REDD+ activities. UNFCCC, 'REDD+ MRV and results-based payments', available at <http://redd.unfccc.int/fact-sheets/redd-mrv-and-results-based-payments.html> (visited 31 March 2016).

[40] IUCN, 'Ecosystem-based Adaptation and climate change', available at <https://www.iucn.org/theme/ecosystem-management/our-work/ecosystem-based-adaptation-and-climate-change> (visited 31 March 2016).

[41] Ecosystem-based Adaptation through South-South Cooperation (EbA South) is a full-sized Global Environment Facility (GEF) project implemented by UNEP and executed by the National Development and Reform Commission of China. The project aims to assist vulnerable communities in Africa and Asia-Pacific to adapt to the impacts of climate change, by improving their capacity to plan, implement, finance, research and legislate in support of EbA. For more information, see 'Ecosystem-based Adaptation through South-South Cooperation', available at <http://www.ebasouth.org> (visited 31 March 2016). Ecosystem Based Adaptation in Mountain Ecosystems (Mountain EbA), sponsored by BMU, is a joint and complementary effort of UNEP, UNDP and World Conservation Union (IUCN). The project looks at the impacts of climate change on the integrity and functioning of mountain ecosystems in Nepal, Peru and Uganda. For more information, see IUCN, 'Ecosystem-based Adaptation in Mountain Ecosystems', available at <https://www.iucn.org/asia/nepal/countries/nepal/ecosystem-based-adaptation-mountain-ecosystems> (visited 31 March 2016).

In the SSCCC matrix	ECOSYSTEM-BASED APPROACHES				
	Knowledge	**Capacity**	**Technology**	**Policy**	**Finance**
Food security, water access	**Selected topics** EbA for food security EbA for water security **Baseline initiatives** EBAFOSC, EBAFOSA[42] Ecosystem-based Adaptation Approach to Maintaining Water Security in Critical Water Catchments in Mongolia (UNDP project)[43]				
Enhancing resilience, Disaster Risk Reduction (DRR)	**Selected topics** Ecosystem-based Adaptation Eco-DRR **Baseline initiatives** EbA South, Mountain EbA[44]				
Energy access; low carbon development	**Selected topics** Carbon sequestration Renewable energy sources (hydropower, biomass) **Baseline initiatives** Initiatives under the UN-REDD Programme[45]				
Sustainable urbanization	**Selected topics** Urban EbA **Baseline initiatives** Ecosystem-based Adaptation in Urban Areas in Asia[46] ICLEI's programme on Climate Resilient Cities[47]				
Natural resource management	**Selected topics** Sustainable management of ecosystem services Biodiversity conservation **Baseline initiatives** UNEP–International Ecosystem Nanagement Partnership (IEMP) programmes[48] IUCN programmes[49]				

[42] For more information about the Ecosystem-based Adaptation for Food Security Conference (EBAFOSC) and Assembly (EBAFOSA), please visit: <http://www.ebafosa.org/> (visited 31 March 2016).

[43] UNDP, 'Ecosystem-based Adaptation Approach to Maintaining Water Security in Critical Water Catchments in Mongolia', available at <http://www.mn.undp.org/content/mongolia/en/home/operations/projects/environment_and_energy/Ecosystem-based-Adaptation-Approach-to-Maintaining-Water-Security-in-Critical-Water-Catchments-in-Mongolia.html> (visited 31 March 2016).

[44] See IUCN, 'Ecosystem-based Adaptation', *supra* note 40.

[45] UN REDD Programme, available at <http://www.un-redd.org/> (visited 31 March 2016).

[46] Keith Alverson, 'Ecosystem-based Adaption in vulnerable Urban Areas' (UNEP, 2013), available at <http://resilient-cities.iclei.org/fileadmin/sites/resilient-cities/files/Resilient_Cities_2013/Presentations/A4_Alverson_RC2013.pdf> (visited 31 March 2016).

[47] ICLEI, 'Local Governments for Sustainability, Resilient City', available at <http://www.iclei.org/activities/agendas/resilient-city.html> (visited 31 March 2016).

[48] See <http://unep-iemp.org/>.

[49] IUCN, 'Ecosystem-based Adaptation', *supra* note 40.

Key messages from 1st SSCCC Forum in Lima, 2014[50]
- Ecosystem-based approaches to adaptation and mitigation, and in particular their synergies, are an integral part of the climate change solution equation;
- They require strong policy and financial support to be effective;
- South-South cooperation can play a fundamental role in the sharing of knowledge and good practice, including traditional South-based solutions.

2.2 Strategic directions

In terms of strategic directions, the following three overarching areas can be identified: i) research and knowledge generation; ii) capacity-building; and iii) solution development and sharing of good practice.

2.2.1 Research and knowledge generation

Science is the basis for informed decision-making in climate action.[51] In order to produce information that is needed and used in policy development, the linkages between the supply of and demand for scientific knowledge need to be strengthened. One of the many barriers for developing countries to access and effectively apply relevant knowledge to inform both policy and practice is inadequate collaboration between developers and users of scholarly research, which limits the relevance and usefulness of knowledge products. To this end, scientists and practitioners, both in the North and in the South, must work together to ensure that key decision questions are identified and used to frame the analysis and the subsequent development of knowledge products.

In the area of research, SSCCC could serve three purposes: i) supporting more effective South-based engagement in international scientific efforts and assessment processes, such as the Intergovernmental Panel on Climate Change (IPCC);[52] ii) addressing knowledge gaps of importance to the South, such as improved monsoon modeling; and iii) developing analytical frameworks that support Southern perspectives – such as co-benefits/multiple benefits or equity reference frameworks, or even narratives and modeling for long-term socio-economic scenarios that better reflect the Southern reality.[53]

[50] UNEP-IEMP, First SSCCC Forum Meeting Report (2015).

[51] As noted by Gupta, the UNFCCC in its preamble states 'science-based policy making' to be its goal. Joyeeta Gupta, 'Global scientific assessment and environmental resource governance: towards a science-policy interface ladder', in Monika Ambrus *et al*, *The Role of 'Experts' in International and European Decision-Making Processes.* (Cambridge University Press, 2014) 148-170. The Paris Climate Agreement (Arts 4, 7 and 14) also states that climate action should be based on the best available science.

[52] See <http://www.ipcc.ch>.

[53] This paragraph reflects a statement made by Anand Patwardhan (GEF/STAP) at the Strategic Dialogue on South-South Cooperation on Climate Change held in Beijing on 27 August 2015. UNEP-IEMP, Strategic Dialogue on South-South Cooperation on Climate Change. Meeting report (2015).

2.2.2 Capacity-building

Capacity-building for developing countries to identify, plan and implement ways to mitigate and adapt to climate change has been part of the UNFCCC[54] process since its inception more than two decades ago. In 2001, the Conference of the Parties adopted two frameworks[55] that outline guiding principles and approaches for capacity-building, and list priority areas for action, based on countries' specific needs. More recently, after a series of in-depth discussions, the Durban Forum on Capacity-building was established in 2011.[56]

Capacity-building can be delivered in different modalities; through education, outreach and awareness, or facilitated through peer learning, knowledge platforms, information exchanges, and technical assistance. Under the UNFCCC and its Kyoto Protocol,[57] capacity-building takes place on three levels: i) individual (targeting, for instance, personal awareness on climate change issues); ii) institutional (for instance, fostering cooperation between sectors and organizations, and developing appropriate legislative frameworks); and iii) systemic (aiming to create enabling environments through economic and regulatory policies).[58]

South-South exchanges may prove to be highly beneficial for capacity-building activities, as they have the potential to create more opportunities for developing countries to share their experiences. As noted in Part 2.1 of this paper, institutional capacity building is of particular importance. To date, there is clear under-investment and under-engagement in long-term institutional building efforts. SSCCC could contribute to filling this gap, by mobilizing more resources in and for the South.

2.2.3 Solution development and transfer

There are many areas where adaptation and low-carbon development solutions can emerge, and are emerging, from the South. Research into South-based solutions could help to validate such solutions, and add them to the menu of options that can be supported for implementation. SSC could be instrumental for changing the conventional model that relies on the transfer of technology developed in the North.

The transfer of technological solutions from developing countries to other developing countries can be advantageous, as they often share similarities in both environmental conditions and institutional contexts. Economic and developmental co-ben-

[54] 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>.

[55] The frameworks are enshrined in decisions 2/CP.7 ('Capacity building in developing countries') and 3/CP.7 ('Capacity building in countries with economies in transition') adopted in 2001.

[56] For more information on capacity-building under the UNFCCC, see UNFCCC, 'A brief history of capacity-building in the UNFCCC process', available at <http://unfccc.int/cooperation_and_support/capacity_building/items/7061.php> (visited 31 March 2016).

[57] 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.

[58] UNFCCC, 'A brief history', *supra* note 56.

efits can also be generated. For example, as indicated in Box 2, more effective natural resource management can be key for supporting livelihoods and developmental outcomes in rural areas, as well as for enhancing climate resilience. Often, there is a wealth of knowledge and traditional practice in the South that is very appropriate for developing country situations – and which would benefit from mechanisms that support South-South knowledge and solution transfer. The concept of 'appropriate technology'[59] is well-established; and localizing solutions for Southern conditions and contexts often remains a challenge.

3 Implementing SSCCC

3.1 Introduction

Realizing the benefits of SSCCC will require innovative and effective implementation modalities. Where appropriate, these implementation modalities could leverage existing structures and mechanisms. Implementation approaches should be guided by considerations of inclusiveness and transparency as well as efficiency and effectiveness. Some initial ideas regarding three key elements for implementing SSCCC – institutional architecture, finance and a knowledge platform – are provided below.

3.1.1 Institutional architecture

It would be useful to examine ways in which the existing climate finance architecture could support SSCCC. The financial mechanism under the UNFCCC has a number of operating entities, including the Global Environment Facility,[60] the Adaptation Fund (AF)[61] and the Green Climate Fund (GCF),[62] with their own governance structures and institutional arrangements. In addition, other bodies and activities under the UNFCCC, such as the TT:CLEAR, the UNFCCC's Technology Information Clearinghouse,[63] the Adaptation Committee[64] and the Nairobi Work Program,[65] serve as mechanisms for the dissemination of policy and cooperation on

[59] Ernst F. Schumacher, *Small Is Beautiful: Economics As If People Mattered* (Harper & Row, 1973).

[60] See <https://www.thegef.org/>.

[61] See <https://www.adaptation-fund.org/>.

[62] See <http://www.greenclimate.fund/home>.

[63] For more information on TT:CLEAR and other activities aimed at enhancing the development and transfer of climate technologies to developing countries, including the Technology Mechanism and its two complementary bodies, the Technology Executive Committee (TEC) and the Climate Technology Centre and Network (CTCN), see UNFCCC, 'Technology in INDCs', available at <http://unfccc.int/ttclear/pages/home.html> (visited 31 March 2016).

[64] The Adaptation Committee (AC) promotes the implementation of enhanced action on adaptation under the UNFCCC. For more information, see UNFCCC, 'Adaptation Committee', available at <http://unfccc.int/adaptation/groups_committees/adaptation_committee/items/6053.php> (visited 31 March 2016).

[65] The Nairobi Work Programme (NWP) is a mechanism that aims to facilitate and catalyze the development and dissemination of relevant knowledge in support of climate change adaptation policies and practices. For more information see UNFCCC, 'Nairobi work programme on impacts, vulnerability and adaptation to climate change (NWP)', available at <https://www3.unfccc.int/pls/apex-/f?p=333:1:953565116002771> (visited 31 March 2016).

matters including technology, research and policy implementation within the global South. Even though a clear policy direction for SSCCC under the UNFCCC has yet to be put in place, these processes could provide the basis to support expanding South-South flows.

In addition to the existing mechanisms under the UNFCCC, there could be other alternatives for enabling South-South transfer of resources to support SSCCC. One example would be multi-donor trust funds that are created and operated under the UN umbrella, such as the Millennium Development Goals Achievement Fund (MDG-F).[66] These special purpose vehicles offer the advantages of flexibility and targeting of resources, even while providing the inclusiveness and transparency of a UN-based structure.

3.1.2 Finance

Adequate financing is the foundation for the implementation of climate policies.

In Copenhagen in 2009[67] and in Cancún in 2010,[68] developed countries committed to a goal of jointly mobilizing USD 100 billion annually in climate finance for developing countries, by 2020. Even if these commitments are realized, it would still be challenging to meet projected adaptation needs, especially those of Least Developed Countries (LDCs) and Small Island Developing States (SIDS), as well as to implement effective mitigation measures in rapidly growing economies (BRICS[69] countries in particular).

In this context, South-originating climate finance[70] could become an important complementary component of the existent global climate finance.

The Paris Agreement (although reaffirming developed countries' obligations under the UNFCCC) for the first time encourages developing countries also to provide financial support, voluntarily.[71] These efforts could play an essential role in catalyzing more resources and in strengthening SSCCC; there could also be normative pressure for developed countries to increase their own contributions.[72]

66 See <http://www.mdgfund.org/node/4>.
67 See 'Copenhagen Accord', UNFCCC Decision 2/CP.15 (2009).
68 See 'The Cancun Agreements: Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention', UNFCCC Dec. 1/CP.16 (2010).
69 See 'BRICS', *supra* note 10.
70 Climate finance flowing among developing countries tracked by the Climate Policy Initiative amounted to USD 10-billion. See Barbara Buchner *et al*, *The Global Landscape of Climate Finance 2014* (Climate Policy Initiative, 2014), available at <http://climatepolicyinitiative.org/wp-content/uploads/2014/11/The-Global-Landscape-of-Climate-Finance-2014.pdf> (visited 31 March 2016) at 17.
71 Center for Climate and Energy Solutions, 'Outcomes of the UN Climate Change Conference in Paris' (2015), available at <http://www.c2es.org/docUploads/cop-21-paris-summary-02-2016-final.pdf> (visited 31 March 2016).
72 Phillip M. Hannam *et al*, 'Developing country finance in a post-2020 global climate agreement', 5 *Nature Climate Change* (2015) 983-987.

In 2014 and 2015, China announced the creation of a South-South Climate Cooperation Fund (cf. BOX 1 in section 1.2), expected to become 'the cornerstone of China's climate leadership'.[73] Though commended by the international community, these announcements also received criticism. As noted by Hannam *et al*,[74] China's decision to establish its own, market-based fund outside the scope of the UNFCCC brings about fragmentation in the climate finance architecture; lack of coordination may fail to create an appropriate incentive system for countries to shift investment towards low carbon and climate resilient solutions. On the other hand, a recent study conducted by UNDP shows that developing countries rate China's delivery of support for climate change action very positively.[75] China-led SSCCC endeavors are considered to be technically sound, needs-based and quick in delivering concrete results.[76]

South-to-South climate finance, including assistance to LDCs, export financing and private sector investment, has been growing in recent years.[77] If appropriately coordinated within a consistent set of rules, South-South flows will play an increasingly important role in scaling up global efforts to mitigate and adapt to climate change.

3.1.3 Platform for SSCCC promotion

As a follow-up of the SSCCC Forum in Lima, NDRC called for, *inter alia*, the development of a 'Platform for Promoting South-South Cooperation on Climate Change', which would serve as a long-term mechanism for enhancing mutual learning and knowledge sharing (through cooperative research and projects), capacity-building (through trainings for institutional capacity, public climate awareness and technology development), and policy support (strengthening the science-policy interface to facilitate dialogue in and among developing country governments), as well as technology exchange (through technology demonstration and the sharing of solutions) across developing countries.[78]

The establishment of a new platform would be beneficial to catalyze and complement the efforts of existing networks that promote climate action in developing countries and promote exchanges at the regional and interregional level. Notable examples include the UNEP-GAN (Global Adaptation Network)[79] members:

[73] Liu Hongqiao, 'China pledges USD20 million a year to its new South-South Cooperation Fund', Chinadialogue of 12 December 2014, available at <https://www.chinadialogue.net/blog/7596-China-pledges-US-2-million-a-year-to-its-new-South-South-Cooperation-Fund/en> (visited 31 March 2016).

[74] Hannam *et al*, 'Developing country finance', *supra* note 72.

[75] Moritz Weigel, *China's Climate Change South-South Cooperation: Track Record and Future Direction* (UNDP China, 2016).

[76] Thanks to a non-bureaucratic and unconditional provision of support, with simple approval procedures and efficient delivery, China's approach to SSCCC is broadly recognized.

[77] Stephen Minas, 'FPC Briefing: Climate change cooperation within the Global South: Finance, policy and institutions' (the Foreign Policy Centre, undated), available at <http://fpc.org.uk/fsblob/1628.pdf> (visited 31 March 2016).

[78] UNEP-IEMP, First SSCCC Forum Meeting Report (2015).

[79] See the Global Adaptation Network website, available at <http://ganadapt.unep.org> (visited 31 March 2016).

Asia-Pacific Adaptation Network (APAN),[80] African Adaptation Knowledge Network (AAKnet),[81] West Asia Regional Network on Climate Change (WARN-CC),[82] and Regional Gateway for Adaptation and Technology in Latin America and Caribbean (REGATTA).[83] These networks represent an important basis for promoting SSCCC. Besides UN Agencies (not only the UN Environment, but also UNDP, UN-Habitat,[84] etc.), several international organizations around the world have also shown proactive engagement in coordinating and supporting South-South exchanges – for instance, the World Bank,[85] GIZ,[86] and WWF,[87] to name but a few.

As a preliminary proposal by UNEP and NDRC, the mission of the platform would be to promote SSCCC and scale up mitigation and adaptation actions in developing countries, in ways which would be compatible with their respective capabilities, national circumstances and sustainable development priorities.[88] Thematic areas to deal with could reflect the key sectors and intervention modalities identified as strategic functions and directions of SSCCC, as indicated in Part 2 above. The platform should be open and inclusive, and it may also serve the purpose of catalyzing funds for project implementation.

4 Conclusions

In recent years, South-South Cooperation has demonstrated its potential to contribute to all building blocks of climate change responses: capacity-building, finance, knowledge, policy, and technology, covering both adaptation and mitigation. Developing countries have increasingly engaged in concerted efforts to share lessons and experiences; some of them have even taken leads in defining and implementing low-carbon, climate resilient development pathways (see examples provided in Part 1.2 of this paper).

The importance of South-South Cooperation on Climate Change was acknowledged by ministers, principals of UN agencies and other prominent international

[80] See <http://www.asiapacificadapt.net/>.
[81] See <http://www.aaknet.org/>.
[82] See <http://ganadapt.unep.org/index.php/regional-networks/warn-cc>-
[83] See <http://www.cambioclimatico-regatta.org/index.php/en/>.
[84] UN-Habitat is the United Nations programme working towards a better urban future. See <http://unhabitat.org/>.
[85] World Bank client countries share experiences through the Knowledge Sharing for Results platform. See South-South Facility, available at <http://knowledgesharingfordev.org/what-south-south-facility> (visited 31 March 2016).
[86] See GIZ, 'Global Agendas', available at <https://www.giz.de/en/ourservices/1410.html> (visited 31 March 2016).
[87] See for example: WWF, 'South Asian nations pledge cooperation on rampant wildlife trade' (2008), available at <http://wwf.panda.org/wwf_news/?124200/South-Asian-nations-pledge-cooperation-on-rampant-wildlife-trade> (visited 31 March 2016).
[88] UNEP-IEMP, 'Strategic Dialogue on South-South Cooperation on Climate Change'. Meeting report (2015).

organizations who gathered for the first and second session of the SSCCC Forum – held in Lima and Paris in conjunction with COP20 and COP21, respectively. On those occasions, the necessity to give SSC appropriate political weight in the climate negotiation context was emphasized. Further to this, it was suggested that all initiatives and funding mechanisms under the UNFCCC, national and international alike, should include a South-South dimension in their respective work programmes.

The new international climate agreement finalized at COP21 in Paris in December 2015 represents a key opportunity for both the South and the North to confront the climate change challenge. SSC, an important modality of international cooperation, can play a fundamental role in the implementation of the Paris Agreement. As an example, it could contribute to strengthening countries' capacity for accessing new flows of resources for climate change adaptation and mitigation; it could also help them make a stronger case for availability of, and simpler access to, scaled up resources.

After countries have formally ratified the Paris Agreement, there will still be many operational details of the new framework to be discussed and decisions to be made. In this context, in 2016 the SSCCC Forum initiative was re-launched as a standing policy mechanism, with the goal of setting the compass for SSC in the implementation of the Agreement.[89] Jointly led by the United Nations (UNEP and UN-EOSG) and China (through NDRC), this initiative represents another milestone in the development of a platform for ongoing dialogue amongst SSCCC stakeholders in support of enhanced and concerted climate action in and for the global South.

[89] UNEP-IEMP, 'Scoping Meeting on the SSCCC Forum'. Meeting report (2016).

Climate Change and Adaptation in Kyrgyzstan

Oksana Lipka[1]

1 Introduction

The Kyrgyz Republic is a small developing country in the centre of the Eurasian continent, far from the coast. It occupies around 200,000 km^2, of which 90 per cent are located at more than 1,500 metres above sea level.[2] In 2012, the population of Kyrgyzstan amounted to 5.7 million people, life expectancy was 66 years for men and 74 years for women. The poverty rate averaged across the country was 38 per cent.[3] Kyrgyzstan is a poor country and, despite any efforts that it might itself undertake, it is likely to prove difficult for it to solve, or mitigate significantly, its environmental problems without international support.

According to the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report,[4] a substantial temperature rise can be expected in Kyrgyzstan as compared to the global average. This could lead to exacerbated aridization[5] and aggravated water supply problems being faced by the major sectors, namely, agriculture and hydropower.

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[1] Ph.D. (Lomonosov Moscow State University); Coordinator of Climate and Energy programme, WWF-Russia; IPBES Lead Author; e-mail: olipka@wwf.ru.

[2] 'Biodiversity conservation priorities of the Kyrgyz Republic till 2024 and Action Plan for implementation of biodiversity conservation priorities of the Kyrgyz Republic for 2014–2020'. Approved by the Decree 131 of the Government of the Kyrgyz Republic of 17 March 2014, available at <https://www.cbd.int/doc/world/kg/kg-nbsap-v3-en.pdf> (visited 17 July 2016).

[3] National Statistical Committee of the Kyrgyz Republic, 'The Environment in the Kyrgyz Republic 2008–2012' (2013) 67 (in Russian).

[4] Thomas F. Stocker *et al,* (eds), *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2013) 1535, available at <https://www.ipcc.ch/report/ar5/wg1/> (visited 21 July 2016).

[5] Aridization is a complex of processes which reduce the level of moistening of territories. This causes reduction of biological productivity of ecosystems by reducing the difference between precipitation and evaporation.

According to the World Bank,[6] the Kyrgyz Republic is the third most vulnerable of the European and Central Asian countries in respect of climate change. This unfavourable ranking is based on both climate change trends and the countries' adaptation potentials and poverty rates. A developing agricultural state with a hot and dry climate and frequent hazardous weather events has extremely poor adaptation ability, if acting on its own.

The 2015 Paris Agreement on climate change[7] offers new adaptation opportunities at the international level that can be implemented through measures taken nationally. However, as long as the international community is unaware of the situation in the country and of the state's needs and potentials, it will be hard for Kyrgyzstan to obtain adaptation financing from international sources, including the Green Climate Fund,[8] the Global Environment Facility (GEF),[9] and a large variety of bilateral agreements.

The purpose of this paper is to raise awareness within international circles of experts and stakeholders on the situation in the Kyrgyz Republic so as to facilitate the country's involvement in international processes and access to funds. The paper therefore begins by considering the climate threats and risks that face Kyrgyzstan. The paper then proceeds to examine current adaptation efforts and measures that need to be taken in the near future. The paper concludes by summarizing the situation as a whole.

2 Kyrgyzstan's vulnerability to climate change

2.1 Climate

Kyrgyzstan is characterized by extreme natural conditions and highly vulnerable mountain ecosystems. Winter temperatures, particularly in the high mountains and intermountain basins, are as low as minus 20°C or 30°C, although thaws are not uncommon. The average monthly temperature in July varies between +25°C and +37°C, whereas at the altitude of 3,600 metres it is +4°C or lower. Summer is usually dry and hot. The absolute maximum temperature is +44°C, while the absolute minimum is -53.6°C. The highest annual precipitation is found on the western slope of the Fergana Range (1,090 mm), whilst the lowest precipitation is recorded on the western side of the Issyk Kul basin (144 mm). Average precipitation varies between 300 and 600 mm per year.[10]

[6] Marianne Fay, Rachel I. Block and Jane Ebinger (eds), *Adapting to Climate Change in Eastern Europe and Central Asia* (World Bank, 2010) 208, available at <http://www.worldbank.org/eca/climate/ECA_CCA_Full_Report.pdf> (visited 21 July 2016).

[7] Paris Agreement to the United Nations Framework Convention on Climate Change, Paris, 12 December 2015, in force 4 November 2016; 'Adoption of the Paris Agreement', UNFCCC Dec. 1/CP.21 (2015).

[8] See <http://www.greenclimate.fund/home>.

[9] See <http://www.thegef.org>.

[10] National Report on the Environment in the Kyrgyz Republic for 2006–2011 (State Agency on Environment Protection and Forestry under the Government of the Kyrgyz Republic, UNDP and UNEP, 2012) 128 (in Russian).

Substantial climate change has already been observed in the territory of the Kyrgyz Republic. Unfortunately, climate change evolution data for the latest 5 years were not available at the time of writing, because of the lack of capacity in the National Hydrometheorological Service. Even the Executive Summary of the country's Third National Communication to the UN Framework Convention on Climate Change (UNFCCC)[11] uses the graphs shown below, which do not contain data beyond 2010.[12] Average temperature growth over 1885–2010 was more than one degree Celsius (see Figure one below).[13] Average annual temperature growth is observed in all climate zones and regions of the Republic, as well as at all altitudes, and has substantially accelerated over recent decades. While the average annual temperature increase is 0.0104°C/year across the Republic for the whole period on record, it has more than doubled over 1960–2010 to reach 0.0248°C/year, and increased more than 6.5 times over 1990–2010 to 0.0701°C/year. While the highest warming rate is observed for winter, the lowest monthly temperatures increase much faster than the highest ones,[14] favouring alleviation of the severe climate.

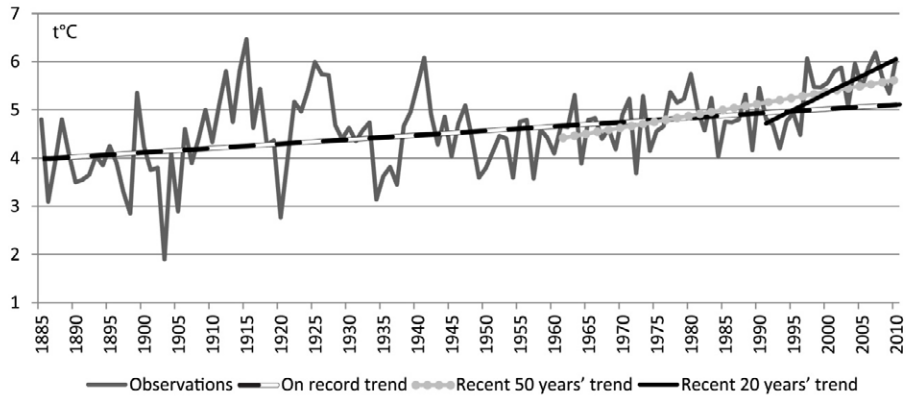

Figure 1. Average annual temperature trend across the Kyrgyz Republic.[15]

[11] 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>.

[12] Third National Communication of the Kyrgyz Republic to UN Framework Convention on Climate Change, Resume (project) (2015), available (in Russian) at <http://climatechange.kg/wp-content/uploads/2014/12/00_Rezyume.pdf> (visited 20 April 2016).

[13] Shamil Ilyasov *et al*, 'Climate Profile of the Kyrgyz Republic' (State Agency for Environmental Protection and Forestry under the Government of the Kyrgyz Republic and UNDP, 2013), available at <http://www.kg.undp.org/content/dam/kyrgyzstan/Publications/env-energy/kgz_Kyrgyzstan%20Climate%20profile_ENG_for%20web-opt.pdf> (visited 21 April 2016) 99.

[14] Third National Communication, *supra* note 12.

[15] Ilyasov *et al*, 'Climate Profile of the Kyrgyz Republic', *supra* note 13, at 99.

Precipitation has shown negligible general evolution as compared to the inter-annual variability.[16] Over the last few years, substantial fluctuations have been recorded for individual regions, either upward or downward, while the overall trend of recent years is definitely downward (see Figure two).[17]

The downward trend for precipitation combined with the steadily growing air temperature shows that the agrometeorological conditions are deteriorating, which is problematic insofar as these conditions are important to ensure the country's food security.

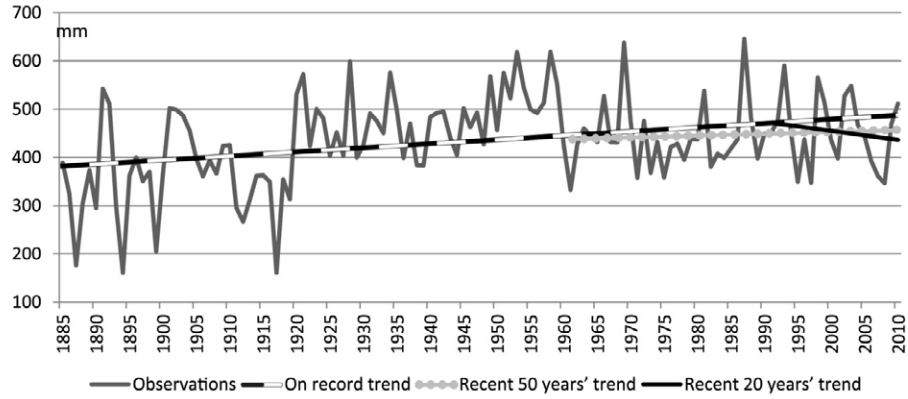

Figure 2. General trend for average annual precipitation over the period on record (1885–2010).[18]

The expected change assessment shows that by 2100 air temperature growth may exceed 4°C.[19] No substantial change is expected in the amount and distribution of annual precipitation based on model runs. Preservation of the precipitation level is expected against simultaneous considerable growth in the surface air temperature, particularly in the RCP8.5 scenario.[20] Anticipated climate change is unfavourable for the country's economy (primarily for agriculture), human health, and natural systems, resulting in a need for adaptation efforts.[21]

[16] *Ibid*.
[17] Third National Communication, *supra* note 12.
[18] Ilyasov *et al*, 'Climate Profile of the Kyrgyz Republic', supra note 13, at 99.
[19] *Ibid*.
[20] Representative Concentration Pathways (RCPs) are scenarios that include time series of emissions and concentrations of the full suite of greenhouse gases and aerosols and chemically active gases, as well as land use/land cover. RCP8.5 is one high pathway for which radiative forcing reaches greater than 8.5 W m–2 by 2100 and continues to rise for some amount of time (IPCC, 2013). It is the most unfavourable climate change scenario.
[21] Third National Communication, *supra* note 12.

2.2 Water reserves

More than 45 per cent of all glaciers in Central Asia, which are a major source of nourishment for rivers, are located in the territory of Kyrgyzstan. Back in the 1960s, 8,208 glaciers totaling 8,077 km^2 could be found here, whereas now the total glacier area has reduced by approximately 20 per cent.[22] In Kyrgyzstan, there are more than 3,500 large and small rivers with the overall annual runoff assessed at around 50 km.^{3} The Karadaria river merges with the Naryn to form the Syrdaria river, which is one of the two major water arteries of Central Asia.[23] According to RCP 8.5 scenario and 5 per cent reduction of annual precipitation, there may be an approximately 40 per cent decrease in runoff.[24]

There are 1,973 lakes in the country, containing 1,745 km^3 of water (that is, approximately 71 per cent of total national water reserves). The Issyk Kul is the largest mountain lake and contains 1,738 km^3 of water, with a 6,236 km^2 water surface area. This lake is therefore a key climate-forming factor for the entire bolson.[25] Climate change may have a substantially adverse impact on the lakes. For example, the Issyk Kul's surface area is expected to shrink by 232–1,049 km^2, and its water level to fall by 5.1 to 27.5 metres as compared to the 2000 values.[26]

2.3 Hazardous events

Since most of the country's territory is located in the highlands, between 401 and 7,439 metres above sea level, where tectonic movements are very active, it is prone to soil creeps, rockfalls, stone falls, mudflows, floods, avalanches, earthquakes, waterlogging, and glacial lake outbursts. Hazardous hydrometeorological events have become more frequent too, exacerbating the situation.

The Kyrgyz Republic's Ministry of Emergency Situations has developed an analysis of statistical data on emergency situations for the period 2000–2014. Dangerous weather events (wind, precipitation, air temperature etc.) are responsible for 13 per cent of all emergency situations, yet they often cause other hazardous processes. Landslides, stone falls, nearly 70 per cent of mudflows and floods, and groundwater rise are all determined by liquid precipitation amount and patterns and snow cover/glacier formation and melt.[27] During 1990–2014 (a 25-year period), the average emergency rate has been 191; while during 2000–2014 (15 years), it has been 239. Over the last 15 years, 20 emergencies per year on average were caused by landslides,

[22] National Report on the Environment, *supra* note 10.
[23] *Ibid*.
[24] Third National Communication, *supra* note 12.
[25] National Report on the Environment, *supra* note 10.
[26] Second National Communication of the Kyrgyz Republic to the UN Framework Convention on Climate Change (Poligraphoformlenie, 2009), available at <http://unfccc.int/resource/docs/natc/kyrnc2e.pdf> (visited 21 July 2016).
[27] The Kyrgyz Republic Ministry of Emergency Situations, 'The 2014 Report', available (in Russian) at <http://mes.kg/upload/kniga_2015/book_rus000.html> (visited 20 April 2016).

70 emergencies by mudflows and floods, 32 by avalanches, 31 by dangerous weather events, 7 by waterlogging, 43 by man-made accidents, road traffic accidents and large fires, 17 by earthquakes, and 13 by infections.[28] Statistical data also show a growing trend for the number of weather-determined emergencies in 1990–2010.[29]

The whole territory of Kyrgyzstan is a seismically active zone, experiencing nearly 3,000 earthquakes per year. In 2014, five grade 5–7 earthquakes took place.[30] In terms of the overall damage suffered, mudflows and floods come first among dangerous natural processes. There are 3,103 mudflow-hazard rivers in the Kyrgyz Republic.[31] 53 per cent of the country's territory is affected by avalanches. Giant avalanches and firn[32] slides are not uncommon in the highlands; and these sometimes bring a million or more cubic metres of snow.[33] Rockfalls and landslides are mostly found in the south of the country; in some parts of the southern territory up to 30–40 creeps per km^2 are met. In all, there are 5,000 slide zones in Kyrgyzstan, of which 3,500 are located in the south.[34] Besides this, there are 330 burst-hazard lakes of various danger categories in the country.[35]

Annual direct damage incurred by various emergencies amounts to approximately USD 30–35 million, while around USD 6 million of public funds are allocated annually for emergency prevention and response.[36]

2.4 Climate change vulnerability in various sectors

Traditionally, agriculture is the leading economic sector in the Kyrgyz Republic, both in terms of value-added and the number of employees. While agriculture is responsible for nearly 20 per cent of the country's GDP, only a small part of the territory (ca. 7 per cent) can be used for the cultivation of crops, and 85 per cent is pastures.[37] In Kyrgyzstan, land is in private ownership, but pastures cannot be transferred to private ownership or lease.[38] At the end of 2015, 382,000 (family-operated) farms and 357 agricultural cooperatives were operating in the country.[39] During 1991–2011, the average annual damage caused to the major crops by all types of

[28] *Ibid*.
[29] Ilyasov *et al*, 'Climate Profile of the Kyrgyz Republic', *supra* note 13, at 99.
[30] The Kyrgyz Republic Ministry of Emergency Situations, 'The 2014 Report', *supra* note 27.
[31] Third National Communication, *supra* note 12.
[32] The term 'firn' is used to describe an intermediate stage in the transformation of snow to glacier ice; granular, partially consolidated snow that has passed through one summer melt season but is not yet glacial ice.
[33] National Report on the Environment, *supra* note 10.
[34] Third National Communication, *supra* note 12.
[35] Programme on Adaptation to Climate Change in the 'Emergency Situations' Sector for 2015–2017. Approved by the order of the Ministry of Emergency Situations of the Kyrgyz Republic No. 692 of 7 July 2015 (in Russian), at 4.
[36] *Ibid*.
[37] Programme on Adaptation to Climate Change of Agriculture and Water Resources for 2016-2020 (in Russian), at 4-5.
[38] The Kyrgyz Republic Land Code, 2 June 1999 (in Russian), Article 4 (Ownership of land).
[39] Third National Communication, *supra* note 12.

climate emergencies varied from USD 3 million to USD 6.5 million (2005 som/USD exchange rate[40]), while droughts and water scarcity specifically contributed at least 57 per cent, but more often 77–93 per cent, to these figures.[41]

When it comes to livestock farming, this activity is heavily dependent upon pasture productivity. Two factors can adversely affect pasture productivity: grazing pressure and temperature. For winter pastures, temperature increases have favourable impacts in all regions. However, in many regions average temperature increase is not accompanied by a sufficient increase in precipitation.[42] Resulting higher levels of evaporation thus lead to lower pasture productivity.

The energy sector is also very important to the Kyrgyz economy, with approximately 90 per cent of the country's electricity being generated by hydropower plants. The Toktogul hydropower plant is the largest operating station, with an installed capacity of 1,200 MW.[43] Dependence of precipitations and ice volume in glaciers makes the country's energy supply vulnerable to current climate change. Consequently, all settlements and industries will suffer from a shortage of energy in the future. Before the adoption of the Paris Agreement, a project involving the construction of a coil power station was considered in order to make energy production more stable. For now, this project is blocked. In contrast, however, several new hydropower stations are in close plans to find funding (possibly to take international credits) and to be constructed as soon as possible.

Climatic conditions and economic growth have caused continuous increases in water consumption (due to the growth in the water needs of the agricultural sector). Between 2008 and 2012, annual intake from natural water sources amounted to 8,469–9,544 million m^3 and had increased from year to year. Most of the water is used for irrigation (from 4,445 to 4,4592 million m^3), while another one third to one half of the needed amount is lost during transportation (from 1,768 to 2,062 million m^3).[44] The World Bank has developed a projection of how evapotranspiration[45] will change in 2071–2099 as compared to 1951–1981 in RCP2.6 (2°C tem-

[40] All International Statistic Data for GBP in connection with Climate Change use methodology of the International Energy Agency (IEA):

> The GDP data have been compiled for individual countries at market prices in local currency and annual rates. These data have been scaled up/down to the price levels of 2005 and then converted to US dollars using the yearly average 2005 exchange rates or purchasing power parities (PPPs). Purchasing power parities are the rates of currency conversion that equalize the purchasing power of different currencies. A given sum of money, when converted into different currencies at the PPP rates, buys the same basket of goods and services in all countries. In other words, PPPs are the rates of currency conversion which eliminate the differences in price levels between different countries.

Available at <http://www.iea.org/statistics/resources/questionnaires/faq/> (visited 20 July 2016).

[41] Ilyasov *et al*, 'Climate Profile of the Kyrgyz Republic', *supra* note 13, at 99.

[42] Third National Communication, *supra* note 12.

[43] National Report on the Environment, *supra* note 10.

[44] National Statistical Committee of the Kyrgyz Republic, 'The Environment in', *supra* note 3.

[45] Evapotranspiration is the sum of evaporation and plant transpiration from the Earth's land and water surface to the atmosphere.

perature increase) and RCP8.5 (4°C) scenarios.[46] As climate will become hotter and drier, more water will be needed for irrigation, because more water will be wasted by evapotranspiration. Water consumption for agricultural purposes will increase in either case.

Currently observed climate change impacts on human health include higher weather-induced mortality and injury rates; increasing gastrointestinal infections, cardiovascular, respiratory, and verminous diseases.[47]

More than 20 types of natural ecosystems are found in the Kyrgyz Republic.[48] Most of the country's territory is covered by mid-altitude mountain and cryophyte (alpine) steppe (48,000 km^2) and cryophyte (alpine) grasslands (17,000 km^2). Despite their role in terms of biodiversity, importance for the local population and prevention of landscape degradation, forests only occupy 5.6 per cent of the territory.[49] In all, there are nearly 26,500 virus, bacteria, fungus, plant, and animal species.[50] Climate change is primarily manifested as changes in the environmental conditions that are habitual and habitable for living organisms. Sustainable ecosystems preserve their structure and keep landscapes operating as before. However, any disruption promotes accelerated formation of new ecosystems that would best fit the altered environment. There is a two-way relationship between biodiversity and climate change: while a changing climate endangers biodiversity, sustainably managed (and therefore resilient) biodiversity can partially compensate for climate change impacts. Preservation of vegetation cover protects against the loss of the fertile soil layer on mountain slopes and prevents destructive floods and mudflows that annually cause millions of dollars' worth of damage. Undestroyed natural ecosystems of Kyrgyzstan are strong stabilization sources not only for highlands, but also for adjacent plains, where lands that have been disturbed by humans are no longer able to maintain a sustainable environment.[51] Moisture reduction may increase the share of arid deserts and semi-arid semideserts from approximately 15 per cent in 2000 to 23–50 per cent in 2100.[52]

[46] World Bank Group, *Turn Down the Heat: Confronting the New Climate Normal* (World Bank, 2014), available at <http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2014/11/20/000406484_20141120090713/Rendered/PDF/927040v20WP00O0ull0Report000English.pdf> (visited 21 April 2016).
[47] Third National Communication, *supra* note 12.
[48] 'Biodiversity conservation priorities of the Kyrgyz Republic till 2024', *supra* note 2.
[49] National Statistical Committee of the Kyrgyz Republic 'The Environment in', *supra* note 3.
[50] National Report on the Environment, *supra* note 10.
[51] Third National Communication, *supra* note 12.
[52] Second National Communication, *supra* note 26.

3 Adaptation

3.1 Introduction

In recent decades, the climate has been changing more rapidly than ever before in the Earth's history. According to the IPCC Fifth Assessment Report,[53] climate change will persist, being driven by past, current, and future anthropogenic emissions of greenhouse gases (GHGs). The impacts will stay with us for decades and centuries, even if all human-induced emissions come to a stop immediately. Therefore, adaptation efforts seem appropriate in any economic development scenarios and along with any GHG emissions reduction activities.[54]

In Kyrgyzstan, the severity of the adverse impacts of climate change has been recognized by Government. Current losses and damages are too large and evident to ignore urgent adaptation needs. A variety of measures and programmes to reduce the country's vulnerability, to stabilize the economy, promote security, improve the well-being of the population, and to preserve biological diversity are therefore being scheduled and implemented.

3.2 Adaptation at the regional level

For the countries of Central Asia, including Kyrgyzstan, adaptation to climate change is primarily about providing a sufficient amount of water, given the increasing water deficit. Exorbitant water intake for irrigation has caused the flow of the lower Amudaria river to diminish and prevented it from replenishing the Aral Sea,[55]

[53] Stocker *et al*, (eds), *Climate Change 2013*, *supra* note 4.

[54] Christopher B. Field *et al,* (eds), *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2014) 1132.

[55] The Aral Sea is situated in the middle of the Eurasian continent, thousands of kilometers from the ocean shores. Amudaria and Syrdaria, the two largest rivers in Central Asia, formed it about ten thousand years ago. In the mid-twentieth century, the Aral Sea was the fourth largest lake in the world with an area of 67,499 km^2; its length was 426 km; width, 284 km; maximum depth, 68 m.; and the water volume reached 1064 m^3. Since the 1960s, the sea began to become shallower and shrunk because of the large withdraw for irrigation. In 1989, the sea split into two isolated lakes – the Northern (Small) and Southern (Large) Aral. In 2003 the surface area of the Aral Sea was about a quarter of what it had originally been, and the volume of water, about 10 per cent. In the same year, the South Aral Sea was divided into western and eastern parts. In 2014, the eastern part of the Southern (Big) Aral Sea dried completely. It is often thought that the cause of the Aral Sea shrinking was purely anthropogenic, but climate change also contributed. The contemporary Aral desiccation is considered to be the worst aquatic ecology crisis in recent history. See Siegmar-W. Breckle *et al,* (eds) (2012). Aralkum – a Man-Made Desert: The Desiccated Floor of the Aral Sea (Central Asia) (Springer, 2012); Michael H. Glantz, Alvin Z. Rubinstein and Igor Zonn, 'Tragedy in the Aral Sea basin: Looking back to plan ahead? 3(2) *Global Environmental Change* (1993) 174–198; N. F. Glazovsky, *The Aral crisis: causes and ways out* (Nauka, 1993); Philip Micklin and Nikolay V. Aladin, 'Reclaiming the Aral Sea'. 298 *Scientific American* (2008) 64-71; NASA, 'Earth Observatory: Shrinking Aral Sea (2014), available at <https://www.flickr.com/photos/gsfc/15225687200/in/photostream/> (visited 3 October 2016); Peter O. Zavialov, *Physical Oceanography of the Dying Aral Sea*. (Praxis Publishing, 2005). Aralkum is a new desert forming on the location of the drying up of the Aral Sea, in the territory of Uzbekistan and Kazakhstan. The current flora of a dried-up lake bottom has started to develop since 1960, and the desert covers an area of over 38,000 km^2 and is a powerful source of wind take away.

which has now given way to a new desert, Aralkum. The situation with the Syrdaria, whose headwaters are in Kyrgyzstan, is much better: its waters (although reduced and heavily polluted) still reach the Small Aral Sea as before.

The need for integrated water management and protection at the basin level had been recognized well before the countries of the region became independent. A decision was made to set up Basin Water Management Organizations (BWMOs) to manage water resources in compliance with the rules and schedule coordinated with the republics and approved by the Ministry of Water Administration of the Soviet Union. As required by the National Resolution No. 1110,[56] all headworks located on the rivers and the main tributaries with more than 10 m^3/sec water consumption were to be operated by BWMO Amudaria and BWMO Syrdaria. Depending on hydrological projections, these BWMOs could reduce or increase the allowed consumption for each country within the 10 per cent range; however, they were not responsible for water quality or water use control in any of the republics.

In 1993, the International Fund for Saving the Aral Sea (IFAS)[57] was established by Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan. As directed by the Agreement regarding the status of the International Fund for Saving the Aral Sea (IFAS) and related organizations,[58] IFAS includes, *inter alia*, the Executive Committee of IFAS (EC IFAS), branches of the Executive Committee of IFAS in the countries of Central Asia, the Interstate Commission for Water Coordination (ICWC), the Basin Water Management Organizations (BWMO Amudaria and BWMO Syrdaria), and the Commission for Sustainable Development (ICSD). The ICWC was established somewhat earlier in accordance with the agreement between the countries of Central Asia on cooperation in the joint management, use, and protection of transboundary water resources (1992).[59] UNEP, UNDP, the World Bank and many other international organizations supported the Aral Sea Basin Program (ASBP) of EC IFAS from the beginning.[60]

The sharing of river runoff between Kazakhstan, Tajikistan, and Uzbekistan is based on the 'equal supply per irrigated hectare' principle. Implementation of this principle required the development of schemes, signed Protocols, the legitimacy of which was

[56] The Central Committee of the Communist Party of the Soviet Union and the USSR Council of Ministers, 'On the measures to radically improve the environmental and sanitary situation in the Aral Sea area, improve the efficiency of use and enhance the protection of water and land resources in the Aral Sea basin', Resolution No. 1110 of 19 September 1988.

[57] See <http://ec-ifas.org/en/>.

[58] Agreement between the government of Kazakhstan, the government of the Kyrgyz Republic, the government of Tajikistan, the government of Turkmenistan, and the government of Uzbekistan Regarding the Status of the International Fund for Saving the Aral Sea and related organizations, Ashgabat, 9 April 1999), <http://www.icwc-aral.uz/statute3_ru.htm> (visited 20 April 2016).

[59] Cooperation Agreement between the Republic of Kazakhstan, the Republic of Kyrgyzstan, the Republic of Uzbekistan, the Republic of Tajikistan, and Turkmenistan on the Joint Management, Use, and Protection of Transboundary Water Resources, Alma-Ata, 18 February 1992), <http://ashgabat.kz/article/108> (visited 20 April 2016).

[60] See <http://ec-ifas.org/en/prog1.php>.

confirmed by the leaders of the Central Asian states (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan) in 1995 through the adoption of the Nukus Declaration.[61] Thus, countries confirmed their intentions and financial commitments to support IFAS and its bodies to achieve, in cooperation, positive results in 'overcoming consequences of ecological crisis in a zone of pool of Aral sea and its influence on the nature and the person'. In addition, a 1996 Resolution of the Interstate Council for the Aral Sea Basin[62] specifies that: 'until a regional water strategy has been adopted, the states shall be governed by the approved water sharing principle'.[63] As new rules were not developed, in accordance with the above documents, Kyrgyzstan is entitled to use 24 per cent of water from Syrdaria up to the total of 11.9 km^3. In addition, Kyrgyzstan obtains water for irrigation from the hydraulic facilities that are used for water intake and runoff accumulation and are owned by neighboring states Uzbekistan (385 million m^3 in total) and Tajikistan (77 million m^3 in total).[64]

The Interstate Commission for Water Coordination of Central Asia proposes the following hydraulic measures:[65] careful compliance with water intake quotas and compliance with the Naryn-Syrdaria reservoir cascade operation mode; timely maintenance and construction of hydraulic facilities; improvement of hydraulic monitoring; and improvement of operational communications to exchange hydraulic information between the countries in the Syrdaria basin.[66] These measures were developed under the frames of the Commission before the need to adapt to climate change was recognized in the Central Asian Region. Actually, all of the proposed

[61] Nukus Declaration, Nukus, 20 September 1995, available at <http://www.internationalwaterlaw.org/documents/regionaldocs/nukus_declaration_eng.pdf> (visited 22 July 2016).

[62] 'About Activities of Interstate Commission for Water Coordination (ICWC) for the year 1995', Resolution of the Interstate Council for the Aral Sea Basin, Kyzyl-Orda, 19 April 1996, article 8.3.

[63] 'Resolution of the Interstate Council for the Aral Sea Basin, Kyzyl-Orda, 19 April 1996' in Interstate Commission For Water Coordination Of Central Asia. Bulletin No. 10. August 1996 (in Russian), at 5-12. Available (in Russian) at <http://www.icwc-aral.uz/pdf/10-ru.pdf> (visited 22 July 2016).

[64] National Report on the Environment, *supra* note 9.

[65] Interstate Commission for Water Coordination of Central Asia, Basin Water Management Organization Syrdaria, <http://www.icwc-aral.uz/bwosyr.htm> (visited 20 April 2016).

[66] *Ibid*.

> Water resources scheme administrated by BWMO 'Syrdarya' works under conditions of guaranteed discharge bypass, as well as under extreme conditions when there are an ultimate water shortage and a need for accidentless high flow bypass with enhanced water supply in exceptionally high water years. River flows, planned (limited) water use, and water reserves available in reservoirs in this period are taken into account in order to ensure these modes. The reservoirs are operated during several years depending on water resources availability, demands for water and possible changes in Naryn-Syrdarya water carrier operation mode. That is why in such cases water resources dispatch control is annually exercised to maintain guaranteed operation mode of reservoir cascade. Low frequency peak flow bypass on Syrdarya river is achieved owing to peak flow reduction using compensatory capacity, which equals 0.8 km^3 in Toktogul reservoir, 0.8 km3 in Kayrakkum reservoir and 0.8 km^3 in Chardara reservoir. When there is compensatory peak flow regulation, the capacity of river waterworks and of river channel itself in various sections is taken into account, and, first, Karadarya and Fergana Valley rivers flows and Toktogul reservoir emergency flows are released. Kayrakkum reservoir transforms peak flows and balances its release taking into account Syrdarya river channel capacity. Chardara reservoir regulates Kayrakkum reservoir releases and peak flows of the rivers, flowing into Syrdarya river in Kayrakkum-Chardara section. Such system of water resources scheme operation guarantees reliable and no-failure operation of waterworks on rivers, intakes and main canals. Taking into account the forecast of river water availability in non-vegetation and vegetation periods and of Naryn-Syrdarya cascade reservoir storage, BWMO 'Syrdarya' designs and submits to ICWC to confirm reservoir cascade operation mode and water intake limits to the states. The confirmed limits are the basis for implementing interstate water allocation on canals and pumping plants. Water intake limits can be adjusted in accordance with the formed water situation. If adjustment value exceeds 10 per cent of total volume, then the limits will be reconfirmed at the ICWC meeting.

Ibid.

measures are adaptive, but norms should be evaluated and changed under new climate and socio-economic reality.

The above list indicates the need for two clusters of measures. The first of these relates to rational water use and is implementable through international agreements and enhanced agricultural technologies. The second cluster relates to the improvement and due maintenance of hydraulic facilities. At the national level, it is important to minimize water transportation loss in the channel network.

Unlike its neighbours, Uzbekistan and Kazakhstan, Kyrgyzstan is not a party to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (UNECE Water Convention).[67] It is very unlikely that the Kyrgyz Republic will join the Convention, because doing so will, *inter alia*, expose the country to water pollution fees. Thus, climate adaptation (including economic water consumption) and water treatment measures taken by Kyrgyzstan to contribute to the maintenance of water resources in Syrdaria will only occur on a voluntary basis.

A survey on 'Development of cooperation in climate change adaptation transboundary basins of the Chu and Talas rivers: Kazakhstan and Kyrgyzstan' is one example of a bilateral project aiming at the assessment of climate change impacts and the development of adaptation measures. The project assessed climate vulnerability, water resources and consumption and proposed ambitious measures, ranging from extreme weather damage reduction and water use efficiency improvement in the agricultural sector, to water ecosystems protection and water quality maintenance in rivers and climate change resilience improvement in densely populated regions of the two river basins.[68] The proposed measures were developed up to a high professional standard. Whether or not they will be successfully implemented will depend, however, on whether the two states will be able to cooperate and allocate the necessary financing to such implementation. The drafting of a new intergovernmental agreement between Kazakhstan and Kyrgyzstan on the Chu and Talas water use is part of the Action Plan for Kyrgyz State Agriculture and Water Management Adaptation to Climate Change Programme for 2016–2020.[69] The survey will be presented at the 6th Workshop on Adaptation to Climate Change in Transboundary Basins (focused on financing adaptation) and 8th meeting of the Task Force on Water and Climate, Geneva, 13-15 September 2016 as a successful case study under frames of the United Nations Economic Commission for Europe (UNECE).[70]

[67] Convention on the Protection and Use of Transboundary Watercourses and International Lakes, Helsinki 17 March 1992, in force 6 October 1996, 31 *International Legal Materials* (1992) 1312.

[68] 'Development of cooperation in climate change adaptation in transboundary basins of the Chu and Talas rivers, Kazakhstan and Kyrgyzstan' (Zoï Environment Network, 2014), 40, available at <http://www.zoinet.org/web/sites/default/files/publications/chu_talas.pdf> (visited on 22 August 2016).

[69] Action Plan for Agriculture and Water Management Adaptation to Climate Change Programme for 2016–2020, available (in Russian) at <http://climatechange.kg/wp-content/uploads/2014/12/SELHOZ-Plan-meropriyatij-finalnyj-IK.pdf> (visited 20 April 2016).

[70] See <http://www.unece.org/index.php?id=42218#/> (visited on 22 August 2016).

3.3 Adaptation at the national level

As the urgent need for climate change adaptation measures is recognized in Kyrgyzstan, the prevalence of poverty in this country means that its primary focus is on addressing challenges related to the population's well-being. The following sectors have been identified as the most vulnerable to climate change: water resources; agriculture; energy; emergencies; human health; forest and biodiversity.[71]

3.3.1 Water resources adaptation

The Water Code[72] assigns to the National Water Administration responsibility for the implementation of measures aimed at water resource management, prevention/minimization of hazardous events, reduction of water loss, and improvement of the rational use of irrigation. This agency is also responsible for any measures related to water monitoring, protection, and regulation of use; handling emergencies; dam safety; and design and construction of irrigation, drainage and hydraulic networks and facilities.[73]

Therefore, it is the National Water Administration which is responsible for the implementation of key climate change adaptation targets in this sector, as described in the Third National Communication of the Kyrgyz Republic to the UNFCCC: to improve the rational use of water resources, maintenance/construction of hydraulic facilities, maintenance of the river runoff zones (including afforestation and designating these zones as protected areas), raising the awareness of the population about the importance of implementing water saving technologies and possibilities regarding simple adaptive measures, and enhancement of international cooperation.[74] However, this agency's mandate clearly goes far beyond what the agency is able to achieve with its current resources and budget. The Action Plan for Agriculture and Water Management Adaptation to Climate Change Programme for 2016-2020 envisages, *inter alia*: the construction of five new water reservoirs; and the rehabilitation/construction of water channels, including to divert runoff between the basins. Implementation of these measures will optimize water supply and reduce water deficit in some regions. Unfortunately, it is not possible for the Government to realize any of the large activities identified in the Plan without international support. The shortage of funding was calculated for each activity, and some will only be initiated if donors provide necessary support.[75]

[71] Climate Change Adaptation Priorities in the Kyrgyz Republic till 2017. Approved by Government Decision No 549 of 2 October 2013.
[72] The Kyrgyz Republic Water Code, 12 January 2005.
[73] *Ibid*. at Art. 11 (1-2a,b).
[74] Third National Communication, *supra* note 12.
[75] Action Plan for Agriculture, *supra* note 69.

3.3.2 Desertification

The United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa[76] defines desertification as 'land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities'.[77] Of the 10.6 million ha of farmland in Kyrgyzstan, most of which is used as pasture for 11 million heads of livestock, nearly 30 per cent are highly desertified, 27 per cent are at a medium stage of desertification, and 17 per cent are at an early stage of desertification. The Kyrgyz Republic signed the Convention in 1997 and ratified it in 1999. In 2000, a National Action Plan to Combat Desertification was developed.[78]

The Kyrgyz Government has developed, and for the most part implemented, a large national investment programme that basically builds upon international grants and loans. This programme includes, *inter alia*, an irrigation rehabilitation project (worth USD 46.8 million over a period of 6 years); an on-farm irrigation project (USD 28.42 million, 7 years); a subsidiary services in agriculture project (USD 29.82 million, 5 years); a sheep breeding and pasture monitoring project (USD 16.78 million, 5 years); and a regional agriculture development project (USD 45 million, 7 years).[79] Although such measures are important steps in the right direction, it should be kept in mind that climate change adaptation is an on-going process that needs to consist of consecutive steps. It is important that continuous measures be taken to prevent land degradation and desertification in an arid climate. It is thus worrying that, to date, no new action plan to combat desertification has been developed in Kyrgyzstan.

3.3.3 Adaptation in agriculture

According to the Kyrgyz Republic's Land Code, 'land owners and land users are responsible for land protection as required by the regulations and provisions of this Code and environmental protection legislation'.[80] In Kyrgyzstan, land is in private ownership, and so adaptation measures are often the responsibility of smallholders. In view of this, owners and users of a piece of land are responsible for the rational use thereof, prevention of degradation and pollution, remediation, reclamation, and, if need be, for conservation for subsequent reclamation.[81] However, the population's poverty is a serious barrier to the implementation of the above measures, despite the fact that they are required by law.

[76] 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>.

[77] *Ibid*. at Art. 1(1)(a).

[78] National Action Plan to Combat Desertification in the Kyrgyz Republic (Ministry of agriculture and irrigation of the Kyrgyz Republic, 2000). Approved by the Chairman of the coordination Council of the Minister of agriculture and water resources of the Kyrgyz Republic, 8 December 2000.

[79] *Ibid*.

[80] Land Code, Art. 95 (2).

[81] *Ibid*. at Art. 96 (1).

In compliance with the Climate Change Adaptation Priorities in the Kyrgyz Republic till 2017,[82] the Kyrgyz Ministry of Agriculture and Irrigation has developed a Programme for Agriculture and Water Management Adaptation to Climate Change.[83] This Programme includes the breeding and distribution of new, drought-resistant varieties of plants, use of soil protection technologies and rational use of irrigation, optimization of crop rotation, and measures to combat soil erosion and degradation. In respect of the planning of livestock raising, the Programme requires selective breeding, disease prevention and control, supply of animal feed in the winter, construction of new types of farms using state-of-the-art technologies to fit the climate parameters, and development and promotion of livestock insurance. One important activity is pasture adaptation to climate change.[84]

In the agricultural sector, the country could strongly benefit from support from the Food and Agricultural Organization (FAO), for example in terms of the distribution of new varieties of plants and animals or introduction of soil management/watering techniques.

3.3.4 Adaptation in the emergency situations sector

The prevention or minimization of damage caused by emergencies is an important climate change adaptation activity area. Because Kyrgyzstan is a high seismic hazard zone, the planning of activities in this sector must be comprehensive.

In compliance with the Climate Change Adaptation Priorities,[85] basic adaptation measures in the emergency situations sector, as these were reflected in the Climate Change Adaptation Programme for the 'Emergency Situations', include the improvement of monitoring, projection and alert systems; adoption of new building codes; development of insurance; and preparedness of medical and social organizations to operate in emergency situations.[86] The use of engineering facilities or ecosystem services to minimize or prevent damage from natural calamities is not envisaged in the plans for the period until 2017. Most likely, this is because the priorities were developed by the State Agency on Environment Protection and Forestry, which can only propose measures, but not provide funding therefore or insist on implementation. The Agency which really has power in respect of, and bears responsibility for combating, climate caused hazards is the Ministry of Emergency Situations.

The Kyrgyz National Platform for Disaster Risk Reduction (DRR) started its work in 2011 and was mainly supported by international organizations (the United Na-

[82] Climate Change Adaptation Priorities, *supra* note 71.
[83] Agriculture and Water Management Adaptation to Climate Change Programme for 2016–2020, available (in Russian) at <http://climatechange.kg/wp-content/uploads/2014/12/SELHOZ-Programma-IK-12.pdf> (visited 20 April 2016).
[84] *Ibid*. at 17, 24, 29-30.
[85] Climate Change Adaptation Priorities, *supra* note 71.
[86] Climate Change Adaptation Programme for the 'Emergency Situations', *supra* note 35 and Climate Change Adaption Action Plan for 2015–2017.

tions Development Programme (UNDP),[87] the United Nations Children's Rights and Emergency Relief Organization (UNICEF)[88] and the World Bank).[89] The national progress report on the implementation of the Hyogo Framework for Action[90] (2013–2015)[91] specified the main goals and achieved results, including projects of the Ministry of Emergency Situations. These projects were worth more than USD 18 million, of which 70 per cent was financed from international grants, and included, *inter alia*, training, disaster vulnerability assessments, setting up a Centre for Crisis Management in the Ministry of Emergency Situations,[92] providing support for regional governments, development of monitoring and alert systems, and purchase of equipment (including cars and vehicles). These activities have made a meaningful contribution towards the development of hazard prevention systems and rescue service capacity-building in Kyrgyzstan.

The most detailed action plan for Disaster Risk Reduction, including prevention of climate hazards and minimization of their consequences, is presented in the Strategy for the Integrated Safety of Population and Territories of the Kyrgyz Republic in Emergency and Crisis Situations till 2020.[93] This Strategy makes provision for capacity building, public awareness, early emergency systems, technical supply and engineering constructions etc. However, '[b]ecause of the difficult financial situation of the country, the relevant ministries co-executors of the Strategy reviewing of their program budgets have to work constantly to attract additional grants and investments, for the implementation of regional programs – to seek funding sources independently'.[94]

[87] See <http://www.undp.org/>.

[88] See <http://www.unicef.org/>.

[89] See <http://www.worldbank.org/>.

[90] 'The Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters (HFA)' is the first plan to explain, describe and detail the work that is required from all different sectors and actors to reduce disaster losses. It was developed and agreed on with the many partners needed to reduce disaster risk - governments, international agencies, disaster experts and many others - bringing them into a common system of coordination. The HFA outlines five priorities for action, and offers guiding principles and practical means for achieving disaster resilience. Its goal is to substantially reduce disaster losses by 2015 by building the resilience of nations and communities to disasters. This means reducing loss of lives and social, economic, and environmental assets when hazards strike. See <https://www.unisdr.org/we/coordinate/hfa> (visited on 25 July 2016). From July 2015 the current version of DDR global strategy is Sendai Framework for 2015–2030. See <http://www.unisdr.org/we/inform/publications/43291> (visited on 25 July 2016).

[91] Kyrgyz National Platform Secretariat. Kyrgyzstan: National progress report on the implementation of the Hyogo Framework for Action (2013–2015) Interim, available at <http://preventionweb.net/go/43352> (visited 20 April 2016).

[92] See (in Russian) <http://mes.kg/ru/about/subordinate/ssuks-ru/obshee-polojenie/> (visited on 25 July 2016).

[93] The resolution of the Government of the Kyrgyz Republic N 357 of 2 June 2012 (in Russian), available at <http://mes.kg/ru/strategiya-komplexsnoe-bezopasnosti/postanovleniya/> (visited on 25 July 2016).

[94] *Ibid.*, Chapter IV, part 2 'Stages of implementation of the Strategy 2015-2020'.

3.3.5 Adaptation in the human health sector

The 2011–2015 Climate Change Adaptation Programme for the Kyrgyz Republic's human health sector[95] aims primarily at monitoring, revealing the most vulnerable groups, providing doctors with further training, and raising public awareness.[96] The provision of assistance to the population in the case of hazardous weather events shall be addressed within the framework of adaptation in the emergency situations sector (see above).

3.3.6 Adaptation in the forest and biodiversity sector

The State Agency on Environment Protection and Forestry under the government of the Kyrgyz Republic[97] is assigned responsibility for the preservation of biodiversity.

The 10th Conference of the Parties of the Convention on Biological Diversity[98] in Nagoya adopted the Strategic Plan for Biodiversity for 2011–2020 and the Aichi Biodiversity Targets.[99] These documents include, *inter alia*: 'Strategic goal B. Reduce the direct pressures on biodiversity and promote sustainable use'; and 'Target 10. By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning'.

The abovementioned Aichi Target 10, which is about climate change adaptation, was perceived by a number of countries to be related exclusively to coral reefs and other marine ecosystems suffering from ocean acidification. Because Kyrgyzstan is thousands of kilometers away from the coast, this target was regarded as not applicable to the country and so was not included in the list of the country's priorities.[100] However, a more careful reading shows that adaptation is included in National goal 4.2:

> Increase the resilience of ecosystems, and thus increase the contribution of biodiversity to carbon stocks, contributing to climate change mitigation and adaptation and to combating desertification. Growth of destructive pressure from almost all sectors leads to the destruction of a large part of natural ecosystems, primarily forests. Reduction of the productivity and biodiversity of ecosystems deprives them of the ability to adapt to climate change and desertification,

[95] See (in Russian) <http://climatechange.kg/wp-content/uploads/2014/12/Programma-sektora-zdrav__ohraneniya-Kyrgyzskoj-Respubliki-po-adaptatsii-k-__zmeneniyu-klimata-na-per__od-2011-2015-gody-1.pdf> (visited on 25 July 2016).

[96] Third National Communication, *supra* note 12.

[97] State Agency on Environment Protection and Forestry under the government of the Kyrgyz Republic <http://nature.gov.kg/index.php/en/> (visited 20 April 2016).

[98] 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>.

[99] 'The Strategic Plan for Biodiversity 2011–2020 and the Aichi Biodiversity Targets', Decision X/2, in Report of the Tenth Meeting of the Conference of the Parties to the Convention on Biological Diversity, Nagoya, Japan, 18–29 October 2010, UN Doc. UNEP/CBD/COP/10/27* (2011), <http://www.cbd.int/sp/targets/>.

[100] 'Biodiversity conservation priorities', *supra* note 2.

> and so can cause a serious economic damage. Key actions: develop a draft Programme of the Government of the Kyrgyz Republic on the rehabilitation of degraded land, considering the restoration of more than 10 per cent of degraded land; implement measures for sustainable development of mountain forests and land resources in the face of climate change on the area of 30 thousand ha.[101]

The Action Plan for the implementation of biodiversity conservation priorities of the Kyrgyz Republic for 2014–2020 contains 20 items, some of which directly correspond to Aichi Target 10,[102] and some of which refer to adaptation in a broader sense than formulated under the Convention on Biological Diversity.[103]

The Fifth National Report of the Kyrgyz Republic to the Convention on Biological Diversity was more specific about the need for adaptation efforts:

> In order to increase the adaptive capacity of species and ecosystem resilience, it is necessary to take the following measures: 1. Reduction of non-climatic loads, such as pollution, over-exploitation, loss and fragmentation of habitats and the impact of alien species; 2. Broader implementation of methods of nature protection and sustainable use, including by strengthening networks of protected areas, conservation system matrices of undisturbed ecosystems; 3. Facilitating adaptive management through the improvement of monitoring and evaluation systems. … Use of biodiversity and ecosystem services under ecosystem-based adaptation is summarized in the framework of a common adaptation strategy. It includes the sustainable management, conservation and restoration of ecosystems to provide services that help people to adapt to the adverse effects of climate change.[104]

In compliance with the Forest Code, measures aiming at the reproduction, protection, and use of forests and state game resources lands, as well as at erosion/mudflow prevention on wooded land, are the responsibility of the Republican State Forestry Agency. This agency may set up special Services Agencies for forest fire control, pest/disease control, forest management, etc.[105]

As required by the country's Climate Change Adaptation Priorities,[106] the improvement of protected areas management, preservation of wetlands, reforestation, and tourism planning according to recreation capacity were specified as the basic adap-

[101] *Ibid*.
[102] 'The Strategic Plan for Biodiversity', *supra* note 99.
[103] 'Biodiversity conservation priorities', *supra* note 2.
[104] Fifth National Report on Conservation of Biodiversity of the Kyrgyz Republic State Agency on Environment Protection and Forestry under the Government of the Kyrgyz Republic (2013).
[105] The Kyrgyz Republic Forest Code, 8 July 1999 at Arts 23 and 24. Available (in Russian) at <http://online.adviser.kg/Document/?doc_id=30242084> (visited on 25 July 2016).
[106] Climate Change Adaptation Priorities, *supra* note 71.

tation measures in the forest and biodiversity sector.[107] In fact, many of the above activities are part of the Agency's nature protection mandate and are not related exclusively to adaptation.

Measures of the Climate Change Adaptation Programme and Action Plan for the 'Forests and Biodiversity' Sector for 2015–2017 are far more carefully elaborated and better correspond to the notion of adaptation. These measures include, *inter alia*, the afforestation of lands which, due to climate change, become fit for tree species, because current trends and available projections show that in any climate change scenario most existing forests will be lost.[108] However, no domestic funding is available for these measures. The Plan specifies 'international grants' as financing possibilities.

3.3.7 Adaptation in the energy sector

Adaptation measures aimed at the diversification of energy sources and the improvement of energy efficiency are important to reduce the risks of substantial economic loss and deterioration of the population's socioeconomic status.[109] Two national goals have been formulated in this regard: (i) improved efficiency of energy resource use through better energy efficiency and the development of hydroplants' emergency operation modes to account for the projected climate-induced precipitation reduction; and (ii) promotion of renewable energy use through the development of renewable energy generation capacity.[110] Kyrgyzstan has a large solar and (in certain locations) wind energy potential, but the development thereof – again – requires substantial funding, with capacity building and technology transfer for the best efficiency.

3.3.8 The 'information, education, and scientific potential' priority

The Climate Change Adaptation Priorities also highlighted the importance of 'information, education, and scientific potential'. Major tasks and measures pretty much correspond to the title of this priority, aiming to raise public and decision-makers' awareness, develop course curricula and educational programmes, and conduct monitoring/adaptation research.[111] Domestic experts, as well as scientific and educational organizations, have the ability to address these tasks but need support in the transfer of knowledge and technologies.

3.3.9 Local adaptation initiatives

The scarcity of public funds needed to finance urgent adaptation measures in Kyrgyzstan is, to a certain extent, made up for by the proactive attitude of local non-governmental organizations (NGOs) which receive international grants for small, yet

[107] Third National Communication, *supra* note 12.
[108] Climate change adaptation programme and action plan for the 'Forests And Biodiversity' Sector for 2015–2017. Approved by an Order of the State Agency of Environment Protection and Forestry under the Kyrgyz Republic Government of 17 April 2015, N 01-9/110.
[109] Climate Change Adaptation Priorities, *supra* note 71.
[110] *Ibid.*
[111] *Ibid.*

very important, projects that help improve the resilience of local communities to the changing climate, improve their standard of living, and reduce conflicts caused by resource shortages. Donor organizations include the GEF, the Department of Energy and Climate Change of Great Britain,[112] the Norwegian Society for the Conservation of Nature/Friends of Earth Norway[113] supported by the Norwegian Ministry of Foreign Affairs,[114] the World Wildlife Fund (WWF),[115] and the United States Agency for International Development (USAID).[116]

4 Conclusions

The need for climate change adaptation has received significant attention in Kyrgyzstan in recent years. The issue is strongly supported at the national level. Adaptation measures are included in the country's Intended Nationally Determined Contributions (INDCs) and in the Third National Communication under the UNFCCC. National strategies and action plans have been developed and approved for the following sectors: emergency situations; forest and biodiversity; agriculture and water management; human health; and energy. Land, Water, and Forest Codes have been amended and supplemented so as to ensure the implementation of effective adaptation measures. In addition, local adaptation initiatives are being actively developed and enjoy support from the government, on the one hand, and from international organizations, on the other.

However, despite the very well realized need for adaptation and the availability of detailed and elaborate plans, implementation is hampered by the lack of funds. If acting on its own, Kyrgyzstan can implement only a negligible part of the required measures, for it is a small and relatively weak developing country with a mere USD 1,269 per capita income.[117] By way of an illustration: the resources needed to prevent the projected damage in the most vulnerable sectors in Kyrgyzstan are assessed at USD 1,937.5 million (USD 2005), while the country only had USD 213.4 million (USD 2005) domestic costs allocated for December 2015.[118]

Insufficient adaptation measures in Kyrgyzstan will adversely affect the countries located downstream in the Syrdaria basin. Increased water intake from the Syrdaria River may, *inter alia*, exacerbate the Aral crisis. Today, the Syrdaria reaches as far

[112] See <https://www.gov.uk/government/organisations/department-of-energy-climate-change>.
[113] See <http://naturvernforbundet.no/?lang=en_GB>.
[114] Ilia Domashov *et al,* (eds), 'Climate Change: Adaptation Case Studies at the Community Level' (2012) 52. Available (in Russian) at <http://www.undp.org/content/dam/kyrgyzstan/Publications/env-energy/UNDP_kg_Climate_Change_Adaptation_Book_RUS_small.pdf> (visited on 25 July 2016).
[115] See <http://www.worldwildlife.org/>.
[116] See <https://www.usaid.gov/>.
[117] The World Bank, 'GDP per capita (current US$)', availale at <http://data.worldbank.org/indicator/NY.GDP.PCAP.CD> (visited in April 2016).
[118] The Kyrgyz Republic Intended Nationally Determined Contribution, available at <http://www4.unfccc.int/submissions/INDC/Published%20Documents/Kyrgyzstan/1/Kyrgyzstan%20INDC%20_ENG_%20final.pdf> (visited 22 December 2016).

as the Small Aral area, but a temperature increase, if not compensated by escalated precipitation, is expected to result in an increase in agricultural and residential water uptake. The International Fund for Saving the Aral Sea[119] lacks adequate resources to implement the entire set of adaptation measures that have been identified as necessary because the material resources of the Central Asian developing states are insufficient. The Fund plays an important role as a platform for planning international cooperation between the countries of the basin and for the development of agreements regarding the fair, shared use of water resources. Given the increasing water deficit, the Fund is the key platform to settle disputes and prevent conflicts.

All the legislation necessary to operationalize international financing possibilities is in place at the national level and meets the requirements of international finance institutions. The development of a national adaptation plan (NAP)[120] is also under way. Therefore, it is recommended that financial institutions pay attention to Kyrgyzstan. The receipt of international adaptation aid will benefit not only Kyrgyzstan itself, but all the countries in the basin of the Syrdaria, which is a key water artery in Central Asia.

Kyrgyzstan as a Party is in a special situation in the UNFCCC context. It has not joined any negotiation blocks, such as the Group of 77 and China. In spite of other Central Asian countries (Tajikistan and Turkmenistan) being members of this Group, the Kyrgyz Republic has no plans to enter. Usually, Kyrgyzstan cooperates with other countries of the Eurasian Economic Union, in particular Russia and Kazakhstan, but in contrast to them it is a poor developing country and much more vulnerable to climate change.

For several years, the UN Environment Programme collaborated with WWF to implement a project 'Capacity building and awareness raising in Central Asia towards contributing to a new global climate agreement under UNFCCC', the purpose of which was to provide advisory and analytical support to Central Asian countries, including Kyrgyzstan, in the framework of climate negotiations and preparation for the conference in Paris. The project included analysis of the UNFCCC documents and negotiation processes, positions of Parties, explanation of climate change's effects and prognosis of the IPCC 5th Assessment Report, discussions on possible ways to get international support, etc. Documents were prepared and updated on a regular basis before and after any of the UNFCCC's sessions. As a result, the Kyrgyz delegation had a clear understanding of the climate negotiation stage and possible benefits and losses. The Kyrgyz Republic has prepared a high quality INDC document,

[119] See <http://ec-ifas.waterunites-ca.org/about/6-about-ec-ifas.html>.

[120] 'The national adaptation plan (NAP) process was established under the Cancun Adaptation Framework (CAF). It enables Parties to formulate and implement national adaptation plans (NAPs) as a means of identifying medium- and long-term adaptation needs and developing and implementing strategies and programmes to address those needs. It is a continuous, progressive and iterative process which follows a country-driven, gender-sensitive, participatory and fully transparent approach.' See at <http://unfccc.int/adaptation/workstreams/national_adaptation_plans/items/6057.php> (visited on 27 July 2016).

which was decent and realistic in assessing the situation in the country, necessary adaptation measures and required external support. The Paris Agreement gives an opportunity for Kyrgyzstan to realize the NAP with the assistance of international support, provided that the country works actively with potential donors.

Sex, Sea Turtles, and Missed Opportunities: Biodiversity-related Provisions in the Paris Agreement

Ed Couzens[1]

1 Introduction

What is a climate-related disaster? According to Lyster, '[t]he conclusions reached by climate scientists explain the influence of human-induced climate change on what might otherwise be regarded as "natural disasters" or even "Acts of God", across timescales which reach as far into the future as 2100, and even 2300 in the case of sea level rise'.[2] Climate scientists, she says,

> explain that the world has begun to experience the impacts of climate change at a time when natural resources are already severely degraded through processes of: air, water and land pollution; land degradation; water scarcity and overallocation of water resources (usually to agriculture); the destruction of tropical rainforests and native vegetation; overfishing and the by-catch of dolphins, turtles and sea birds; the destruction of coral reefs; and impacts on biodiversity, to the point of extinction, in some cases. Meanwhile, climate scientists and insurers highlight that the costs of climate disasters are escalating beyond anything experienced before, largely due to the intersection of the risk of the hazard of extreme weather and slow onset events, vulnerability and exposure.[3]

[1] Associate Professor, The University of Sydney Law School; BA Hons LLB (Wits) LLM Environmental Law (Natal & Nottingham) PhD (KZN); Attorney of the High Court, RSA. Email: ed.couzens@sydney.edu.au.

[2] Rosemary Lyster, *Climate Justice and Disaster Law* (Cambridge University Press, 2015) 1.

[3] *Ibid*.

Would the loss of a species, or of a sub-species, qualify as a disaster? Would a substantial decline in the numbers of a species or sub-species? Maintaining the health of biological diversity as a whole, of particular ecosystems, and of individual species and sub-species, is the fundament upon which all life rests. It could reasonably be supposed that this consideration would be at the front of negotiators' minds when they craft the international instruments intended to shape the relationships between humans and their environments in an era of rapidly changing climates. Nevertheless, it often seems, reflecting on the legal instruments which eventuate from international negotiations, that this is not the case.

While there are many international legal instruments which are relevant to the protection of biological diversity,[4] it is important that no high profile opportunity be lost to raise awareness of the plight of biological diversity worldwide and, if possible, to secure commitments to protect species and essential ecosystems. The Paris Agreement,[5] adopted at COP21 of the United Nations Framework Convention on Climate Change[6] in December 2015, would have been a valuable instrument in which to include such a profile-raising mention and to have had the Parties make a firm commitment to protection. The opportunity was, however, missed.

The adoption and the implementation of such instruments relevant to the protection of biological diversity should be as informed as possible, and should be negotiated from a perspective of understanding what 'loss of biological diversity' really means – and what the effects of rapid climate change on biological diversity can be. The present paper laments the weaknesses of the commitments relevant to biological diversity made in the Paris Agreement; and provides a case study on the effects of climate change on a particular aspect of the life cycle of a particular species in order to highlight how significant a missed opportunity this was.

2 The statuses of sea turtles

There are seven recognized species[7] of sea turtle. This Part gives a snapshot of their statuses drawn largely from the assessments provided by the IUCN *Red Data List*,[8]

4 See the discussion under Part 4.3 below.

5 Paris Agreement to the United Nations Framework Convention on Climate Change, Paris, 12 December 2015, in force 4 November 2016; 'Adoption of the Paris Agreement', UNFCCC Dec. 1/CP.21 (2015).

6 United Nations Framework Convention on Climate Change, New York, 9 May 1992, in force 21 March 1994, 31 *International Legal Materials* (1992) 1529, <http://www.unfccc.int>.

7 In this paper the term 'species' has been used interchangeably for both sea turtles as a whole and for each of the seven species of sea turtle.

8 See, generally, <http://www.iucnredlist.org/>. Reliance on the Red List has, for assessing sea turtle populations, been criticized as resulting in 'flawed categorizations' and 'creating problems of credibility'; the claimed problem being that '[w]hen a species that may number in the millions in an ocean basin is classified as being at the same "very high risk of extinction in the wild" as a species represented by just a few individuals, there is something fundamentally wrong with the assessment system'. Matthew H. Godfrey and Brendan J. Godley, 'Seeing past the red: Flawed IUCN global listings for sea turtles', 6(2) *Endangered Species Research* (2008) 155-159 at 155.

which is generally considered a reliable source of information (although particular species reports can be out-of-date).

2.1 Flatback

The flatback turtle (*Natator depressus*) has not been assessed by the IUCN – it is simply listed as 'data deficient'. The species, which eats crabs, other crustaceans and mollusks, has a limited range off the coast of Australia. The flatback turtle is classified in the category *endangered* by the Australian government.[9]

The flatback turtle can nest up to four times in a season, with an average of 50 eggs being laid each time.[10] It is threatened by the collection of its eggs and hunting of live specimens for human consumption; by bycatch in fisheries; by disease (the tumours caused by *fibropapillomatosis*); by loss and degradation of its habitat; by the wildlife trade; by various forms of pollution; and by the predatory attentions of feral dogs, foxes and pigs. Of these, fisheries bycatch appears to be the most serious.[11]

2.2 Green

The green turtle (*Chelonia mydas*), which is found across the middle band of the world's oceans and which eats seagrasses, is currently listed by the IUCN as *endangered*. Extensive population declines are evident – including a 48-67 per cent decline in numbers of mature females nesting annually over the last three generations.[12] All sea turtles are long-lived and slow to mature, but green turtles seem to have the longest growth rate to maturity – estimates of such maturity age being from 17 to 23 years.[13] Green turtles are highly migratory and during their lifetimes use a wide variety of different habitats.

Green turtles face multiple threats. Deliberate harvesting of eggs and adults from nesting beaches, and of both adults and juveniles at sea, is a major threat. Other threats include fisheries bycatch, and other fisheries-related problems such as entanglements in discarded nets, long-line fishing, and dynamiting for fish; habitat degradation at nesting beaches (construction of buildings, armoring of beaches, and both the re-nourishment of, and sand extraction from, beaches); habitat degradation within feeding areas, resulting from coastal development with increased effluent,

[9] Under the *Environment Protection and Biodiversity Conservation Act*, 1999 (Commonwealth). See Department of Environment and Energy, Australian Government, 'Flatback turtle – *Natator depressus*' (2008), available at <https://www.environment.gov.au/biodiversity/threatened/publications/flatback-turtle-natator-depressus-2008> (visited 15 September 2016).

[10] WWF Global, 'Flatback turtle', (2016), available at <http://wwf.panda.org/what_we_do/endangered_species/marine_turtles/flatback_turtle/> (visited 15 September 2016).

[11] *Ibid*.

[12] Jeffrey A. Seminoff '*Chelonia mydas*: green turtle', IUCN *Red List of Threatened Species 2004*, available at <https://dx.doi.org/10.2305/IUCN.UK.2004.RLTS.T4615A11037468.en> (visited 15 September 2016), at 1. 'Generation' being defined by the IUCN as the average age of parents in a population.

[13] *Ibid*. at 2-3.

marina construction, increased boat traffic and harvest of nearshore algal resources; and increased lighting at or near nesting beaches, which appears to draw hatchlings away from the sea. Green turtles are particularly vulnerable to disease – particularly the *fibropapilloma* disease which causes bulbous epithelial tumours to form.[14]

2.3 Hawksbill

The hawksbill turtle (*Eretmochelys imbricata*), which is found across the middle band of the world's oceans, and which eats algae and sponges in most parts of its ranges (although being omnivorous in places), is currently listed by the IUCN as *critically endangered*.[15] An 84-87 per cent decline is evident in the numbers of mature females nesting annually over the previous three generations.[16] The data is complicated, and when assessing so long-lived and slow maturing a species, populations may have been in decline for decades prior to these declines being realized by observers.[17]

Threats include over-consumption by humans – both historically and recently, for the making of tortoiseshell ornaments rather than for food, millions of hawksbill turtles having been killed in the last century to supply markets in Asia (especially in Japan), Europe and the United States;[18] egg collection, especially in Asia; slaughter for meat, with both adults and juveniles being targeted either for human consumption or to be used as shark bait.[19] Also, destruction of nesting habitats, particularly as tropical coastlines are rapidly developed to provide tourism facilities; and destruction of foraging habitats, especially as coral reefs, with which hawksbills have a close relationship, decline.[20] Further, hawksbills suffer from being 'particularly susceptible to entanglement in gill nets … and capture on fishing hooks', as well as 'ingestion of marine debris'. To compound matters, there is apparently 'evidence [that] oil pollution has a greater impact on hawksbills than on other species of turtle', with this being a particular problem in the Middle East. As if all of these problems were not enough, it appears that in areas where hawksbills numbers are especially low, they 'regularly hybridise with other species of sea turtles'[21] – while this could be seen as an ingenious (if desperate) survival strategy, in the long term it could contribute to localized extinctions of the hawksbill as a distinct species.

[14] *Ibid*. at 7. *Fibropapillomatosis* is a disease of sea turtles which causes tumours to form both externally and internally. These tumours may in some cases be benign; in others they may cause difficulties for the affected turtles by affecting their buoyancy, foraging, swimming, and ability to see. See, for instance, Cabi.org, 'Fibropapillomatosis of sea turtles', *Invasive Species Compendium*, 10 September 2015, available at <http://www.cabi.org/isc/datasheet/82638> (visited 15 September 2016).

[15] Jeanne A. Mortimer and M. Donnelly, '*Eretmochelys imbricate*: hawksbill turtle', *IUCN Red List of Threatened Species 2008*, available at <https://dx.doi.org/10.2305/IUCN.UK.2008.RLTS.T8005A12881238.en> (visited 15 September 2016), at 1.

[16] *Ibid*.

[17] *Ibid*. at 2.

[18] *Ibid*. at 10 and 15.

[19] *Ibid*. at 15.

[20] *Ibid*. at 15-16.

[21] *Ibid*.

2.4 Kemp's ridley

Kemp's ridley turtle (*Lepidochelys kempii*), which is found in Mexico and the United States and eats crabs, other crustaceans and mollusks, is currently listed by the IUCN as *critically endangered*. The IUCN does not, however, provide further information on its listing or habitats and threats.[22] Their range is on the East and West side of the Atlantic, but in a narrow band – Western Europe and the upper Western part of Africa, and the bottom East of North America and the extreme upper tip of South America.

The species has been described as 'the world's most endangered sea turtle', with the explanation being that 'with a worldwide female nesting population roughly estimated at just 1,000 individuals, its survival truly hangs in the balance'.[23] It appears that despite modern protection of nesting grounds and the use of 'turtle excluder devices' in fishing nets, the species has never managed to 'rebound' from historical overharvesting.[24]

2.5 Leatherback

The leatherback turtle (*Dermochelys coriacea*), which is found across most of the middle band of the world's Atlantic, Indian and Pacific oceans, and which eats little but jellyfish, is currently listed by the IUCN as *vulnerable*. Its seven subpopulations vary considerably in population size and trends, and in geographic range. The species' status has improved considerably since it was assessed as *critically* endangered in 2000 and, as a 'single taxonomic entity', the leatherback is not currently considered to be in danger of becoming extinct. Overall population is one thing, and local populations another, however. The overall numeric decline is in the region of 40% per cent and some subpopulations are in deep trouble.[25] In the Northwest Atlantic, population trends are very healthy; but this subpopulation could by the year 2040 comprise nearly 99 per cent of global leatherback populations – an increase from historical abundance of 46 per cent three generations back. By contrast, in the last three generations, the subpopulation in the East Pacific has declined by approximately 97 per cent and in the West Pacific by 80 per cent, and without urgent conservation efforts these populations have little chance of recovery.[26]

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[22] Marine Turtle Specialist Group, '*Lepidochelys kempii*: Kemp's ridley', *IUCN Red List of Threatened Species 1996*, available at <https://dx.doi.org/10.2305/IUCN.UK.1996.RLTS.T11533A3292342.en> (visited 15 September 2016), at 1.

[23] *National Geographic*, 'Kemp's Ridley Sea Turtle: *Lepidochelys kempii*' (2016), available at <http://animals.nationalgeographic.com.au/animals/reptiles/kemps-ridley-sea-turtle/> (visited 15 September 2016).

[24] *Ibid*.

[25] Bryan P. Wallace; Manjula Tiwari and Marc Girondot, '*Dermochelys coriacea*: leatherback' *IUCN Red List of Threatened Species 1996*, available at <https://dx.doi.org/10.2305/IUCN.UK.2013-2.RLTS.T6494A43526147.en> (visited 15 September 2016), at 1-2.

[26] *Ibid*. at 3-5.

The maturity age for leatherbacks is not known, and may vary, with estimates falling between 9 and 15 years – generation length is probably about 30 years.[27] In a reproductive year, female leatherbacks will lay a clutch of 60-90 eggs; but will often go two or more years between reproductive seasons.[28] Threats faced by leatherbacks include bycatch in fisheries; direct taking of eggs or live turtles, for consumption or to make commercial products; alteration of coastlines (including by construction, dredging, modification of beaches) by humans; marine pollution (including the threats of entanglement in discarded fishing gear and the ingestion of plastic[29]); and the effects of pervasive pathogens on health. Of all of these, fisheries bycatch probably provides the greatest threat to leatherbacks.[30]

2.6 Loggerhead

The loggerhead turtle (*Caretta caretta*), which is found in most parts of the middle band of the world's oceans, and which eats clams and sea urchins, is currently listed by the IUCN as *vulnerable*.[31] The species has ten subpopulations, in the Atlantic, Indian, Mediterranean and Pacific oceans, with these varying widely in population sizes and trends and widely geographically. While not expected to face extinction, as a 'single taxonomic entity', globally in the next generation, there are many subpopulations which are in serious difficulties – there is an overall 47 per cent population decline relative to population size three generations back.[32]

There are great uncertainties about loggerhead life cycles, including for maturity ages (maturity age being estimated at somewhere between 10 and 39 years), survival rates across life stages, sex ratios for hatchlings and adults, generation length, nesting frequency, migration intervals, and so forth.[33]

Threats to the loggerhead include fisheries bycatch; direct takes by humans of live turtles or eggs, for either consumption or commercial products; coastal development, including alteration of beaches through construction, dredging and so forth; pollution, including entanglement in and swallowing of plastic, the impacts of increased light, and so forth; and increased prevalence of pathogens. Of these, fisheries

[27] *Ibid*. at 7.
[28] *Ibid*. at 11.
[29] Leatherbacks have adapted to a diet of jellyfish by evolving an oesophagus 'lined with inward-pointing cartilaginous spines, which presumable prevent the pieces of jelly-like food from being regurgitated when the turtle is feeding at depth'. George Hughes, *Between the Tides: In Search of Sea Turtles* (Jacana Press, 2012) at 102-103. Unfortunately, this feature also makes it virtually impossible for a leatherback which has mistaken a sheet of plastic for a jellyfish, and begun swallowing it, to reverse the process. *Ibid*. at 106.
[30] Wallace, *supra* note 25, at 11-12.
[31] Paolo Casale and Anton D. Tucker, '*Caretta caretta*: loggerhead turtle', *IUCN Red List of Threatened Species 2015*, available at <https://dx.doi.org/10.2305/IUCN.UK.2015-4.RLTS.T3897A83157651.en> (visited 15 September 2016), at 1.
[32] *Ibid*. at 1-2.
[33] *Ibid*. at 4, 8-9.

bycatch probably provides the highest threat.[34]

2.7 Olive ridley (Pacific ridley)

The olive ridley turtle (*Chelonia olivacea*), which is found across the middle band of the world's oceans and eats crabs, other crustaceans and mollusks, is currently listed by the IUCN as *vulnerable*. It is the most abundant of the sea turtles – despite this, information on its status is described as both scarce and unevenly distributed across regions, with total population size being unknown.[35] Decline rates are considered conservative at 31–36 per cent, with the causes of such decline being considered not to have ceased, or not to be understood, or not to be reversible with the major cause for the reduction in species numbers having been 'massive commercial over-exploitation'.[36]

As is the case for all of the sea turtle species, there are great uncertainties over the olive ridley's life cycle. Different populations within the same species can reach sexual maturity at different ages – generally, it is considered that the olive ridley matures faster than do other species, with some sub-populations reaching sexual maturity at around 13 years, and the average age of a female olive ridley parent being 17-22 years.[37] Their life cycles involve multiple habitats, often widely geographically separated from each other, and complex migratory patterns which see them swim thousands of kilometres over large ocean expanses with no apparent migratory corridors. In addition, the olive ridley has three different reproductive modes – mass nesting, dispersed nesting and a mixed strategy, with (unusually amongst sea turtles) more than 60 per cent of female turtles nesting annually. The first of these, termed an *arribada* (in English: 'arrival' or, perhaps fittingly, 'entry into port'!), occurs in less than a dozen places worldwide and sees thousands of female turtles arrive in just a few days.[38] Hatching rates vary widely, with solitary nesting sites having a rate of around 80 per cent and *arribada* sites a rate of only 1-8 per cent.[39]

Olive ridleys are long-lived and suffer from unsustainable harvesting of their eggs; live takes, despite these being generally illegal; bycatch in fisheries (including gill and other net fisheries, hook and line fisheries, longline fisheries, purse seine netting, and trawling); impacts (degradation, transformation and destruction of) on habitats, especially nesting beaches; and diseases, of the effects of which little is known.[40]

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[34] *Ibid*. at 9.
[35] F. Alberto Abreu-Grobois and Pamela Plotkin, '*Lepidochelys olivacea*: olive ridley' *IUCN Red List of Threatened Species 2008*, available at <https://dx.doi.org/10.2305/IUCN.UK.2008.RLTS.T11534A3292503.en> (visited 15 September 2016), at 2.
[36] *Ibid*. at 3-4.
[37] *Ibid*. at 7.
[38] *Ibid.* at 7-8.
[39] *Ibid*. at 8.
[40] *Ibid*. at 8-10.

3 Sex and the modern sea turtle

Reptiles have, essentially, two types of sex determination: genotypic, as do birds and mammals; and temperature-dependant.[41] In temperature-dependant species sex determination occurs after the eggs have been laid. In turtles, the warmer eggs generally become female. The situation is, however, complicated. There appears to be some evidence of certain species (including an Australian skink lizard) which are genotypic, but in which this can be reversed by extreme temperatures. These may be transitional evolutionary types.[42] There is also some evidence for 'weak' genotypic sex determination in turtles (for example, green turtles and Kemp's ridley turtles) being overridden by temperature.[43]

In crocodiles, by contrast to turtles, both high and low temperatures produce females – while intermediate temperatures produce males. In salt-water crocodiles (*Crocodylus porosus*), temperatures below 31^0 Celsius (Centigrade) produce females; 31-33^0 Celsius produce males; and then above 33^0 Celsius females are again produced. Different environments are used by different crocodilian species worldwide, but the principle is the same. Nile crocodiles (*Crocodylus niloticus*) in Africa and mugger crocodiles (*Crocodylus palustris*) in India dig holes and bury their eggs; American alligators (*Alligator mississippiensis*) and caimans (six subspecies of *Caimaninae*) and Australian saltwater crocodiles build nest mounds. The temperature range for sex determination is then very slight.[44] In the Nile crocodile, temperatures below 31.7^0 Celsius produce females; 31.7^0 to 34.5^0 produce males; and then temperatures above 34.5^0 produce females again.[45] In the Indian mugger crocodile, females are produced at temperatures from 28^0 to 31^0 Celcius; both males and females are produced in varying proportions at temperatures of 31.5, 32 and 33; but at 32.5, only males are produced.[46] What this illustrates is that the difference species have the same technique, but with significant responses to temperature differences in different regions

[41] Alex Quinn, 'How is the gender of some reptiles determined by temperature?' *Scientific American* (2016), available at <http://www.scientificamerican.com/article/experts-temperature-sex-determination-reptiles/> (visited 15 September 2016). See also Scott F. Gilbert, 'Temperature-dependent sex determination in reptiles' in Scott F. Gilbert *Developmental Biology* (6th ed., Sinauer Associates, 2000), available at <http://www.ncbi.nlm.nih.gov/books/NBK9989/> (visited 15 September 2016).

[42] *Ibid*.

[43] John Davenport, 'Temperature and the Life-History Strategies of Sea Turtles', 22(6) *Journal of Thermal Biology* (1997) 479-488 at 482.

[44] Department of the Environment and Energy, Australian Government, '*Crocodylus porosus* — Salt-water crocodile, Estuarine Crocodile' *Species Profile and Threats Database* (2016), available at <https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=1774> (visited 15 September 2016).

[45] Alison Leslie, 'Nile Crocodile: Temperature Dependent Sex Determination', *Pulse of the Planet*, 11 February 2000, available at <http://www.pulseplanet.com/dailyprogram/dailies.php?POP=2075> (visited 15 September 2016).

[46] Jeffrey W. Lang, Harry Andrews and Romulus Whitaker, 'Sex Determination and Sex Ratios in *Crocodylus palustris*', 29(3) *American Zoologist* (1989) 935-952 at 935.

– which shows the important impact that even slight, and apparently unremarkable, temperature changes can have.

Turtles operate in much the same way. The seven species of sea turtle currently recognized[47] have very similar life strategies to each other.[48] The females lay high numbers of eggs and multiple hatchlings are snapped up by many predator species, including birds, crabs, monitor lizards, mongooses and many others. The turtle strategy is to 'spray and pray' – 'spraying out' young, and 'praying' that at least some of them will survive. Female turtles mate in near-shore waters, probably storing sperm for several weeks after a single mating. They lay eggs in nests dug on tropical, subtropical or warm-temperate beaches. Eggs, much larger as well as more numerous than for most freshwater species, incubate for about two months. They hatch at any time of the day or night, but usually emerge from the nest at night, the hatchling turtles crawling down the beach and swimming rapidly and continuously out to sea. Adult turtles, leaving aside threats from man, have few predators.[49]

Temperatures that are unusually low or high have been recognised as a significant source of die-offs in several turtle species. The sex of hatchlings is determined by 'temperature of incubation during the middle third of embryonic development', with high temperatures producing females and low temperatures producing males. Sex determination appears to operate on an 'all-or-nothing' basis, with intersex hatchlings being unusual. It has been shown for the loggerhead that the difference in mean temperature during the critical period between altogether male and altogether female clutches was only 1.1^0 Celsius.[50] A noticeable feature of the pivotal temperatures for species is their similarity: despite the separation of species for many millions of years, all have pivotal temperatures clustering closely around 29^0 Celsius.[51]

There are at least four factors which affect the temperature of sea turtle egg incubation. These are, firstly, the weather (and/or the climate) which prevails during the nesting season; secondly, the height of incoming tides (which might influence the characteristics of the 'female beach crawl'; thirdly, the plant cover that is available at the top of the beach (which is an importance influence in controlling nest shading); and, finally, turtle nesting behaviour.[52]

[47] As described above, the flatback sea turtle, the green sea turtle, the hawksbill sea turtle, the Kemp's ridley sea turtle, the leatherback sea turtle, the loggerhead sea turtle, and the olive ridley sea turtle.

[48] There are differences, of course, from crocodilians. Importantly, turtles do not offer parental care, crocodilians do.

[49] Davenport, 'Temperature and the Life-History', *supra* note 43, at 479-480.

[50] As if this is not complicated enough, it has also been suggested that what is critical may be in fact the temperature on a particular day – with some evidence suggesting the 19th day of incubation. Hughes, *supra* note 29, at 129.

[51] *Ibid*. at 481-482. All of the content of this paragraph has been drawn from this source

[52] *Ibid*. at 483. Per Davenport, it is as yet unknown 'whether female turtles can exert control over incubation temperature, perhaps by choosing warmer or cooler nesting sites, but given a chaotic thermal future it is difficult to envisage the advantage gained by such choice, particularly in species that do not mature for decades, and in which inter-generational mating must be common'. *Ibid*.

Sea turtles are likely to be particularly sensitive to unusually rapid global warming because of three features of their life history: firstly, their 'slow growth to sexual maturity'; secondly, the phenomenon of thermal sex determination; and, thirdly, the phenomenon of 'natal beach homing'.[53] Global warming is likely to 'have significant effects on climate during a small number of turtle generations', with this probably occurring too quickly for turtle populations to adapt. Because of thermal sex determination, mean nest temperatures increases of 'no more than a few tenths of a degree Celsius would be likely to bias reproduction in favour of production of females'.[54] What this means is that increases in temperature, even variations of very small amounts, can skew population ratios. Will turtles respond appropriately? We do not currently know enough about them to know whether they have the capacity 'deliberately' to adjust their breeding habits.

It may well be that producing more females than males gave turtles an original evolutionary advantage and that that is why the temperature bands for sex determination are wider for females than for males, but this might see turtles eventually hoist by their own petard if they are unable to adapt fast enough to rapidly warming environments.

Turtles hatch on a particular beach and, years later, the females return to *that* beach[55] – not to *any* beach. It matters what the temperature is at turtle nesting sites. It is striking, drawing the information from different papers,[56] that all of the different species of turtle operate within virtually the same temperature band and their egg-laying capacity is affected by virtually the same range of factors.

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[53] *Ibid*. at 484.

[54] *Ibid*.

[55] This is the conventional view, drawn from writers such as those listed in note 56 below. However, the present writer has learned to be cautious of any generalized claims about animal behavior. In respect of sea turtles, Hughes gives examples of what he calls the 'baby in the taxi' phenomenon, where heavily gravid turtle mothers-to-be are 'caught short' of their destination and nest on a beach far from their normal nesting site. Hughes, *supra* note 29, at 53 and 116. Nevertheless, the behavior does seem to be markedly characteristic.

[56] See, for instance: Milani Chaloupka, Naoki Kamezaki and Colin Limpus, 'Is climate change affecting the population dynamics of the endangered Pacific loggerhead sea turtle?' 356 *Journal of Experimental Marine Biology and Ecology* (2008) 136-143. Davenport, 'Temperature and the Life-History', *supra* note 43. Mariana M.P.B. Fuentes, M.R. Fish and Jeffrey A. Maynard, 'Management strategies to mitigate the impacts of climate change on sea turtle's terrestrial reproductive phase' 17(1) *Mitigation and Adaptation Strategies for Global Change* (2012) 51-63. Mariana M.P.B. Fuentes, M. Hamann and Colin J. Limpus, 'Temperature and the Life-History thermal profiles of green turtle nesting grounds: Implications from climate change' 383 *Journal of Experimental Marine Biology and Ecology* (2010) 56-64. Mariana M.P.B. Fuentes, David A. Pike, Andrew Dimatteo and Bryan P. Wallace, 'Resilience of marine turtle regional management units to climate change', 19(5) *Global Change Biology* (2013) 1399-1406. Antonios D. Mazaris, Athanasios S. Kallimanis, Stefanos P. Sgardelis and John D. Pantis, 'Do long-term changes in sea surface temperature at the breeding areas affect the breeding dates and reproduction performance of Mediterranean loggerhead turtles?' 367 *Journal of Experimental Marine Biology and Ecology* (2008) 219–226. Elvira S. Poloczanska, Colin J. Limpus and Graeme C. Hays, 'Vulnerability of Marine Turtles to Climate Change' 56 *Advances in Marine Biology* (2009) 151-211. Lisa E. Schwanz, Ricky-John Spencer, Rachel M. Bowden and Fredric J. Janzen, 'Climate and predation dominate juvenile and adult recruitment in a turtle with temperature-dependent sex determination' 91(10) *Ecology* (2010) 3016-3026.

Colonies of turtles separated by only tens of kilometres are usually genetically distinct; what limited gene flow there is between different turtle colonies appears to be 'male-mediated' and 'female natal homing is precise', with 'male-mediated gene flow' being 'too low to prevent genetic sub-structuring'. For these reasons, amongst others, it appears unlikely that turtles will be able to respond to fast global warming by shifting their breeding grounds to different beaches.[57] There are various alternative hypotheses, such as that turtles may respond to climate change by changing their nesting patterns within seasons (for instance, by nesting in cooler periods of the breeding season in order to produce more males) or by selecting inherently cooler nest sites. However, there is not any direct evidence to support these arguments[58] – indeed, it is difficult to see how there could be.

Davenport posits the argument that sea turtle species are 'of great antiquity' and that they 'have clearly coped with climate changes in the past – why then should they not do so again in the near future?'[59] He explains, however, that there are a number of reasons which militate against this. Firstly, there are considerably less turtles alive today than before humans affected them through over-exploitation and habitat loss. Secondly, past climate changes appear to have occurred far more gradually. Turtle nesting beaches, he suggests, are 'ephemeral over geological time scales' and the 'survival of turtle species must always have relied on animals failing in nest site fidelity'. He then explains that while 'such failures are not uncommon' they are unlikely to be 'frequent enough in the cooler direction to be significant over as little as a century' with 'rapid temperature rises and depleted populations' being 'likely to interact to overwhelm the species' resilience'.[60]

Global temperature rise, continues Davenport, is 'also likely to have indirect effects on sea turtles' with it seeming 'probable that climate change will be associated with increased storminess' and that 'alterations in current patterns could have dramatic effects on sea turtles, since they rely so much on currents for migration and dispersal'.[61] There is likely also to be increasingly turbulent weather in the littoral zone generally, as seems to be a current global phenomenon.

The problems compound upon each other. The world is seeing a rise in diseases exacerbated by water temperature changes which lead to the increase of multiple diseases, as can be seen with the increase in tumours in green sea turtles. Moreover, the range of invasive species is increasing and they are moving into areas where they have never been found before, affecting the balance of local ecosystems and challenging native

[57] Davenport, 'Temperature and the Life-History', *supra* note 43, at 485.
[58] *Ibid.*
[59] *Ibid.* at 485.
[60] *Ibid.*
[61] *Ibid.*

species for habitat and resources.[62] Climate change may happen far too quickly for many species to adapt appropriately, and existing threats such as destruction of native vegetation, farming practices incompatible with the preservation of biological diversity, unsustainable exploitation, and numerous different forms of pollution, may be exacerbated. Species possessing biological characteristics that make them vulnerable to change, such as being specialized feeders, or which have severely restricted habitats, are likely to be especially susceptible to the threat of extinction.

Turtles also play back into the system. They are important components of their ecosystems. Hawksbill turtles, for instance, have important influences on healthy coral reef ecosystems – where they eat significant numbers of sponges, they 'support healthy reefs by controlling sponges which would otherwise out-compete reef-building corals for space'.[63] Green turtles assist in maintaining algae levels and seagrass beds at appropriate levels.[64]

For Pacific loggerhead turtles in Australia, it has been shown that 'irrespective of whether a population was decreasing or increasing (or otherwise), there [is] a significant inverse correlation between nesting abundance and mean annual sea surface temperature in the core foraging region during the year prior to the summer nesting season'.[65] There are related problems. Females cannot simply breed at will – they need optimal, or at least not harmful, environmental conditions. Female sea turtles generally require at least one year of plentiful food in order to acquire sufficient body fat deposits for vitellogenesis to occur in the foraging grounds; let alone to supply the energy requirements which they need for the lengthy migration to distant nesting beaches.[66]

There may be some localized advantages. Chaloupka *et al* suggest that, for loggerheads in the Pacific, 'cooler foraging habitat ocean temperatures are presumably associated with increased western Pacific Ocean productivity and prey abundance and consequently increased loggerhead breeding capacity'.[67] However, changing populations and movements of fish are hard to predict. According to Chaloupka *et al*, 'variation in abundance of the Pacific saury has been shown to be a consequence of oceanic climatic variability rather than commercial fishing effort' with the consequence that warmer ocean temperatures in the region could 'lead to long-term decreased loggerhead food supply and reduced nesting and recruitment unless Pacific loggerheads adapt by shifting their foraging habitat to cooler regions'.[68]

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[62] For a general, brief account of problems facing the world's oceans, see Ed Couzens, 'International Law Relating to Climate Change and Marine Issues' in Ed Couzens and Tuula Honkonen (eds), *International Environmental Law-making and Diplomacy Review 2010* University of Eastern Finland – UNEP Course Series 10 (University of Eastern Finland, 2011) 185-216 at 186-191.

[63] Mortimer and Donnelly, '*Eretmochelys imbricate*', *supra* note 15, at 10.

[64] Fuentes, Hamann and Limpus, 'Temperature and the Life-History', *supra* note 56, at 57.

[65] Chaloupka, Kamezaki and Limpus, 'Is climate change affecting', *supra* note 56, at 141.

[66] *Ibid*.

[67] *Ibid*.

[68] *Ibid*.

Chaloupka *et al* then suggest that 'it is becoming increasingly apparent that sea temperature in the foraging habitats is an important factor affecting the interseasonal nesting population dynamics of marine turtles such as green turtles, leatherbacks, loggerheads and Pacific greens'.[69] They posit that a 'plausible consequence of increased Pacific Ocean warming for Pacific loggerhead population dynamics is lower recruitment',[70] with the explanations for this including that fewer females will undergo vitellogenesis and migrate to nesting beaches, and that, for those females that do migrate, reduced 'per capita fecundity' will become a feature due to shorter nesting seasons.[71] Loggerheads, they conclude, will have four basic means they might employ as responses to climate change induced increased ocean warming, these being to shift the timing of the nesting seasons to cooler months; to shift their nesting areas Southward to find cooler beaches; to shift their foraging habitats toward cooler and more productive waters; or to become 'regionally extinct'.[72]

Warmer sand temperatures may skew sea turtle populations' sex ratios towards predominantly females and decrease hatching success. Therefore, understanding the rates at which sand temperatures increase as climate change progresses is an important issue for research.[73] If sea turtles do not adapt to future climatic changes, predicted temperature increases could potentially lead to lower hatching success and to a gradual shift towards a feminization of sea turtle populations. These changes will have the potential to compromise the viability of sea turtle populations, especially those severely threatened by other factors (such as direct and indirect take, pollution, and so forth).[74]

There are also implications for humans. If the green turtle population,[75] for instance, is not able to adapt to a predicted increase in sand temperatures there will be ecological implications (for the region studied) as well as social and cultural impacts. For example, under the Australian *Native Title Act*[76] indigenous Australians are accorded the legal right to hunt turtles for traditional purposes and Torres Strait Islanders are therefore still able to rely on sea turtles for food and as a cultural symbol during social gatherings and ceremonies.[77]

If sea turtles are to be assisted to survive, then precautionary actions and adaptive management are going to be necessary to mitigate the predicted impacts from climate change and thus to give sea turtles a realistic opportunity to engage in adaptive

[69] *Ibid*.
[70] 'Lower recruitment', when translated into ordinary English, meaning that fewer baby turtles will be born.
[71] Chaloupka, Kamezaki and Limpus, 'Is climate change affecting', *supra* note 56, at 141.
[72] *Ibid*. at 142.
[73] Fuentes, Hamann and Limpus, 'Temperature and the Life-History', *supra* note 56, at 56-62.
[74] *Ibid*.
[75] In the Pacific, the subject of the Fuentes *et al* study, *ibid*.
[76] *Native Title Act*, 1993 (Commonwealth).
[77] Fuentes, Hamann and Limpus, 'Temperature and the Life-History', *supra* note 56, at 62.

behaviour. Managers may consider various options such as affording greater protection to significant 'male-producing' regions in order to 'promote future population viability'; or perhaps by adopting more 'manipulative' methods, such as by attempting to modify sand temperatures (through means such as providing artificial shading, increasing plant cover, or sprinkling cool water over nests) on nesting beaches, or physically relocating nests to more suitable environments.[78]

While initiatives such as these suggested by Fuentes at al might assist, much of the problem for sea turtles stems from the sheer scale of the combined threats facing the seven species, and the multiple other species of fauna and flora upon which the seven species depend. Constraints and threats do not operate in isolation and ultimately it is likely to be their *cumulative* impact that is most significant both for general resilience and for particular relationships between species and their environments. To put it crudely, if one imagines being mugged by a single attacker then one can probably imagine fighting the attacker off or in some way either defending oneself or escaping. If, however, one imagines being mugged by multiple assailants simultaneously, with more renewing the attack in waves, what chance would one have? In many ways, that is a metaphor for what we are doing to turtles (and to many other species, of course) … it is never just one problem which turtles must find a way to resist.

To recast for the 21st Century the wonderful words of Ogden Nash:

> The turtle lives betwixt stacked decks
> That practically obviate its having sex;
> I would think it extraordinarily clever of the turtle
> In such a hot fix to remain in any way fertile![79]

4 The Paris Agreement and the protection of biological diversity

4.1 Understanding the need to protect biological diversity

The casual reader beginning this paper could easily have thought either that she or he was confused about the nature of the present *Review of International Environmental Law-making and Diplomacy*; or, more probably, that the author of this paper was so confused. The intention behind the aforegoing ten or so pages was, however, to shine a light on what really needs to be considered when negotiations are conducted toward an international agreement in the climate change issue-area. What is really

[78] *Ibid*. at 62-63.

[79] My apologies to Nash! (Note: I have not referenced the original poem to a specific source, as it is easily available through the internet, open access.)

at stake must be realized. When one thinks of a 'climate change-related disaster', what does that mean? What comes to mind? A long, crippling drought … broken by floods which wreak havoc? Storm surges? Fires? Crop failures? Loss of human life and property?

The sex lives of sea turtles are probably not the sort of thing immediately to come to mind, but what needs to be understood is that the problems turtles face as climates change and the oceans warm are emblematic of the problems faced by most species – with many of these problems being counter-intuitive. In respect of Australia, for example, not many people would think that the mountain pygmy possum (*Burramys parvus*) is facing extinction in the wild because of a lack of snow;[80] or that Lumholtz's tree kangaroo (*Dendrolagus lumholtzi*) is facing similar difficulties because the tree leaves on which it feeds are becoming less nutritious due to lower nitrogen content as carbon dioxide levels in the atmosphere increase.[81]

By focusing on a single species (sea turtles) in an effort to show how complicated are interrelationships in the natural world, and how complicated are the effects of rapid anthropocentric climate change on these, the point is to give impetus to improving negotiation techniques. If negotiators do not approach negotiations with an informed understanding of what biological diversity *is*, and *why* it should be protected, and too much deference is given to other interests, then it is hardly surprising that the international instruments they adopt are not going to be sufficiently nuanced to be either adequate or appropriate.

Australia, to continue with that country as an example, has a raft of sophisticated, even world-leading, environmental laws in place, but they do not seem to be operating as effectively as they might – the continent has suffered historically from an astonishingly high rate of extinctions, and many species are facing a precarious future in the wild.[82] This is not a criticism unique to Australia – every country is facing a similar reality, no matter what the state of advancement of its legal systems. In the same way as we need to understand that biological diversity functions through a complicated pattern of interrelationships, so we need to see that international legal instruments, and national too, function through similar patterns. We need all. Australia is not an island, and nor is any other country.

It is often said that governments 'lack the political will' to implement environmental

[80] The mountain pygmy possum is one of only a small number of marsupials which hibernate. For adequate insulation during this period, the possum needs a snow depth of at least one metre. Together with other threats, such as alien invasive species like cats and foxes increasing their ranges, the possum faces a difficulty in that snow fall seasons in its alpine and sub-alpine ranges in New South Wales and Victoria are declining. See, for instance, Australian Museum, 'Australian Species Vulnerable to Climate Change', 26 October 2015, available at <http://australianmuseum.net.au/australian-species-vulnerable-to-climate-change> (visited 15 September 2016).

[81] *Ibid*. These rare kangaroos live in an extremely restricted range in the wet tropics of Queensland.

[82] See, for instance, John C.Z. Woinarski, Andrew A. Burbidge and Peter L. Harrison, 'Ongoing unraveling of a continental fauna: Decline and extinction of Australian mammals since European settlement' 112(15) *Proceedings of the National Academy of Sciences* (2015) 4531-4540.

legislation. This might not always be fair criticism. While it does indeed take a very brave politician to look further than a brief political career and take decisions for the long-term, and very few do, where there is legislation it will have been put in place by politicians. When politicians ignore environmental legislation, it probably can be argued that they *are* responding to the 'political will' – what most people *want*, and want *now*, is increased urban development, poverty alleviation, more luxurious living standards, and externalized environmental consequences. Change needs to be driven, and long-term vision introduced, by the people who drive the politicians – including both ordinary people, and insightful diplomats and negotiators.

4.2 The Paris Agreement and its biological diversity-related provisions

There *are* some provisions on biological diversity in the Paris Agreement – but the reader must look diligently to find them. The opening words of the Preamble:[83] 'The Parties to the Agreement, *Noting* the importance of ensuring the integrity of all ecosystems, including the oceans and the protection of biodiversity …' do set the scene, and arguably – as with all preambles – provide an imperative to interpret provisions within the substantive text in accordance with them.[84] Perhaps unfortunately, however, the words which follow ('…recognized by some cultures as Mother Earth, and noting the importance for some of the concept of "climate justice", when taking action to address climate change, …') could be taken to imply that the Preamble is quite firmly driven by anthropocentric considerations.

In much of the rest of the Paris Agreement, references to protecting biological diversity must be 'read in' by implication.[85] In Article 2 the following words appear:

> 1. This Agreement, in enhancing the implementation of the Convention, including its objective, aims to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty, including by:
>
> …
>
> (b) Increasing *the ability to adapt to the adverse impacts of climate change and foster climate resilience* and low greenhouse gas emissions development, in a manner that does not threaten food production;
>
> …

The italicized (own emphasis) words necessarily will include taking care of and protecting biodiversity. Fostering climate resilience implies having environments which include biological diversity that is in a state as close to natural as possible.

[83] Annex: Preamble.
[84] Vienna Convention on the Law of Treaties, Vienna, 22 May 1969, in force 27 January 1980, 1155 *United Nations Treaty Series* 331; Art. 31: 'General Rule of Interpretation'.
[85] In what follows, all emphases in italics have been made by the present author.

In Article 5 the following appears:

> 1. Parties *should take action to conserve and enhance, as appropriate, sinks and reservoirs of greenhouse gases* as referred to in Article 4, paragraph 1(d), of the Convention, including forests.
>
> 2. Parties are encouraged to take action to implement and support, including through results-based payments, the existing framework as set out in related guidance and decisions already agreed under the Convention for:
>
> > policy approaches and positive incentives for activities relating to reducing emissions from deforestation and forest degradation, and the role of *conservation, sustainable management of forests* and enhancement of forest carbon stocks in developing countries; and alternative policy approaches, such as joint mitigation and adaptation approaches for the *integral and sustainable management of forests*, while reaffirming the importance of incentivizing, as appropriate, non-carbon benefits associated with such approaches.

Although the protection of biological diversity is again implied, these are not firm obligations – the Parties '*should* take action' and are '*encouraged* to take action'.

In Article 7 it is provided that:

> 1. Parties hereby establish the global goal on adaptation of *enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change*, with a view to contributing to sustainable development and ensuring an adequate adaptation response in the context of the temperature goal referred to in Article 2.

It is hard to imagine how this 'global goal' could be met without taking care of biological diversity.

Article 7 continues:

> 2. Parties recognize that *adaptation* is a global challenge faced by all with local, subnational, national, regional and international dimensions, and that it *is a key component of and makes a contribution to the long-term global response*

to climate change to protect people, livelihoods and ecosystems, taking into account the urgent and immediate needs of those developing country Parties that are particularly vulnerable to the adverse effects of climate change.

…

5. Parties acknowledge that adaptation action should follow a country-driven, gender-responsive, participatory and fully transparent approach, *taking into consideration vulnerable groups, communities and ecosystems*, and should be based on and guided by the best available science and, as appropriate, traditional knowledge, knowledge of indigenous peoples and local knowledge systems, with a view to integrating adaptation into relevant socioeconomic and environmental policies and actions, where appropriate.

…

9. Each Party *shall*, as appropriate, engage in adaptation planning processes and the implementation of actions, including the development or enhancement of relevant plans, policies and/or contributions, which may include:

…

(c) The *assessment of climate change impacts and vulnerability*, with a view to formulating nationally determined prioritized actions, taking into account *vulnerable* people, places and *ecosystems*;

…

(e) *Building the resilience of socioeconomic and ecological systems*, including through economic diversification and *sustainable management of natural resources*.

…

This mix of hard and soft law, binding commitments phrased in hortatory language, is common within multilateral environmental instruments. Each Party *shall*, it is a firm obligation, '*as appropriate* engage in adaptation planning processes' … what commences as a firm commitment becomes in the end very weak. Negotiating such commitments is always a balancing act.

Article 8 includes the following words:

1. Parties *recognize the importance* of averting, minimizing and addressing loss and damage associated with the adverse effects of climate change, …

…

3. Parties should enhance understanding, action and support, including through the Warsaw International Mechanism, as appropriate, …
4. Accordingly, *areas of cooperation and facilitation to enhance understanding, action and support* may include:

…

(c) *Slow onset events*;

(d) Events that *may involve irreversible and permanent loss and damage*;

…

(g) *Non-economic losses*;
(h) *Resilience* of communities, livelihoods and *ecosystems*.

Recognition of the importance of protecting biological diversity can surely be read into Article 8; but, again, weak, hortatory phrases such as 'should enhance' and 'may include' necessarily weaken the impact of the whole.

Finally, in Article 9 the following, perhaps surprisingly firm, commitment appears:

1. *Developed country Parties shall provide financial resources to assist developing country Parties* with respect to *both mitigation and adaptation* in continuation of their existing obligations under the Convention.
...

Effective adaptation will rely, to a great extent, on protecting biological diversity in order to enhance its resilience – as such, it could be argued that there is a commitment resting on developed country Parties to ensure that much of the financial assistance they provide is directed toward this end.

Unfortunately, these provisions are the only ones which the present author was able to identify in the Paris Agreement that are, directly or indirectly, relevant to the protection of biological diversity.

4.3 The Paris Agreement and other instruments relevant to biological diversity

There are rather a lot of multilateral environmental agreements, and rather a lot of them are directly relevant to the protection of biological diversity. The *University of Oregon's Database Project*[86] lists more than 1,190 multilateral environmental agreements, more than 1,500 bilateral environmental agreements, and more than 250 'other' environmental agreements. If, within the website, one runs a more focused search on agreements related to biological diversity, and then searches for 'nature' there are 389 multilateral, and 236 bilateral, Agreements and Modifications listed. If one searches for 'habitat', there are 70 and 20, respectively. A search for 'ocean' produces 358 and 261, respectively; and a search on 'species (mammals)' produces 146 and 41, respectively.

This profusion can be narrowed down somewhat – and there are arguably six multilateral environmental agreements of global scope which could be used to 'harmonize' many of the others. These are, listed by date of adoption, the Convention on Wetlands of International Importance (Ramsar Convention), 1971;[87] the World

[86] See <http://iea.uoregon.edu/page.php?file=home.htm&query=static> (visited 15 September 2016).
[87] Convention on Wetlands of International Importance especially as Waterfowl Habitat, Ramsar, 2 January 1971, in force 21 December 1975, 996 *United Nations Treaty Series* 245, <http://www.ramsar.org>.

Heritage Convention (the WHC), 1972;[88] the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), 1973;[89] the Convention on the Conservation of Migratory Species (the CMS), 1979;[90] the Convention on Biological Diversity (Biodiversity Convention; CBD), 1992;[91] and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGFA, or 'the Plant Treaty'), 2001.[92]

The definition of biological diversity contained in the Convention on Biological Diversity is widely accepted, and can now even be found incorporated into the national statutes of states.[93] According to this definition:

> 'biological diversity' means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.[94]

The objectives of the Convention on Biological Diversity, to be 'pursued in accordance with its relevant provisions', are:

> the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding.[95]

In 2002 the Parties to the Convention on Biological Diversity adopted a *Strategic Plan*[96] which was intended to achieve, by 2010:

> a significant reduction in the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on Earth.

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88 Convention for 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>.

89 Convention on International Trade in Endangered Species of Wild Fauna and Flora, Washington DC, 3 March 1973, in force 1 July 1975, 993 *International Legal Materials* (1992) 993, <http://www.cites.org>.

90 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>.

91 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>.

92 International Treaty on Plant Genetic Resources for Food and Agriculture, Rome, 3 November 2001, in force 29 June 2004, 2400 *United Nations Treaty Series* 303, <http://www.planttreaty.org/>.

93 For instance, Australia in the *Environment Protection and Biodiversity Conservation Act*, 1999 (Commonwealth) and South Africa in the *National Environmental Management: Biodiversity Act* 10 of 2004.

94 Article 2.

95 Article 1.

96 CBD, *Strategic Plan for the Convention on Biological Diversity*, CBD Dec. VI/26 (2002).

This Plan was subsequently endorsed by both the *World Summit on Sustainable Development* of 2002[97] and the United Nation General Assembly.[98]

However, in 2010 it was concluded that this target had not been met, and nor had any of the sub-targets which accompanied it; that, instead, all components of biodiversity are continuing to decline, and that the principal drivers of biodiversity loss (climate change, habitat change, invasive alien species, overexploitation, and pollution) have either remained constant or have increased in intensity.[99]

In response the solution the Parties reached was, obviously, to launch a *new* strategic plan! The Parties to the Convention on Biological Diversity therefore now have a *Strategic Plan* for the years 2011–20[100] intended to ensure that, by 2020:

> ecosystems are resilient and continue to provide essential services, thereby securing the planet's variety of life, and contributing to human well-being, and poverty eradication.[101]

The Plan identifies five strategic goals and 20 targets (known as the Aichi Biodiversity Targets[102]) which it is hoped will be achieved by 2020. Recently, in 2014, the *Global Biodiversity Outlook 4* suggested that, while it is still possible to achieve the majority of the Plan's targets, it will be 'challenging' to do so and success will require 'innovative and bold action in many areas, and a sustained focus on biodiversity in a wide range of policy areas for the second half of this decade'.[103]

It is worth mentioning at this point that the goals and targets articulated in the Convention on Biological Diversity's *Strategic Plan* have been impliedly endorsed by the Strategic Plans of other conventions related to biological diversity. The *Strategic Plan for the Conservation of Migratory Species 2015-2023*[104] of the CMS, for instance, con-

[97] Plan of Implementation of the World Summit on Sustainable Development, UN Doc. A/CONF.199/20 (2002), para. 44.

[98] 'Convention on Biological Diversity', UNGA Res. 57/260 (2002), para. 7.

[99] Secretariat of the Convention on Biological Diversity, *Global Biodiversity Outlook 3* (2010), available at <http://www.cbd.int/doc/publications/gbo/gbo3-final-en.pdf> (visited 15 September 2015) at 17-19. *Outlook 3* highlighted also the high risk of a dramatic loss of biological diversity and degradation of ecosystem services if certain 'tipping points' are reached.

[100] CBD Dec. X/2 (2010), Annex.

[101] *Ibid*. paras 12-13.

[102] As an example, Aichi Target 12 aims to prevent the extinction of threatened species and improve their conservation: '[b]y 2020 the extinction of known threatened species [will have been] prevented and their conservation status, particularly of those in decline, [will have been] improved and sustained'.

[103] Secretariat of the Convention on Biological Diversity, *Global Biodiversity Outlook 4: A mid-term assessment of progress toward the implementation of the Strategic Plan for Biodiversity 2011-2020* (2014), available at <http://www.cbd.int/gbo4/> (visited 15 September 2016), at 17.

[104] CMS, *Strategic Plan for the Conservation of Migratory Species 2015-2023* (2014), available at <http://www.cms.int/sites/default/files/document/Res_11_02_Strategic_Plan_for_MS_2015_2023_E_0.pdf> (visited 15 September 2016).

tains numerous references to the Aichi Biodiversity Targets, such as that '[t]he Strategic Plan for Biodiversity and its Aichi Biodiversity Targets should be used as a framework when developing' the Strategic Plan for Migratory Species;[105] or that '[n]othing in this Plan shall be taken to dilute or reduce the commitments represented by the Aichi Biodiversity Targets'.[106] As another example, the *4th Strategic Plan of the Ramsar Convention 2016-2024*[107] has an Annex which explains in table form various convergences and synergies between the Aichi Biodiversity Targets and the Ramsar Goals and Targets 2016-2024.[108]

Unfortunately, a few successful localized conservation and protection efforts aside, it does not seem at time of writing that the new *Strategic Plan* will be more successful than that which it replaced.[109, 110] In such a situation, it would have been extraordinarily valuable if the most recent high profile international instrument to be adopted – the Paris Agreement, agreed to by 196 states and hailed by United States President Barack Obama, as an example of a reaction from a high profile leader, as showing 'what is possible when the world stands as one' and as representing 'the best chance we have to save the one planet that we've got'[111] – had included a specific commitment to protecting biological diversity. While it can be argued that it is not necessarily wise for international legal instruments to cover the same ground as others, and it could hardly be expected that the Paris Agreement would have mentioned the effects of changing climates on the sex lives of sea turtles, much more could have been included than eventually was.

[105] *Ibid*. Ch. 1.1(1), at 6.

[106] *Ibid*. Ch. 3, at 10.

[107] Ramsar, *4th Strategic Plan of the Ramsar Convention 2016-2024* (2015), available at <http://www.ramsar.org/sites/default/files/documents/library/4th_strategic_plan_2016_2024_e.pdf> (visited 15 September 2016).

[108] *Ibid.* Annex 2: 'Synergies between CBD Aichi Biodiversity Targets and Ramsar Targets', 30-34.

[109] It is worth noting also that the failure of the Convention on Biological Diversity's 2002 *Strategic Plan* to achieve its targets, or anything like them, by 2010 is attributable not just to that Convention, but also to the general lack of efficacy of CITES, the CMS, the ITPGFA, Ramsar, and the WHC. No one of these conventions is on its own effective, and even as a network they are struggling. What can be said for them is that, without them and the efforts they promote, the situation would undoubtedly be far more desperate than it is.

[110] In respect of climate change, all of these conventions are, obviously, facing grave challenges. This can be seen in the adoption of resolutions on the impacts climate change adopted by various of these conventions. For instance, the CMS has been adopting resolutions on climate change since 2008; for instance, acknowledging that climate change 'may significantly affect the behaviour, distribution and abundance of migratory species and may change the ecological character of their habitats' (Res. 8.13, 2008). See Arie Trouwborst, 'Transboundary Wildlife Conservation in A Changing Climate: Adaptation of the Bonn Convention on Migratory Species and Its Daughter Instruments to Climate Change', (2012) 4 *Diversity* 258-300, at 267.

[111] See, for instance, John Vidal, Adam Vaughan, Suzanne Goldenberg, Lenore Taylor and Daniel Boffey, 'World Leaders Hail Paris Climate Deal as "Major Leap for Mankind"', *The Observer*, 13 December 2015, available at <https://www.theguardian.com/environment/2015/dec/13/world-leaders-hail-paris-climate-deal> (visited 15 September 2016).

5 Conclusion

The Paris Agreement acknowledges in its Preamble the need to protect biological diversity, but it would have been a significant step forward to have included the words 'biological diversity' at some point in the substantive text of the Agreement. What would have been useful, for instance, would have been a mention in Article 2. Article 2 reads:

> 1. This Agreement, in enhancing the implementation of the Convention, including its objective, aims to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty, including by:
>
> (a) …;
>
> (b) Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production; and
>
> (c) …

Article 2.1(b) could have included stronger language, such as the following:

> (b) Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience, *especially through significantly increased efforts to recognize the value of ecosystemt services and to conserve and protect biological diversity,* and low greenhouse gas emissions development in a manner that does not threaten food production; …

This seems to the present writer a missed opportunity.[112] Instead, analysts and commentators are left to interpret provisions in light of the Preamble, and to make efforts to tease out of these implied duties to protect biological diversity.

Partially in response to the Paris Agreement, the Subsidiary Body on Scientific, Technical and Technological Advice to the Convention on Biological Diversity, adopted a recommendation in April 2016.[113] Under clause 6, the Subsidiary Body:

[112] While it might of course be objected that many other important issue-areas would also have claims to be included, it seems to the present writer that the protection of biological diversity is so seminal, and so overarching, an issue that including it would have been justifiable – many other issue-areas would necessarily also obtain protection if biological diversity were carefully managed and properly protected.

[113] Recommendation adopted by the Subsidiary Body on Scientific, Technical and Technological Advice XX/10: 'Biodiversity and climate change'. UN Doc. UNEP/CBD/SBSTTA/REC/XX/10 (2016), available at <https://www.cbd.int/doc/recommendations/sbstta-20/sbstta-20-rec-10-en.pdf> (visited 15 September 2016).

> 1. Welcomes the Paris Agreement under the United Nations Framework Convention on Climate Change, in particular the articles related to biodiversity; …

The 'articles related to biodiversity' are listed specifically as being:

> [t]he reference to the importance of ensuring the integrity of all ecosystems as contained in the preamble of the Paris Agreement; Article 5, which calls upon Parties to take action to conserve and enhance sinks and reservoirs of greenhouse gases; Article 7, which recognizes the role of adaptation in protecting livelihoods and ecosystems; Article 8 relating to loss and damage, including resilience of livelihoods, communities and ecosystems.

Convention organs are usually polite to each other, and are usually seeking positive things to say (sometimes even where this is nigh impossible) – as such, these observations are hardly surprising.

Other commentators can be less reticent. According to Hance, writing in *The Guardian* in January 2016:

> The word 'biodiversity' is employed once in[114] the Paris [A]greement's 32 pages. 'Forests' appears a few times, but 'oceans', like biodiversity, scores just a single appearance. There is no mention of extinction. Wildlife, coral reefs, birds, frogs, orchids, polar bears and pikas never show up anywhere in the document. This is hardly surprising: the landmark agreement in Paris – the boldest yet to tackle climate change (which is saying something, but not nearly enough) – was contrived by one species for the benefit of one species.[115]

One of the great dilemmas for international lawyers remains how to bridge the gap between international law obligations and national enforcement.[116] In almost every case it is simply left to the Parties to international instruments to determine for themselves how results are to be achieved. In fact, the word 'enforcement' is virtually never even mentioned in an international convention or other instrument – and nor is any advice ever given on how to achieve it, that simply being left to the Parties themselves.

[114] As this mention is in the Preamble, it is not in fact *in* the Agreement.

[115] Jeremy Hance, 'What does the Paris Agreement mean for the world's other 8 million species?', *The Guardian*, 6 January 2016, available at <https://www.theguardian.com/environment/radical-conservation/2016/jan/06/-paris-agreement-biodiversity-coral-reefs-forests> (visited 15 September 2016).

[116] See, for instance, Ed Couzens, *Enforcement of Environmental Law: Good Practices from Africa, Central Asia, ASEAN Countries and China* (UNEP, 2015); and Gregory Rose, *Gaps in the Implementation of Environmental Law at the National, Regional and Global Level*, First Preparatory Meeting of the World Congress on Justice, Governance and Law for Environmental Sustainability (UNEP, 2011).

While not surprising, it is arguably a great pity that the opportunity was not seized in the Agreement[117] – which was presented to the world as a bold step – to include a firm commitment to protecting biological diversity and even to be a little more specific on actions that can be taken. That would have been something worth hailing – by humans and sea turtles alike.

[117] That the opportunity was missed arguably places a greater, not lesser, responsibility on the Parties to the CBD, CITES, the CMS, the ITPGFA, Ramsar and the WHC, and to hundreds of other biodiversity-related conventions, to 'step up their efforts' to raise awareness of the potential impacts of climate change on biodiversity, to adopt more protective measures for species and ecosystems, and to foster more effective synergies between themselves in respect of climate-change related initiatives.

Part IV

Interactive Negotiation Skills in the Area of Climate Change

The Shanghai Negotiations – A Multilateral Simulation Exercise: The 2015 Paris Agreement to Strengthen Action on Climate Change[1]

Tuula Honkonen[2] and Harro van Asselt[3]

1 Overview

1.1 Introduction

These materials set out the elements and structure of a negotiation simulation exercise for the University of Eastern Finland – UNEP Course on Multilateral Environmental Agreements (MEAs), held in Shanghai 2–12 November 2015.

The scenario for the negotiation simulation focuses on substantive, institutional and procedural issues in the context of the international climate change negotiations. The simulation was hypothetical but drew on issues at play in actual ongoing negotiations.

The exercise began with a plenary of the Conference of the Parties (COP) of the United Nations Framework Convention on Climate Change (UNFCCC).[4] Three

[1] This paper is partly drawn from the description of previous negotiation exercises conducted by Cam Carruthers.

[2] LLM (London School of Economics and Political Science) D.Sc Environmental Law (University of Joensuu); post-doc researcher of International Environmental Law, the University of Eastern Finland; e-mail: tuula.h.honkonen@gmail.com.

[3] PhD (Vrije Universiteit Amsterdam); Professor of Climate Law and Policy, University of Eastern Finland; Senior Research Fellow, the Stockholm Environment Institute; e-mail: harro.vanasselt@uef.fi.

[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>.

key issues had been identified requiring further negotiation, namely: legal issues; transparency; and compliance. As participants convened in the plenary, the COP President proposed to establish three informal groups with the aim of finalizing expert-level negotiations before the start of the high-level segment of the COP and the arrival of the ministers. The COP President proposed to establish informal groups on the following:

A. Legal issues (including legal form of the 2015 agreement; the legal nature and anchoring of intended nationally determined contributions (INDCs); and the housing of such contributions).
B. Transparency (including reporting, implementation review, and global stocktake/assessment).
C. Compliance.

A supplementary objective of the exercise was that it would produce discussion and results, including a paper in the annual course *Review* which may be of interest to international climate policy stakeholders and experts, and participants in related multilateral fora. The theme also provided an opportunity for participants to gain understanding about evolving legal architectures in international environmental governance.

This paper contains key elements of the primary materials for the simulation exercise, including general instructions and supporting material. Individual instructions were provided separately to each negotiation simulation participant.

1.2 Importance of procedures and rules of procedure in MEA negotiations

To facilitate MEA decision-making, procedures and/or rules of procedure are set up to govern activities in decision-making bodies, based on a provision in the MEA itself which usually stipulates that Parties are to agree on such rules. The COP (or a similar body) serves as the supreme decision-making body of the agreement. A COP takes decisions to implement the agreement, and reviews and evaluates the implementation of the agreement, including related decisions. Even in the case of the negotiation of a completely new MEA, procedures are still very important. The states participating in negotiations may agree on their own rules of procedure, though in UN fora the basis must be consensus. Even in the absence of such an agreement, there are generally accepted norms of practice which are usually followed. Where a new legal instrument, such as a protocol, is being negotiated under the umbrella of an existing treaty, the rules of procedure of the existing treaty would generally apply, absent an alternative agreement.

Rules of procedure generally regulate the activities of decision-making bodies, including subjects such as membership, officers, conduct of business, decision-making, agendas, languages and amendments to the rules, and, for an MEA that is in force, secretariat functions. Among other things, the rules reflect fundamental

principles of transparency and procedural fairness, the latter being based largely on the principle of equality of sovereign states. Another principle reflected in the rules is that in international law, authority is ultimately derived from states. While the fundamental principles are common, each set of rules is adapted to its specific context. A good knowledge of the rules of procedure of the forum a negotiator works in is invaluable. Knowing the rules means knowing what one can do to advance or protect one's position, and how to do it.[5]

However, all too often negotiators in multilateral environmental fora have only a limited awareness of the rules that define the arena in which they operate. The rules and related issues may seem either mundane or arcane, and only incidental to the more compelling questions of substance. Negotiators are often more concerned with strategy or technical priorities. Some may not even be aware of the influence of the rules on the process, which can be subtle. Even when no reference is made to the rules they have a profound influence on outcomes. A key example is decision-making: votes are generally avoided, but whether and how consensus is obtained on a given issue may depend to some degree on the understanding of how Parties would vote if they did vote. Negotiators who fail to understand the underlying dynamics on such issues can make serious strategic errors.

Indeed, ignorance of the rules can lead to major failures and frustrations with the process, especially since problems may be discovered after key decisions have been taken. It is difficult if not practically impossible to undo multilateral process decisions, once taken. So it is important to consider strategic issues about decision-making processes and relevant rules early in any multilateral endeavour. Once a process is underway, it may result in a proliferation of sub-processes based on a set of interrelated decisions. While these processes are susceptible to congestion and inertia, it is also possible that they can move toward an unexpected direction or conclusion very quickly, with major outcomes in the balance.

This simulation exercise was designed, in part, to open up certain procedural issues so that participants could strengthen their knowledge and understanding of the procedures and rules as tools for more effective and efficient negotiation of individual and common objectives. The idea was for participants to negotiate conceptual ownership of procedures while they negotiated practical textual solutions. The premise was that the procedures and rules constitute a code which reflects the values and interests of Parties and informs the way negotiators work together to take decisions. The rules frame what happens, who can make it happen, when, where and how. The higher the level of common understanding and agreement of the rules in any given body, the more efficiently and effectively that body can operate and reach agreement to attain common objectives.

[5] For an analysis of the importance of the rules of procedure in a particular MEA, see Joanna Depledge, *The Organization of Global Negotiations: Constructing the Climate Change Regime* (London: Earthscan, 2005), particularly at 80-102.

1.3 Simulation objectives

This negotiation simulation exercise focused on the multilateral climate change negotiations. The general objectives were to promote among participants, through simulation experience:

1) Understanding of the challenges and opportunities related to adopting a new international legal instrument, both in general and in the specific context of the international climate change regime.
2) Understanding of the principles and practices of multilateral negotiations, and appreciation of the value and role of the rules of procedure.
3) Familiarity with specific substantive and drafting issues, as well as legal implications of different types of instruments; and
4) Discussion and appreciation of different perspectives on substantive and institutional issues related to international cooperation on climate change.

Within the exercise, the specific objective of the meeting was to produce agreement on the three issues set out in section 1.4 below.

1.4 Procedural scenario

The negotiation simulation scenario and the issues set out within it were hypothetical, but drew on recent discussions in the negotiations leading up to the Paris Agreement.

The scenario was set at UNFCCC COP21 in Paris, with a new international agreement on climate change due to be adopted. At COP17 in Durban in 2011, Parties created the Ad Hoc Working Group on the Durban Platform on Enhanced Action (ADP), with a view to develop 'a protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all Parties'.[6] ADP negotiations have taken place between 2011 and 2015, and Parties have made significant progress. The stated goal of negotiating partners within the simulation was to have a final text for adoption at the end of the COP, although informal discussion in the corridors revealed considerable doubt about whether there was sufficient political will to compromise and overcome obstacles to agreement.

The premise of the scenario was that the final negotiations in the ADP at COP21 had just been closed, and its outcomes had been reported to the COP. The ADP had forwarded its final text (from the Parties) to the COP. This text, as well as other outstanding issues, such as the legal form of the agreement, were now in the hands of the COP and its President (and Vice-President). While the ADP was able to reach agreement on several crunch issues in the negotiations, such as ensuring pre-

[6] 'Establishment of an Ad Hoc Working Group on the Durban Platform for Enhanced Action', UNFCCC Dec. 1/CP.17 (2011) para. 4.

dictability on climate finance provided by developed countries and the status of loss and damage[7] in the agreement, three key issues remained unresolved: legal issues, transparency, and compliance.

With respect to **legal issues** (Group A), three separate yet inter-related issues were impossible to resolve in the ADP: 1) the legal form of the instrument to be adopted; 2) the legal nature and anchoring of the INDCs;[8] and 3) the housing of the contributions.

1) On legal form, the main disagreement seemed to be whether the agreement should be in the form of a 'protocol' or 'another legal instrument'; however, some had suggested that it might also be possible to adopt an instrument that could be made legally binding through domestic law. Ideally, Parties would have reached agreement on what legal form to choose for the instrument to be adopted in Paris, or at the very least specify under which conditions a certain legal form should be chosen.
2) On the legal nature and anchoring of the INDCs, a few key questions remained unresolved: should the contributions of developed and developing country Parties be different? Should the obligations that Parties take on be effort-based (for instance, the obligation to implement a contribution nationally), result-based (for instance, the obligation to achieve the mitigation target outlined in a contribution), or a combination of both? Should the obligations be procedural (for instance, the obligation to regularly communicate or submit a new contribution to the UNFCCC), substantive (for instance, the obligation to implement a contribution), or a combination of both?
3) Finally, on the housing of INDCs, there was still disagreement on whether the contributions should be 'inside' (for instance, as part of an Annex) or 'outside' (for instance, as part of a COP decision or an informal document) the agreement and, if the latter, in what kind of form the contributions should be presented.

On **transparency** (Group B), Parties agreed that this was an important issue and that a system should be established to enhance the transparency of Parties' mitigation contributions (a transparency system on financial and other support provided by developed countries to developing countries was already agreed in the ADP). Yet disagreement still prevailed on a number of issues:

[7] 'Loss and damage' refers to the question of 'how best to address the permanent and irreversible impacts of human-induced climate change on particularly vulnerable developing countries'. M. J. Mace and Roda Verheyen, 'Loss, Damage and Responsibility after COP21: All Options Open after the Paris Agreement', 25(2) *Review of European, Comparative and International Environmental Law* (2016) 197-214 at 197.

[8] Intended nationally determined contributions are the non-legally binding climate action plans that Parties to the UNFCCC pledged in the run-up to the Paris climate summit. 'Further Advancing the Durban Platform', UNFCCC Dec. 1/CP.19, para. 2(b).

1) Reporting: The main unresolved issue was the extent to which reporting obligations should be differentiated between different (types of) Parties; and whether reporting obligations should be different from existing obligations (which require developed countries to submit Biennial Reports every two years; and developing countries to submit Biennial Update Reports every two years; Least-Developed Countries and Small Island Developing States could report on a voluntary basis).
2) Review of implementation: This disagreement concerned the extent to which a review of implementation should be differentiated, and whether the reviewing system should follow or depart from the review system established by the Cancún Agreements (for instance, International Consultations and Analysis for developing countries; International Assessment and Review for developed countries). In addition, Parties still disagreed on the extent to which a review should include a review by (independent) experts or whether it should involve a more political process involving other Parties.
3) Stocktake: the key issue here was whether there should be a regular assessment of whether contributions/commitments were fair and adequate; and, if so, whether such an assessment would also include an assessment of the adequacy and fairness of individual contributions.

On **compliance** (Group C), Parties still disagreed on the very basic question of whether a compliance mechanism should be established. Related to this, if such a mechanism would be included, it remained unresolved what its nature would be: would it be facilitative and non-adversarial in nature, or would it have the potential power to sanction Parties that are in non-compliance? Moreover, would it apply in a similar way to developed and developing countries, or would some kind of differentiation between Parties be necessary? Finally, if a new compliance-related body would be created, it remained unclear what the composition of such a body would be.

The COP first considered these issues at the expert level, with a view to presenting clear options for ministers to choose from in the subsequent high-level segment. Ideally, everything had to be as ready as possible as the high-level segment began.

The exercise started with a COP plenary. The night before, the COP had heard the ADP's report and agreed to hold informal consultations on the way forward with the outstanding issues. As the exercise began, the COP President and Vice-President reported back to the COP plenary on their informal consultations late the previous night, indicating preliminary agreement to establish informal groups to consider the three outstanding issues, and initially giving the informal groups until 11am the following morning to report back to a stocktaking plenary.

The first day of the simulation should also have been understood as ending of the last day of the Drafting Group activity. The second day of the simulation was the last day of the high level segment.

The COP had a President and Vice-President (also serving as a Rapporteur for COP plenaries), which were selected by the Simulation Coordinators. Facilitators for the Drafting Groups and Rapporteurs for these groups were elected by Parties at the COP plenary at the start of the exercise. The Parties had to follow established practice and seek to balance developed country and developing country representation in these elected positions.

The entire negotiation text ('Draft Agreement') can be found in Appendix I to this chapter. For Group A, the relevant text to be negotiated is contained in Article 3, paragraphs 2, 3 and 7 of the Draft Agreement. For Group B, the relevant text is contained in Article 9, paragraphs 1–7, and Article 10 of the Draft Agreement. For Group C, the relevant text can be found in Article 11 of the Draft Agreement.

1.5 Introduction to the exercise

Each participant played a specific role, representing a state (once an MEA is in force, delegates are generally considered Party representatives). In addition, participants playing the COP President and Vice-President, the Drafting Group Facilitators and Rapporteurs played an additional role, which they had to carefully balance with their role as state representative. Participants were encouraged to play their part in the overall scenario for the simulation, following both general and individual instructions.

Participants were encouraged, where possible, to make alliances and develop coordinated strategies to intervene in support of others, or to take the lead in other cases. Participants were particularly encouraged to seek support in the context of their negotiation group(s). No specific time allocation was made for negotiation group coordination, nor had any organizational approach been set out for such groups. In real life, negotiation groups differ widely in their internal organization and they usually have very limited status in multilateral negotiations (with the exception of the European Union, which now often has Party status in MEAs). However, they can be very effective at driving negotiation outcomes, particularly when their members have aligned interests and positions, and when they are well-organized. As in real life, there were negotiation groups in this simulation. Negotiation groups (and their composition) were specified in individual instructions, and it was up to participants to organize and negotiate within their negotiation groups. Their effectiveness depended on the investment made by participants.

Some roles, including the COP President and Vice-President and the Drafting Group Facilitators, played a resource function and could be useful to participants. Those playing such roles were to serve all participants and work for a positive outcome in addition to their individual instructions. They were encouraged to signal to the other Parties when they took up their partisan roles (for instance, 'I'm taking off my President/Facilitator hat...'). The Simulation Coordinators (Harro van Asselt and Ed Couzens) assisted as further resource persons by acting as UNFCCC Secretariat officials.

Participants were told to keep in mind their interests and positions with respect to all three issues, but to focus on the issue assigned to their Drafting Group. Keeping an eye on how negotiations were progressing within other groups might produce useful information which could assist negotiators within their own groups. The groups were to narrow their focus as quickly as possible to identify issues to be addressed, and to dispose of issues expeditiously where possible. Participants were instructed to work hard to achieve their objectives.

Participants were strongly urged to follow their instructions, and to elaborate interventions with a compelling rationale to advance their positions. Participants were also encouraged to take the initiative and be inventive and to intervene in Drafting Groups and in plenary even if they had no specific instructions on a particular issue. Participants representing Parties were highly encouraged to seek support from other participants for, and identify opposition to, their positions, including positions discussed in Drafting Groups in which they did not participate. To this end, participants were to consider developing joint drafting proposals and making interventions on behalf of more than one State, and it was pointed out that they might wish to consider using negotiation groups as a point of departure. Participants were also asked to think about issues for discussion in the 'post-mortem', a facilitated review of the exercise, which followed the conclusion of the negotiation exercise, and include issues of both process and substance within the exercise, as well as issues relating to the structure and management of the exercise itself.

The simulation was designed to focus on both the negotiation process as well as the substantive issues, and it was designed to be difficult, with failure to reach agreement being a real possibility. Unavoidably, a random distribution of positions was likely to result in making some Parties appear more or less constructive, and indeed for simulation purposes some positions were designed to cause difficulties. It is important to note that the positions in individual instructions were developed and assigned randomly. They were entirely hypothetical and were not intended to reflect specific positions of particular Parties or the views of organizations or individuals.

Individual delegates often face situations similar to this exercise, where they have little opportunity to prepare, but should still define objectives and develop a strategy. Informal diplomacy is where most progress toward agreement on concepts is made, while Drafting Group and plenary discussion is often required for agreement on specific texts. Drafting often involves a fine balance between accommodation and clarity. In real life, decision-making on final text in plenary may appear to be simply 'pro-forma' (merely a formal repetition of what has already been agreed), but there can be surprises. Decisions in the plenary are critical and can sometimes move very

quickly, at times moving back and forth on an agenda, so that being prepared with an effective intervention at any moment is essential.

The COP President, Vice-President and the three Drafting Group Facilitators played important roles, setting up and managing the process – and managing time – to produce agreement. They were encouraged to consult broadly, including with other Facilitators and state representatives (noting that the Simulation Coordinators were possibly able to provide advice acting as senior UNFCCC Secretariat officials). The key to success was thoughtful organization of the work of the groups, including strategic management of how the smaller Drafting Groups and the plenary sessions function and are linked.

1.6 Drafting and the high-level segment

Participants were instructed to focus on drafting, and then shift to more discussion of trade-offs and accommodations with other Parties during the high-level segment of the COP (Day 2). Participants were also to expect that Ministers and Heads of Delegation would only have limited time to deal with a few issues, perhaps only one issue. It is often important to settle complex issues at the technical level and in settings like Drafting Groups, as it is very risky to rely on outcomes from the high-level segment. Issues that can be formulated as requiring a 'yes' or a 'no' answer are most susceptible to the high-level segment discussions, and the formulation of the question can be critical.

2 Instructions

2.1 Individual instructions

The core of the simulation was set out in confidential individual instructions of 1–2 pages in length. They provided very brief positions and fall-back positions on each of the issues being negotiated, but no rationale or strategy (this had to be developed by each participant). In some cases, the instructions might seem internally inconsistent and even contradictory (this happens in real life, and is interesting to watch!). For this exercise, instructions were provided in a simplified form rather than that of official delegation instructions. In some cases, instructions stipulated that a position could not be abandoned for a fall back without consulting a designated senior official in the state's capital. For the purposes of this simulation the Simulation Coordinators served in this capacity.

2.2 General instructions

The following general instructions were provided:

> At a minimum, please review the general and individual instructions and the key simulation documents (Section 3 below).
>
> 1) Each participant is assigned a role as a Lead Negotiator for a particular Party (this is a 'speaking role').[9] Additional confidential individual instructions will be provided to each participant.
> 2) Participants representing Parties have been sent with full credentials from their governments to participate in the COP, using their confidential individual instructions as a guide.[10]
>   a. Participants should do their best to achieve the objectives laid out in their instructions. You should develop a strategy and an integrated rationale to support your positions.
>   b. On any issues on which you do not have a position in your individual instructions, you should develop your own positions, with a view to securing agreement on the issues where you do have a position.
>   c. Do not share your confidential individual instructions with other participants.
>   d. Do not concede to a fall-back position without a serious effort to achieve your primary objective (and not on the first day!).
>   e. You should work with your negotiation group and allies as much as possible – within the scope of your individual instructions. If possible, consult with others before the session, to 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 outnumbered. You should try to identify participants with opposing views, and influence them both in formal negotiations, as well as in informal settings.
>   f. At any time, you may receive supplementary instructions.
>   g. Participants should, of course, always be respectful of each other's views and background.
> 3) The Simulation Coordinators (Harro van Asselt and Ed Couzens) may, as needed, act as senior UNFCCC Secretariat officials and/or a designated senior government official in a state's capital authorized to provide supplementary instructions to their delegations. Coordinators will remain as far as possible outside of the simulation and should not be consulted unless necessary. Questions on procedure, etc. should be addressed to the COP

[9] There are no intergovernmental or non-governmental organization roles in this exercise, based largely on feedback from participants in previous simulations who indicated that they found such roles to be very limited.

[10] Confidential individual instructions have been developed without reference to actual country positions, and it is not necessary for this simulation that participants attempt to follow positions in the real negotiations.

President and Vice-President or Drafting Group Facilitators. It should be borne in mind that – as in real negotiations – Secretariat officials can suggest possibilities, but cannot be called upon to make decisions for State Parties.

4) In the COP plenary and Drafting Groups, the COP President/Vice-President/Facilitators/Rapporteurs sit at the head of the room. Parties will be provided with a 'flag' or country nameplate. To speak, raise your 'flag' and signal to the COP Vice-President/Drafting Group Rapporteur keeping the speakers' list.
5) The simulation will begin and end in the COP plenary. The first task for Parties is to agree on the establishment of three groups, and to elect a Facilitator and Rapporteur for each group. The usual practice is that developing country Parties and developed country Parties are equally represented. For the exercise, the selection should be based on informal consultations, and decided by consensus.
6) If and when the COP plenary breaks into the three groups, please join the group identified in your individual instructions. The groups will operate like an informal Drafting Group (see the *MEA Negotiator's Handbook*, available online).
7) The three groups must reach agreement on what to report back to the COP plenary[11] (see also the *MEA Negotiator's Handbook* on drafting, especially use of brackets).
8) The COP President and Vice-President and, once elected, the Drafting Group Facilitators must play their role in the session of the body they manage, and in that body, refrain from openly taking positions. If they do so, they should explicitly indicate that they are "taking their President/Facilitator hat off".
9) 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!).
10) The exercise will take place over a two-day period. Participants are encouraged to consult informally before the exercise for nominations to the official positions and in the evening of the first day to from alliances and broker solutions (as in real life).

2.3 Evaluation

Following the exercise, participants were requested to respond to the evaluation questions in the course evaluation in relation to this exercise.

[11] It is possible for the three groups to split up into smaller groups to work on text or to try to reach agreement on sensitive issues. Such smaller Drafting Groups should be run on an informal basis, with reference to participants by name not country.

3 Key simulation documents

3.1 Background material

3.1.1 The climate challenge

In this fictional scenario, COP21 is taking place against a background of increasing urgency to address the challenges presented by climate change.

There is a solid scientific basis for international action to mitigate the causes and adapt to the impacts of climate change. Greenhouse gas emissions, in particular those of carbon dioxide (CO_2), provide a major contribution to the warming trend, and it is clear that greenhouse gas concentrations are increasing.

Climate science also provides mounting evidence of the impacts of climatic changes. The increasing temperatures are expected to lead to impacts across the globe, some of which will be – and are being – felt worldwide (for instance, sea level rise) whereas others (for instance, extreme weather events) will vary for different regions. How climate impacts will be felt by humans and ecosystems depends to a large extent on their climate vulnerability and their ability to adapt to climate change. It is clear that many climate impacts are very unevenly distributed, and that the least developed countries are at the same time the most vulnerable and have the lowest capacity to adapt.

Governments have embraced the objective of keeping the increase of the global average temperature below 2°C relative to pre-industrial times, with countries vulnerable to climate impacts calling for limiting temperature increases to 1.5°C. Assessments show that to stay below 2°C with over 75 per cent certainty, it would be necessary to limit cumulative CO_2 emissions between 2000 and 2050 to 1000 gigatonnes. Approximately half of this trillion tonne budget has already been emitted, meaning that at the rate CO_2 is currently being emitted, net emissions would need to be zero around 2050. Keeping temperature increases below 1.5°C will be even more challenging.

3.1.2 A short history of the UN climate change regime[12]

Following new scientific insights indicating the scope of the challenge, as well as heightened media and political attention in the late 1980s, negotiations on a multilateral climate change treaty started in the lead-up to the UN Conference on Environment and Development in Rio de Janeiro 1992. Yet the adoption of the UNFCCC in Rio was merely the start of the development of the international climate regime.

The UNFCCC aims to achieve 'stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system' (Article 2), a goal that has been translated into avoiding

[12] This section is adapted from Harro van Asselt, Michael A. Mehling and Clarisse Kehler Siebert, 'The Changing Architecture of International Climate Change Law' in Geert Van Calster, Wim Vandenberghe and Leonie Reins (eds), *Research Handbook on Climate Change Mitigation Law* (Edward Elgar, 2015) 1–30.

temperature increases more than 2°C below pre-industrial levels. The Convention further introduces several 'principles', including those of inter-generational and intra-generational equity, common but differentiated responsibilities and respective capabilities of developed and developing countries, the need for a precautionary approach, the right to sustainable development, and the promotion of a supportive, open economic system.

The UNFCCC has been widely ratified – including by all major emitters – and launched an ongoing international negotiation process. As a framework convention, the treaty contains broad principles and commitments, but it did not contain specific and time-bound emission limitation or reduction targets. At the first COP in 1995 a mandate was adopted to negotiate 'a protocol or another legal instrument', which resulted in the 1997 Kyoto Protocol.[13] The Kyoto Protocol established emission targets – but only for industrialized (or Annex I) countries – and introduced three market-based flexibility mechanisms to assist countries in achieving cost-effective emission reductions: Joint Implementation, the Clean Development Mechanism (CDM), and international emissions trading. The Protocol further put in place a compliance mechanism, including a Compliance Committee.

Following a series of events – including the failed COP in The Hague in 2000 and the United States' withdrawal from the Protocol a year later – the ratification of the Protocol by Russia cleared the way for the Protocol's entry into force in February 2005. In these years, the focus was primarily on implementation of the existing climate treaties, and the rulebook of the climate treaties expanded significantly.

At the same time, attention increasingly shifted towards the future: what would need to be done when the Kyoto targets expired in 2012? In the 2007 Bali Action Plan,[14] Parties agreed that a new climate agreement should be adopted at the fifteenth COP in Copenhagen in 2009. However, the Copenhagen summit, which was attended by an unprecedented number of participants, never managed to meet these high expectations. The negotiation process was characterized by distrust between countries, and the resulting Copenhagen Accord[15] was only 'taken note of' by the COP, rather than adopted by consensus.

Despite the setback in Copenhagen, Parties in Cancún a year later managed to restore hope in the UNFCCC process by adopting the Cancún Agreements.[16]

[13] 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.

[14] 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), Addendum.

[15] 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.

[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, 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).

The Agreements brought country emission reduction pledges made in the context of the Copenhagen Accord into the formal UNFCCC framework through a COP decision. Furthermore, they added details on measurement, reporting and verification (MRV) for mitigation commitments and actions for developed and developing countries; established a new funding mechanism (the Green Climate Fund) and a new Technology Mechanism; and incorporated an agreement on reducing emissions from deforestation and forest degradation (REDD+).

Parties at the seventeenth COP in Durban in 2011 agreed to negotiate, by 2015, 'a protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all Parties' through the newly created Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP).[17] While this agreement will only 'come into effect and be implemented from 2020', Parties also continue to negotiate options for enhancing mitigation ambition before 2020.

The negotiations on the new agreement – which was to be adopted in Paris in 2015 – face several challenges: they require a balance between a 'top-down' and a 'bottom-up' approach to international climate policy; they need to be flexible and dynamic enough to accommodate changes in scientific insights and socio-economic and political conditions, yet be predictable enough to ensure that the ultimate objective is not lost out of sight. Building on the current architecture of the international climate regime, the Paris agreement will further need, at the very least, to address mitigation and adaptation commitments of Parties; access to finance, technology and capacity-building; market and non-market instruments; as well as MRV and compliance control.

The signs in the run-up to the crucial COP at the end of 2015 have been positive, however, and climate action seems to have gained significant momentum. By the end of October 2015, 155 Parties had submitted their so-termed 'intended nationally-determined contributions' (INDCs), including their climate change action plans. In addition, through initiatives undertaken by the UNFCCC Secretariat and COP Presidencies, as well as the UN Secretary-General Ban Ki-moon, a wide range of non-state actors (including businesses, regional and local governments, civil society, research and academia, and international organizations) have come forward with an array of voluntary pledges to undertake climate action. While the state pledges submitted thus far may not be sufficient yet to keep global warming below 2°C, the hope and expectation is that by creating an institutional and legal architecture for regularly increasing ambition by states and other actors, it will be possible to address the main challenges presented by climate change.

However, this progress and the positive mood still needs to be translated to the actual negotiations. In February 2015, Parties agreed on a lengthy (86 pages) negotiation text

[17] Decision 1/CP.17 'Establishment of an Ad Hoc Working Group on the Durban Platform for Enhanced Action' in Report of the Conference of the Parties on its 17th sess., UN Doc. FCCC/CP/2011/9/Add.1 (2012).

in Geneva. Throughout the year, Parties – guided by the ADP Co-Chairs – managed to reduce the text to a Draft Agreement. The excerpts relevant for the negotiation exercise are included below, and the full draft agreement can be found in Appendix I.

3.2 Draft text for negotiation

DRAFT AGREEMENT[18]

Article 3 (MITIGATION)

1. …
2. Each Party [shall][should][other] regularly communicate a nationally determined mitigation [contribution][commitment][other] that it [shall][should] [other] implement.
3. Each Party's nationally determined mitigation [contribution][commitment] [other] [shall][should][other] reflect a progression beyond its previous efforts, noting that those Parties that have previously communicated economy-wide efforts should continue to do so in a manner that is progressively more ambitious and that all Parties should aim to do so over time. Each mitigation [contribution][commitment][other] [shall][should][other] reflect the Party's highest possible ambition, in light of its national circumstances, and:
   (a) [Be quantified or quantifiable;]
   (b) [Be unconditional, at least in part;]
   (c) [Other].

….

7. The secretariat shall maintain in a public registry Parties' nationally determined mitigation [contributions][commitments][other].

Article 9 (TRANSPARENCY)

1. Building on the Convention arrangements and with a view to promoting confidence and effective implementation, a [unified][robust] transparency system covering both action and support, applicable to all Parties in a flexible manner and taking into account their differing capacities, is hereby established.

2. The purpose of the system for transparency of action is to:
   (a) Provide the clearest possible understanding of the emissions of individual Parties and of global aggregate emissions in the light of the global temperature goal;
   (b) Ensure clarity and tracking of progress made in implementing and achieving individual Parties' respective nationally determined mitigation [contributions][commitments][other] under Article 3, as well as tracking progress in implementing adaptation actions under Article 4.

[18] This text is based on: UNFCCC, Non-paper, Note by the Co-Chairs, 5 October 2015, <http://unfccc.int/resource/docs/2015/adp2/eng/8infnot.pdf>.

3. The purpose of the system for transparency of support is to:
   (a) Enhance the tracking of support provided and received;
   (b) Provide, to the extent possible, a full overview of support provided and received.
4. Each Party [shall][should][other] regularly provide complete and accurate information in relation to:
   (a) Its national inventory of anthropogenic emissions by sources and removals by sinks of greenhouse gases, using comparable methodologies to be agreed on by the CMA;
   (b) Progress made in implementing and achieving its nationally determined mitigation [contribution][commitment][other];
   (c) Information on vulnerability to climate change impacts and actions taken to build resilience and reduce vulnerability;
   (d) Support provided, efforts to improve domestic enabling environments, and support received, including the use, impact and estimated results thereof.
5. *[Further discussion is needed on: the relationship between the system and existing arrangements; the nature of flexibility, including whether there should be a "transition" period; the potential role of 'nationally determined'; and the potential role of technical expert review/facilitative examination.]*
6. The CMA shall at its first session, building on lessons learned and elaborating on the provisions above, adopt modalities, procedures and guidelines, as appropriate, for promoting environmental integrity. It shall take into account, inter alia:
   (a) The need for flexibility in the light of capability;
   (b) The importance of facilitating improved reporting and transparency over time;
   (c) The need to avoid undue burden and duplication;
   (d) The facilitative, non-intrusive nature of review.
7. The CMA shall cooperate with the Conference of the Parties to avoid overlap and duplication.

…

Article 10 (GLOBAL STOCKTAKE)

1. The CMA shall take stock of the implementation of this Agreement to assess aggregate progress towards achieving the objective of the Convention in a comprehensive and facilitative manner. The stocktaking shall consider the aggregate effect of the efforts by Parties, as well as assessments of the best available science, with a view to enhancing the implementation of the Agreement.
2. The CMA shall undertake its first stocktaking in [2023][2024] on the basis of the modalities to be adopted by the CMA at its first session, and shall conduct stocktakings thereafter at regular intervals to be decided by the CMA.

Article 11 (FACILITATING IMPLEMENTATION AND COMPLIANCE)

1. A [process][mechanism] is hereby established to facilitate implementation of [and promote compliance with] the provisions of this Agreement. The [process][mechanism] shall be facilitative, non-punitive, non-adversarial and non-judicial.

2. The [process][mechanism] shall be under the authority of the CMA. The [body referred to in paragraph 3 of this Article] shall consider matters relating to the implementation of [and compliance with] the provisions of this Agreement and shall report annually to the CMA.
3. Pursuant to this Article [and decision 1/.CP.21], the CMA shall, at its first session, adopt additional modalities and procedures for the [process][mechanism] referred to in paragraph 1 of this Article. Those modalities and procedures shall, inter alia, define the functions of the [process][mechanism], [establish the body that will carry out those functions,] and set out the measures to facilitate implementation [and promote compliance].

3.3 UNFCCC Draft Rules of Procedure

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 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.

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.

A selection of relevant rules of procedure are included in Appendix II.

4 Review of the exercise

The following is a brief summary of the proceedings and analysis based on our observation of the exercise, as well as written evaluations from participants.

There were 22 official participants in all, not including the facilitators and the other resource people who supported or played various roles in respect of the simulation.[19] The participants were mainly from Ministries of Foreign Affairs or from ministries responsible for environmental matters of their respective countries. Academic, non-governmental organizations and intergovernmental organizations were also represented.

The negotiations commenced with a COP plenary, in which the sole purpose was to agree on the formation of three informal groups (on legal issues, transparency, and compliance). Agreement in the first plenary was remarkably quick, with none of the participants raising any procedural issues.

Participants in the informal drafting group on legal issues focused their discussions on the anchoring of mitigation contributions and commitments in the agreement. All participants agreed that some form of differentiation was warranted and that there needed to be regular communication of contributions (for developing country Parties) and contributions and mitigation commitments (for developed country Parties), but there was divergence on how this would be put in practice, as well as the type of language used for the obligation ("shall" or "should"), with some participants suggesting that they could only accept the word "shall" after gaining assurance about the direction of the negotiations in the informal drafting group on compliance. Further discussion concerned the formulation of a principle specifying the level of ambition in the future, and whether contributions and/or commitments should be quantified and unconditional.

Encouraged by the facilitator of the informal group on transparency, participants reached basic agreement on the provision on a global stocktake, with participants suggesting that the fairness and adequacy of contributions should be assessed *ex ante*, and that the global stocktake should take place biannually. However, on other issues positions diverged more strongly, notably with regard to the question of whether there should be a unified transparency system, and whether there should be different obligations for Parties based on the level of emissions.

The informal group on compliance was divided on the question on whether the agreement should contain any provisions on compliance, with some insisting there was no need for such provisions given the work in the informal group on transparency. Others disagreed with this view, and moved forward with suggesting options for a provision on compliance.

The three informal groups varied significantly in terms of reaching agreement. While the outcome of the group on transparency was a heavily bracketed text, there was agreement in the informal group on compliance. The group on legal issues had made

[19] The 22 participants included 13 women and 9 men from 21 countries: Antigua, Belarus, Cameroon, Canada, Dominican Republic, DR Congo, Fiji, Finland, Ghana, Guyana, Indonesia, Iraq, Italy, Kenya, Nepal, Peru, Romania, Russia, Thailand, Ukraine and Zambia.

some progress in the anchoring of contributions, acknowledging that some form of differentiation was warranted, but had yet to discuss the issue of legal form of the agreement by the time the work of the group had ended.

Following the conclusion of the informal drafting groups, all participants reconvened as the COP. They had before them three draft provisions, one for each informal group. It was at this stage that disagreements that had been simmering in the various informal groups re-emerged, combined with new disagreements related to positions of participants that had not been able to follow the discussions in other informal groups more closely. Reaching a compromise on these aspects was already difficult given the rather diverging instructions participants had received, but this situation was compounded by the fact that participants now also had to decide on the key question on the legal form of any agreement – i.e. a treaty, a COP decision, or something else. Some participants found it challenging to grasp the implications of adopting provisions in the form of a legally binding instruments, as compared to, for instance, a COP decision. Others, however, had a clear preference for either adopting a legally binding instrument or not.

The final plenary proceeded in a somewhat chaotic fashion, with substantive positions and arguments (e.g. on differentiation between developed and developing countries) mixed with comments on the process (e.g. not having been given sufficient time to process the draft text). In a final bid to reach a compromise, some of the participants that had thus far showed most reluctance to agree were invited by the COP President to join a "huddle". However, the outcome of this huddle was immediately challenged by participants that had not been a part of it. Ultimately, the time for the exercise had run out, and the COP President had to announce that no agreement was reached.

Although the exercise did not lead to an agreement, and left some participants perhaps somewhat deflated after an intensive two days, the exercise was generally considered to be very helpful for the participants. Participants appreciated the fact that they were confronted with their own strengths and weaknesses in negotiating with others, and spoke of a newfound respect for negotiators. For one participant, the exercise was "extremely useful and interactive … I was drafting for the first time and learned a lot". Another suggested: "This was a fantastic exercise, a lot more challenging than expected, but a real eye opener to the importance of language used etc.". It was notable that throughout the exercise, the drafting or provisions allowed those participants with legal or negotiation expertise to share their experience with participants that had less experience in legal drafting.

Participants also highlighted the contribution of the exercise to the development of negotiation skills, or, as one participant put it, "the dos and don'ts of diplomacy". For one participant, the negotiation exercise "taught me the importance of knowing the procedural rules and how and when to use them in negotiation and the impor-

tance of using appropriate language when negotiating". Another suggested that "the negotiation simulation exercise was extremely insightful, as a novice to this area … it really brought out skills I didn't know I had, and I got a real understanding of the various tricks used". Related to negotiation skills, participants also appreciated that the exercise improved their skills in terms of working with people who have a different background, position, or culture, or who speak a different language.

However, participants also had suggestions for improvement. Several participants remarked that further training in negotiation skills (e.g. diplomatic skills, rules of procedure, language, body language, the art of compromise) would have been helpful in preparing for the exercise. Furthermore, some participants felt rather unequipped for engaging in a legal drafting exercise. Finally, participants suggested that involving several Simulation Coordinators with experience in negotiations would be useful in the future.

Upon reflection, there are several possible reasons for why no agreement could be reached. First of all, not all participants stuck to their instructions, and some may have stuck a bit too closely to their written instructions. For instance, some participants were approached with instructions (by the Simulation Coordinators) from their capitals to give in a little bit more, but still stuck to their more hard-line positions. For other participants – especially those already involved in intergovernmental negotiations – it was difficult to separate the participant's position from those of a particular party in the real world. In part, this was to be expected given the fact that the topics chosen for the exercise were very closely related to ongoing negotiations. The exercise took place one month before the meeting at which the Paris Agreement was adopted, and the topics in question were still heavily debated by Parties in the negotiations (with the exception of legal form; an issue that was seemingly resolved already a few months before the Paris COP[20]).

Second, a lack of time to go into every issue in detail was another reason pointed out by participants as being a barrier to reaching agreement. As the negotiations on the Paris Agreement proved, the issues under negotiation during the exercise were complex, and were and are at the heart of the development of the climate regime. For instance, in all informal groups the evolution of the bifurcated differentiated system of the UNFCCC was under discussion in the context of specific provisions. Given that something so fundamental was at stake, it was perhaps not surprising that when participants reconvened in plenary, they were eager to ensure that their positions on differentiation were consistent across the issue areas under negotiation. Although some linkages across groups were made in the process (with language in one group being dependent on the outcome in another group), it proved difficult to guarantee consistency in the limited time available to participants.

[20] Daniel Bodansky, 'The Legal Character of the Paris Agreement', 25(2) *Review of European, Comparative and International Environmental Law* (2016) 142-150.

Lastly, the absence of real-world pressure to reach agreement could explain why at least some participants in the end were unable to compromise. Participants noted that in the real world of climate negotiations the stakes would be too high for negotiations to falter. In the final plenary, this was perhaps most evident. While efforts were made – through so-called "huddles", as is becoming practice also in the real climate change negotiations – to bring participants together to compromise at the last-minute, these efforts were in vain with some participants unwilling to give in to wording they felt would go against their instructions. Creative solutions – e.g. postponing further details to later negotiations, the adoption of ambiguous language to accommodate diverging interpretations by Parties, or making concessions in one issue area as a trade-off with another issue area – could have conceivably resolved this in real negotiations, but this was not achievable during the exercise.

In conclusion, the exercise offered helpful insights into the challenges and opportunities related to adopting a new legal instrument on climate change. Although the challenges for the participants prevented them from reaching agreement, it was notable that, one month later, Parties to the UNFCCC *did* succeed in adopting the Paris Agreement, working with the same text as the participants to this exercise. Perhaps more importantly than reaching agreement, however, was that the exercise helped to build negotiation skills by strengthening the understanding of participants of the principles and practices of multilateral negotiations, and appreciation of the value and role of the rules of procedure. As indicated in the evaluations, however, future negotiation exercises can benefit from training to make participants familiar with the basics of multilateral environmental diplomacy, including the language used, the rules of procedure, etc.

Appendix I: Draft text

DRAFT AGREEMENT

[The Parties to this Agreement,

Pp1 *Being* Parties to the United Nations Framework Convention on Climate Change, hereinafter referred to as "the Convention",

Pp2 *In furtherance* of the objective of the Convention,

Pp3 *Recalling* decision 1/CP.17, whereby the Conference of the Parties to the Convention decided to adopt a protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all Parties at its twenty-first session,

Pp4 *Recognizing* the intrinsic relationship between climate change, poverty eradication and sustainable development,

Pp5 *Emphasizing* the need for universal and sustained action by all to respond to the urgent threat of climate change based on the best available scientific knowledge,

Pp6 *Taking account* of the particular vulnerabilities and specific needs of Parties, especially the least developed country (LDC) Parties,

[Additional preambular paragraphs as may be decided during the course of the negotiations; e.g., Parties may consider elements of the sixth preambular paragraph of the draft Decision for inclusion in the Agreement.]

Have agreed as follows:

Article 1 (DEFINITIONS)

For the purposes of this Agreement, all definitions contained in Article 1 of the Convention apply. In addition:

1. "Parties present and voting" means Parties present and casting an affirmative or negative vote;
2. "Party" means a Party to this Agreement;
3. "CMA" means the Conference of the Parties serving as the meeting of the Parties to this Agreement;

[Further definitions may be required at a later stage in the negotiating process.]

Article 2 (PURPOSE)

1. The purpose of this Agreement is to enhance the implementation of the objective of the Convention and strengthen and support the global response to the urgent threat of climate change by further addressing its causes and by further increasing resilience and the ability to adapt to its adverse impacts, with a view to promoting the global transformation to low-emission and climate-resilient societies and economies. It reflects common but differentiated responsibilities and respective capabilities, in light of different national circumstances.
2. Parties recognize that deep cuts in global greenhouse gas emissions are urgently required, with a view to reducing such emissions so as to hold the increase in the global average temperature [below 2 °C][below 2 or 1.5 °C] above pre-industrial levels, without prejudice to adjusting the global long-term temperature goal on the basis of the best available scientific knowledge.

Article 3 (MITIGATION)

1. Parties aim to reach by [X date] [a peaking of global greenhouse gas emissions] [zero net greenhouse gas emissions][a[n] X per cent reduction in global greenhouse gas emissions][global low-carbon transformation][global low-emission transformation][carbon neutrality][climate neutrality].
2. Each Party [shall][should][other] regularly communicate a nationally determined mitigation [contribution][commitment][other] that it [shall][should] [other] implement.
3. Each Party's nationally determined mitigation [contribution][commitment] [other] [shall][should][other] reflect a progression beyond its previous efforts, noting that those Parties that have previously communicated economy-wide efforts should continue to do so in a manner that is progressively more ambitious and that all Parties should aim to do so over time. Each mitigation [contribution][commitment][other] [shall][should][other] reflect the Party's highest possible ambition, in light of its national circumstances, and:
   (a) [Be quantified or quantifiable;]
   (b) [Be unconditional, at least in part;]
   (c) [Other].
4. Each Party, when communicating its nationally determined mitigation [contribution][commitment][other] [shall][should][other] provide the information necessary for clarity, transparency and understanding, in accordance with decision 1/CP.21 and any subsequent decisions by the CMA.
5. The rules and guidance related to accounting that are set forth in decision 1/CP.21, including with respect to land use, will apply along with any subsequent decisions by the CMA.
6. Successive nationally determined mitigation [contributions][commitments] [other] will be communicated every five years, unless decided otherwise by the CMA.
7. The secretariat shall maintain in a public registry Parties' nationally determined mitigation [contributions][commitments][other].

8. Parties, including regional economic integration organizations and their member States, may jointly communicate and/or implement their nationally determined mitigation [contributions][commitments] [other]. Parties may also cooperate in the implementation of mitigation activities.
9. Parties acknowledge the importance of economic diversification and cooperation to reduce the adverse impacts of the implementation of response measures [, including through the institutional arrangements as defined in decision 1/CP.21].
10. The CMA shall facilitate the enhancement of the clarity, transparency and understanding of the nationally determined mitigation contributions communicated by Parties.
11. Parties are invited to formulate and communicate longer-term low-emission development strategies in accordance with the modalities to be decided by the CMA at its first session.
12. Developing country Parties are eligible for support in the implementation of this Article.
13. The implementation of the provisions of this Article should reflect national circumstances.

Article 4 (ADAPTATION)

1. Parties share the goal of increasing resilience and reducing vulnerability to climate change, recognizing that adaptation is a challenge faced by all, with local, national, regional and international dimensions, and that it is a key component of and contribution to the long-term global response to climate change to protect people, livelihoods and ecosystems.
2. Parties recognize that, the greater their mitigation efforts, the less adaptation will be needed.
3. Parties acknowledge that adaptation action should follow a country-driven, gender-sensitive, participatory and fully transparent approach, taking into consideration vulnerable groups, communities and ecosystems, and should be based on and guided by the best available science and, as appropriate, traditional and indigenous knowledge, with a view to integrating adaptation into relevant social, economic and environmental policies and actions, where appropriate.
4. Parties further recognize the importance of international cooperation and support for adaptation efforts and the importance of taking into account the needs of those developing countries that are particularly vulnerable, recognizing the particular vulnerabilities of LDCs and small island developing States (SIDS).
5. Parties [shall][should][other] enhance their cooperation, including with respect to:
   (a) Sharing information, best practices, experiences and lessons learned;
   (b) Strengthening institutional arrangements to support the synthesis of relevant information and knowledge as well as the provision of technical guidance and support;
   (c) Early warning and emergency response preparedness.

6. Each Party [shall][should][other] engage in a national adaptation planning process and enhance its adaptation plans, policies and actions. Such plans, policies and actions will vary depending on each Party's national circumstances and priorities, and could include:
   (a) Undertaking assessments of climate change impacts and vulnerability;
   (b) Prioritizing action with respect to the people, places, ecosystems and sectors that are most vulnerable to climate impacts;
   (c) Strengthening governance and enabling environments for adaptation;
   (d) Monitoring, reporting, evaluating, and learning from, adaptation plans, policies, programmes and actions.
7. Each Party [shall][should][other] submit an adaptation communication that:
   (a) May include its plans, priorities and/or needs;
   (b) May be submitted independently or in conjunction with another communication;
   (c) May be updated every [X] years in accordance with a decision of the CMA.
8. The adaptation communications referred to in paragraph 7 above shall be recorded in a registry made publicly available by the secretariat in accordance with modalities to be decided by the CMA at its first session.
9. Developing country Parties are eligible for support in the implementation of this Article.
10. There shall be a high-level session on adaptation every [X] years, the modalities of which are to be decided by the CMA at its first session.
11. The Adaptation Committee and the Least Developed Countries Expert Group shall serve this Agreement.

Article 5 (LOSS AND DAMAGE)

Parties acknowledge the importance of addressing loss and damage associated with climate change impacts and recognize the need for international cooperation and solidarity[, including through the institutional arrangements as defined in [this Agreement][decision 1/CP.21]].

Article 6 (FINANCE)

1. Over time, all finance flows should promote the transformation to low-emission and climate resilient societies and economies.
2. [Developed country Parties should take the lead and][Developed country Parties and Parties in a position to do so] [shall][should][other] provide support to assist developing country Parties with respect to both mitigation and adaptation.
3. [Developed country Parties][Developed country Parties and Parties in a position to do so] [shall][should][other] periodically communicate information on the projected levels of public climate finance.

4. The Parties recognize the desirability of a wide variety of sources, public and private, bilateral and multilateral, including alternative sources, noting the need for a diversity of sources and instruments to fit recipients' changing economic circumstances.
5. The mobilization of climate finance [shall][should][other] be scaled up [from USD 100 billion per year] from 2020.
6. Parties should strive to balance adaptation support relative to mitigation support, bearing in mind country-driven strategies, priorities and needs, including in relation to forests, technology transfer and capacity-building.
7. Parties should strive to improve the predictability of finance flows.
8. Parties should strive to improve domestic enabling environments to attract low-emission, climate-resilient investment, noting that cooperative action and support may enhance such efforts.
9. The Parties [shall][should][other] take appropriate steps to:
   (a) Prioritize the provision of grant-based and concessional finance to the poorest, most vulnerable and/or those with the least ability to mobilize other resources, including for adaptation;
   (b) Integrate climate considerations, including resilience, into international development assistance;
   (c) Reduce international support for high-emission and maladaptive investments;
   (d) Explore options for simplifying procedures for accessing support, in particular for the LDCs and SIDS.
10. The Financial Mechanism established by Article 11 of the Convention, including its operating entities shall serve as the financial mechanism of this Agreement. The CMA shall decide on the operating entities' policies, programme priorities, and eligibility criteria related to this Agreement.
11. The Standing Committee on Finance established under the Convention shall serve this Agreement. Its biennial assessment of climate finance flows shall utilize, inter alia, information drawn from relevant submissions from Parties.
12. A High-Level Segment on Climate Finance shall be held biennially, as part of the sessions of the CMA, to consider the biennial assessment of the Standing Committee on Finance and make recommendations, as appropriate, to the CMA.

Article 7 (TECHNOLOGY DEVELOPMENT AND TRANSFER)

1. All Parties, noting the importance of technology to support the implementation of mitigation and adaptation efforts under this Agreement and recognizing existing deployment and dissemination efforts, [shall][should][other] strengthen cooperative action to promote and enhance technology development and transfer, improve enabling environments for and address barriers to the dissemination and uptake of technology, and foster cooperative approaches to research and development.

2. The CMA shall, at its first session, consider and adopt a technology framework in accordance with the guidelines contained in decision 1/CP.21. Such a technology framework would be intended to provide direction and overarching guidance to the work of the existing institutions in the medium and long term and to strengthen them.
3. The Technology Mechanism, including the Technology Executive Committee and the Climate Technology Centre and Network, shall serve this Agreement.
4. Developing country Parties are eligible for support in the implementation of this Article.

Article 8 (CAPACITY-BUILDING)

1. Capacity-building under this Agreement should facilitate the ability of Parties, particularly developing countries, to identify, design and implement adaptation and mitigation actions; facilitate technology development and the absorption of technology and finance; and facilitate the transparent, timely and accurate communication of information.
2. Capacity-building should be guided by lessons learned on capacity-building under the Convention and should be an effective, iterative process that is participatory, country-driven and cross-cutting. Capacity-building should respond to national needs and foster country ownership, including at the national, subnational and local levels.
3. Parties [shall][should][other] scale up cooperation to enhance the capacity of Parties in need of support to implement this Agreement, including through regional, bilateral and multilateral approaches.
4. [**Option 1:** The capacity-building institutional arrangements established under the Convention shall serve this Agreement and shall be enhanced and their work intensified, as appropriate, within their respective mandates.]
   [**Option 2:** An international capacity-building mechanism shall be established to serve this Agreement with the intention of enhancing the planning and implementation of mitigation and adaptation actions, including by improving coordination and coherence in the provision of capacity-building and by identifying gaps and needs.]

Article 9 (TRANSPARENCY)

1. Building on the Convention arrangements and with a view to promoting confidence and effective implementation, a [unified][robust] transparency system covering both action and support, applicable to all Parties in a flexible manner and taking into account their differing capacities, is hereby established.
2. The purpose of the system for transparency of action is to:
   (a) Provide the clearest possible understanding of the emissions of individual Parties and of global aggregate emissions in the light of the global temperature goal;

(b) Ensure clarity and tracking of progress made in implementing and achieving individual Parties' respective nationally determined mitigation [contributions][commitments][other] under Article 3, as well as tracking progress in implementing adaptation actions under Article 4.

3. The purpose of the system for transparency of support is to:
   (a) Enhance the tracking of support provided and received;
   (b) Provide, to the extent possible, a full overview of support provided and received.
4. Each Party [shall][should][other] regularly provide complete and accurate information in relation to:
   (a) Its national inventory of anthropogenic emissions by sources and removals by sinks of greenhouse gases, using comparable methodologies to be agreed on by the CMA;
   (b) Progress made in implementing and achieving its nationally determined mitigation [contribution][commitment][other];
   (c) Information on vulnerability to climate change impacts and actions taken to build resilience and reduce vulnerability;
   (d) Support provided, efforts to improve domestic enabling environments, and support received, including the use, impact and estimated results thereof.
5. *[Further discussion is needed on: the relationship between the system and existing arrangements; the nature of flexibility, including whether there should be a "transition" period; the potential role of 'nationally determined'; and the potential role of technical expert review/facilitative examination.]*
6. The CMA shall at its first session, building on lessons learned and elaborating on the provisions above, adopt modalities, procedures and guidelines, as appropriate, for promoting environmental integrity. It shall take into account, inter alia:
   (a) The need for flexibility in the light of capability;
   (b) The importance of facilitating improved reporting and transparency over time;
   (c) The need to avoid undue burden and duplication;
   (d) The facilitative, non-intrusive nature of review.
7. The CMA shall cooperate with the Conference of the Parties to avoid overlap and duplication.
8. Developing country Parties shall be eligible for support to assist in the implementation of this Article.
9. The CMA shall periodically review its decisions and update them, as appropriate.

Article 10 (GLOBAL STOCKTAKE)

1. The CMA shall take stock of the implementation of this Agreement to assess aggregate progress towards achieving the objective of the Convention in a comprehensive and facilitative manner. The stocktaking shall consider the aggregate effect of the efforts by Parties, as well as assessments of the best available science, with a view to enhancing the implementation of the Agreement.
2. The CMA shall undertake its first stocktaking in [2023][2024] on the basis of the modalities to be adopted by the CMA at its first session, and shall conduct stocktakings thereafter at regular intervals to be decided by the CMA.

Article 11 (FACILITATING IMPLEMENTATION AND COMPLIANCE)

1. A [process][mechanism] is hereby established to facilitate implementation of [and promote compliance with] the provisions of this Agreement. The [process][mechanism] shall be facilitative, non-punitive, non-adversarial and non-judicial.
2. The [process][mechanism] shall be under the authority of the CMA. The [body referred to in paragraph 3 of this Article] shall consider matters relating to the implementation of [and compliance with] the provisions of this Agreement and shall report annually to the CMA.
3. Pursuant to this Article [and decision 1/.CP.21], the CMA shall, at its first session, adopt additional modalities and procedures for the [process][mechanism] referred to in paragraph 1 of this Article. Those modalities and procedures shall, inter alia, define the functions of the [process][mechanism], [establish the body that will carry out those functions,] and set out the measures to facilitate implementation [and promote compliance].

Article 12 (CMA)

1. The Conference of the Parties, the supreme body of the Convention, shall serve as the meeting of the Parties to this Agreement.
2. Parties to the Convention that are not Parties to this Agreement may participate as observers in the proceedings of any session of the Conference of the Parties serving as the meeting of the Parties to this Agreement. When the Conference of the Parties serves as the meeting of the Parties to this Agreement, decisions under this Agreement shall be taken only by those that are Parties to this Agreement.
3. When the Conference of the Parties serves as the meeting of the Parties to this Agreement, any member of the Bureau of the Conference of the Parties representing a Party to the Convention but, at that time, not a Party to this Agreement, shall be replaced by an additional member to be elected by and from among Parties to this Agreement.
4. The CMA shall keep under regular review the implementation of this Agreement and shall make within its mandate the decisions necessary to promote its effective implementation. It shall perform the functions assigned to it by this Agreement and shall:

(a) Establish such subsidiary bodies as deemed necessary for the implementation of this Agreement;
(b) Adopt its own rules of procedure at its first session;
(c) Exercise such other functions as may be required for the implementation of this Agreement.

5. The financial procedures applied under the Convention shall be applied mutatis mutandis under this Agreement, except as may be otherwise decided by consensus by the CMA.
6. The first session of the CMA shall be convened by the secretariat in conjunction with the first session of the Conference of the Parties that is scheduled after the date of entry into force of this Agreement. Subsequent ordinary sessions of the CMA shall be held in conjunction with ordinary sessions of the COP, unless otherwise decided by the CMA.
7. Extraordinary sessions of the CMA shall be held at such other times as may be deemed necessary by the CMA or at the written request of any Party, provided that, within six months of the request being communicated to the Parties by the secretariat, it is supported by at least one third of the Parties.
8. 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, may be represented at sessions of the CMA as observers. Any body or agency, whether national or international, governmental or non-governmental, which is qualified in matters covered by this Agreement and which has informed the secretariat of its wish to be represented at a session of the CMA as an observer, may be so admitted unless at least one third of the Parties present object. The admission and participation of observers shall be subject to the rules of procedure referred to in paragraph 4(b) of this Article.

Article 13 (SECRETARIAT)

1. The secretariat established by Article 8 of the Convention shall serve as the secretariat of this Agreement.
2. Article 8, paragraph 2, of the Convention on the functions of the secretariat, and Article 8, paragraph 3, of the Convention on arrangements made for the functioning of the secretariat shall apply mutatis mutandis to this Agreement. The secretariat shall, in addition, exercise the functions assigned to it under this Agreement and by the CMA.

Article 14 (SBSTA AND SBI)

1. The Subsidiary Body for Scientific and Technological Advice and the Subsidiary Body for Implementation (SBI) established by Articles 9 and 10 of the Convention shall serve, respectively, as the Subsidiary Body for Scientific and Technological Advice and the Subsidiary Body for Implementation of this Agreement. The provisions of the Convention relating to the functioning of these two bodies shall apply mutatis mutandis to this Agreement. Sessions of the meetings of the Subsidiary Body for Scientific and Technological Advice

and the Subsidiary Body for Implementation of this Agreement shall be held in conjunction with the meetings of, respectively, the Subsidiary Body for Scientific and Technological Advice and the Subsidiary Body for Implementation of the Convention.

2. Parties to the Convention that are not Parties to this Agreement may participate as observers in the proceedings of any session of the subsidiary bodies. When the subsidiary bodies serve as the subsidiary bodies of this Agreement, decisions under this Agreement shall be taken only by those that are Parties to this Agreement.

3. When the subsidiary bodies established by Articles 9 and 10 of the Convention exercise their functions with regard to matters concerning this Agreement, any member of the bureaux of those subsidiary bodies representing a Party to the Convention but, at that time, not a Party to this Agreement, shall be replaced by an additional member to be elected by and from among the Parties to this Agreement.

Article 15 (BODIES AND INSTITUTIONAL ARRANGEMENTS TO SERVE AGREEMENT)

1. Subsidiary bodies or other institutional arrangements established by or under the Convention, in addition to those subsidiary bodies and institutional arrangements explicitly referred to in this Agreement, may serve this Agreement upon a decision of the CMA. Such decision shall specify the functions to be exercised by such bodies or arrangements.

2. The CMA may provide further guidance to those subsidiary bodies and institutional arrangements.

Article 16 (SIGNATURE AND INSTRUMENTS OF RATIFICATION, ACCEPTANCE, APPROVAL OR ACCESSSION)

1. This Agreement shall be open for signature and subject to ratification, acceptance or approval by States and regional economic integration organizations that are Parties to the Convention. It shall be open for signature at the United Nations Headquarters in New York, the United States of America, from [21 March 2016] to [20 March 2017]. Thereafter, the Agreement shall be open for accession from the day following the date on which it is closed for signature. Instruments of ratification, acceptance, approval or accession shall be deposited with the Depositary;

2. Any regional economic integration organization that becomes a Party to this Agreement without any of its member States being a Party shall be bound by all the obligations under this Agreement. In the case of regional economic integration organizations with one or more member States that are Parties to this Agreement, the organization and its member States shall decide on their respective responsibilities for the performance of their obligations under this Agreement. In such cases, the organization and the member States shall not be entitled to exercise rights under this Agreement concurrently.

3. In their instruments of ratification, acceptance, approval or accession, regional economic integration organizations shall declare the extent of their competence with respect to the matters governed by this Agreement. These organizations shall also inform the Depositary, who shall in turn inform the Parties, of any substantial modification in the extent of their competence.

Article 17 (FURTHER REQUIREMENTS AND DECISION-MAKING RIGHTS)

[Further discussion needed on whether there should be preconditions to join the Agreement and to exercise decision-making rights.]

Article 18 (ENTRY INTO FORCE)

1. This Agreement shall enter into force on the thirtieth day after the date on which at least [X] number of Parties to the Convention have deposited their instruments of ratification, acceptance, approval or accession[.][, with such Parties to the Convention accounting for X per cent of total global greenhouse gas emissions in [1990][2000][2010].]
2. [For the purposes of paragraph 1 of this Article, "total global greenhouse gas emissions" means the total global greenhouse gas emissions as estimated by the Intergovernmental Panel on Climate Change in its Fifth Assessment Report.]
3. For each State or regional economic integration organization that ratifies, accepts or approves this Agreement or accedes thereto after its entry into force in accordance with paragraph 1 of this Article, this Agreement shall enter into force on the thirtieth day after the date of deposit by such State or regional economic integration organization of its instrument of ratification, acceptance, approval or accession.
4. For the purposes of paragraph 1 of this Article, any instrument deposited by a regional economic integration organization shall not be counted as additional to those deposited by its member States.

Article 19 (AMENDMENTS)

The provisions of Article 15 of the Convention on the adoption of amendments to the Convention shall apply mutatis mutandis to this Agreement.

Article 20 (ANNEXES)

1. Annexes to this Agreement shall form an integral part thereof and, unless otherwise expressly provided for, a reference to this Agreement constitutes at the same time a reference to any annexes thereto. Such annexes shall be restricted to lists, forms and any other material of a descriptive nature that is of a scientific, technical, procedural or administrative character.
2. The provisions of Article 16 of the Convention on the adoption and amendment of annexes to the Convention shall apply mutatis mutandis to this Agreement.

Article 21 (SETTLEMENT OF DISPUTES)

The provisions of Article 14 of the Convention on settlement of disputes shall apply mutatis mutandis to this Agreement.

Article 22 (VOTING)

1. Each Party shall have one vote, except as provided in paragraph 2 of this Article.
2. Regional economic integration organizations, in matters within their competence, shall exercise their right to vote with a number of votes equal to the number of their member States that are Parties to this Agreement. Such an organization shall not exercise its right to vote if any of its member States exercises its right, and vice versa.

Article 23 (DEPOSITARY)

The Secretary-General of the United Nations shall be the Depositary of this Agreement.

Article 24 (RESERVATIONS)

No reservations may be made to this Agreement.

Article 25 (WITHDRAWAL)

1. At any time after three years from the date on which this Agreement has entered into force for a Party, that Party may withdraw from this Agreement by giving written notification to the Depositary.
2. Any such withdrawal shall take effect upon expiry of one year from the date of receipt by the Depositary of the notification of withdrawal, or on such later date as may be specified in the notification of withdrawal.
3. Any Party that withdraws from the Convention shall be considered as also having withdrawn from this Agreement.

Article 26 (LANGUAGES)

The original of this Agreement, of which the Arabic, Chinese, English, French, Russian and Spanish texts are equally authentic, shall be deposited with the Secretary-General of the United Nations.]

Appendix II

Draft Rules of Procedure of the Conference of the Parties and its Subsidiary Bodies

VIII. OFFICERS

Rule 22

1. At the commencement of the first meeting of each ordinary session, a President, seven Vice-Presidents, the Chairmen of the subsidiary bodies established by Articles 9 and 10 of the Convention, and a Rapporteur shall be elected from among the representatives of the Parties present at the session. They will serve as the Bureau of the session. Each of the five regional groups shall be represented by two Bureau members and one Bureau member shall represent the small island developing states. The offices of President and Rapporteur shall normally be subject to rotation among the five regional groups.
2. The officers referred to in paragraph 1 above, shall remain in office until their successors are elected at the next ordinary session and shall serve in that capacity at any intervening extraordinary sessions. No officer may serve on the Bureau for more than two consecutive terms of one year.
3. The President shall participate in the session in that capacity and shall not at the same time exercise the rights of a representative of a Party. The Party concerned shall designate another representative who shall be entitled to represent the Party in the session and to exercise the right to vote.

Rule 23

1. In addition to exercising the powers conferred upon the President elsewhere by these rules, the President shall declare the opening and closing of the session, preside at the meetings of the session, ensure the observance of these rules, accord the right to speak, put questions to the vote and announce decisions. The President shall rule on points of order and, subject to these rules, shall have complete control of the proceedings and over the maintenance of order thereat.
2. The President may propose to the Conference of the Parties the closure of the list of speakers, a limitation on the time to be allowed to speakers and on the number of times each representative may speak on a question, the adjournment or the closure of the debate and the suspension or the adjournment of a meeting.
3. The President, in the exercise of the functions of that office, remains under the authority of the Conference of the Parties.

Rule 24

The President, if temporarily absent from a meeting or any part thereof, shall designate a Vice-President to act as President. The President so designated shall not at the same time exercise the rights of a representative of a Party.

IX. SUBSIDIARY BODIES

Rule 27

1. These rules shall apply mutatis mutandis to the proceedings of the subsidiary bodies.
2. The Conference of the Parties may establish, in accordance with Article 7.2(i), such subsidiary bodies as are deemed necessary for the implementation of the Convention.
3. In the case of a subsidiary body that is not open-ended, a majority of the Parties designated by the Conference of the Parties to participate therein shall constitute a quorum.
4. The Conference of the Parties shall decide on the dates of the sessions of the subsidiary bodies, taking note of the desirability of holding such sessions in conjunction with the sessions of the Conference of the Parties.
5. Unless the Conference of the Parties decides otherwise, the Chairman of any subsidiary body other than those established by Articles 9 and 10 of the Convention, shall be elected by that subsidiary body from among the representatives of the Parties present at the session. The Chairmen, Vice-Chairmen and Rapporteurs of such subsidiary bodies shall be elected with due regard to the principle of equitable geographical representation and shall not serve for more than two consecutive terms of one year.
6. Each subsidiary body shall elect its own Vice-Chairman and Rapporteur.

X. SECRETARIAT

Rule 28

1. The head of the secretariat of the Convention, or the representative of the head of the secretariat, shall act in that capacity in all sessions of the Conference of the Parties and of its subsidiary bodies.
2. The head of the secretariat of the Convention shall arrange for the provision of staff and services required by the Conference of the Parties and its subsidiary bodies, within available resources. The head of the secretariat of the Convention shall manage and direct such staff and services and provide appropriate support and advice to the presiding and other officers of the Conference of the Parties and of its subsidiary bodies.

Rule 29

In addition to the functions specified in Article 8 of the Convention, the secretariat shall in accordance with these rules:

(a) Arrange for interpretation at the session;

(b) Receive, translate, reproduce and distribute the documents of the session;

(c) Publish and distribute the official documents of the session;

(d) Make and arrange for keeping of sound recordings of the session;

(e) Arrange for the custody and preservation of the documents of the session; and

(f) Perform all other work that the Conference of the Parties may require.

XI. CONDUCT OF BUSINESS

Rule 32

1. No one may speak at a meeting of the Conference of the Parties without having previously obtained the permission of the President. Subject to Rules 33, 34, 35 and 38, the President shall call upon speakers in the order in which they signify their desire to speak.

The secretariat shall maintain a list of speakers. The President may call a speaker to order if his remarks are not relevant to the subject under discussion.

2. The Conference of the Parties may, on a proposal from the President or from any Party, limit the time allowed to each speaker and the number of times each representative may speak on a question. Before a decision is taken, two representatives may speak in favour of and two against a proposal to set such limits. When the debate is limited and a speaker exceeds the allotted time, the President shall call the speaker to order without delay.

Rule 33

The Chairman or Rapporteur of a subsidiary body may be accorded precedence for the purpose of explaining the conclusions arrived at by that subsidiary body.

Rule 34

During the discussion of any matter, a representative may at any time raise a point of order which shall be decided immediately by the President in accordance with these rules.

A representative may appeal against the ruling of the President. The appeal shall be put to the vote immediately and the ruling shall stand unless overruled by a majority of the Parties present and voting. A representative may not, in raising a point of order, speak on the substance of the matter under discussion.

Rule 35

Any motion calling for a decision on the competence of the Conference of the Parties to discuss any matter or to adopt a proposal or an amendment to a proposal submitted to it shall be put to the vote before the matter is discussed or a vote taken on the proposal or amendment in question.

Rule 36

Proposals and amendments to proposals shall normally be introduced in writing by the Parties and handed to the secretariat, which shall circulate copies to delegations. As a general rule, no proposal shall be discussed or put to the vote at any meeting unless copies of it have been circulated to delegations not later than the day preceding the meeting. The President may, however, permit the discussion and consideration of amendments to proposals or of procedural motions even though these amendments or motions have not been circulated or have been circulated only the same day.

Rule 38

1. Subject to Rule 34, the following motions shall have precedence in the order indicated below over all other proposals or motions:
(a) To suspend the meeting;
(b) To adjourn the meeting;
(c) To adjourn the debate on the question under discussion;
(d) To close the debate on the question under discussion.
2. Permission to speak on a motion falling within (a) to (d) above shall be granted only to the proposer and, in addition, to one speaker in favour of and two against the motion, after which it shall be put immediately to the vote.

Rule 39

A proposal or motion may be withdrawn by its proposer at any time before voting on it has begun, provided that the proposal or motion has not been amended. A proposal or motion withdrawn may be reintroduced by any other Party.

Rule 40

When a proposal has been adopted or rejected, it may not be reconsidered at the same session, unless the Conference of the Parties, by a two-thirds majority of the Parties present and voting, decides in favour of reconsideration. Permission to speak on a motion to reconsider shall be accorded only to the mover and one other supporter, after which it shall be put immediately to the vote.

XII. VOTING

Rule 41

1. Each Party shall have one vote, except as provided for in paragraph 2 of this rule.
2. Regional economic integration organizations, in matters within their competence, shall exercise their right to vote with a number of votes equal to the number of their member States that are Parties to the Convention. Such an organization shall not exercise its right to vote if any of its member States exercises its right, and vice versa.

Rule 42

[1. Alternative A
The Parties shall make every effort to reach agreement on all matters of substance by consensus. If all efforts to reach consensus have been exhausted and no agreement has been reached, the decision shall, as a last resort, be taken by a two-thirds majority vote of the Parties present and voting, except:
(a) as otherwise provided by the Convention, the financial rules referred to in Article 7, paragraph 2 (k) of the Convention or the present rules of procedure[.] [;]
[(b) for a decision to adopt a proposed protocol, which shall be taken by [consensus] [a three-fourths majority of the Parties present and voting][.] [;]
[(c) for decisions under paragraph 3 of Article 4 and paragraphs 1, 3 or 4 of Article 11 of the Convention, which shall be taken by consensus.]

1. Alternative B
Decisions on matters of substance shall be taken by consensus, except that decisions on financial matters shall be taken by a two-thirds majority vote.
2. Decisions of the Conference of the Parties on matters of procedure shall be taken by a majority vote of the Parties present and voting [, except that adoption of a motion or proposal to close or limit debate or the list of speakers shall require a two-thirds majority vote of the Parties present and voting].
3. If the question arises as to whether a matter is one of a procedural or substantive nature, the President shall rule on the question. An appeal against this ruling shall be put to the vote immediately and the President's ruling shall stand unless overruled by a majority of the Parties present and voting.
4. If, on matters other than elections, a vote is equally divided, a second vote shall be taken. If this vote is also equally divided, the proposal shall be regarded as rejected.
5. For the purposes of this rule, the phrase "Parties present and voting" means Parties present at the meeting at which voting takes place and casting an affirmative or negative vote. Parties abstaining from voting shall be considered as not voting.]

Rule 43

If two or more proposals relate to the same question, the Conference of the Parties, unless it decides otherwise, shall vote on the proposals in the order in which they have been submitted. The Conference of the Parties may, after each vote on a proposal, decide whether to vote on the next proposal.

Rule 44

Any representative may request that any part of a proposal or of an amendment to a proposal be voted on separately. The President shall allow the request unless a Party objects. If an objection is made to the request for division, the President shall permit two representatives to speak, one in favour of and the other against the request, after which it shall be put immediately to the vote.

Rule 45

If the request referred to in Rule 44 is allowed or adopted, those parts of a proposal or of an amendment to a proposal which are approved shall then be put to the vote as a whole.

If all the operative parts of a proposal or amendment have been rejected, the proposal or amendment shall be considered to have been rejected as a whole.

Rule 46

A motion is considered to be an amendment to a proposal if it merely adds to, deletes from, or revises parts of that proposal. An amendment shall be voted on before the proposal to which it relates is put to the vote, and if the amendment is adopted, the amended proposal shall then be voted on.

Rule 47

If two or more amendments are moved to a proposal, the Conference of the Parties shall first vote on the amendment furthest removed in substance from the original proposal, then on the amendment next furthest removed therefrom, and so on, until all amendments have been put to the vote. The President shall determine the order of voting on the amendments under this rule.

Rule 48

Voting, except for elections, shall normally be by show of hands. A roll-call vote shall be taken if one is requested by any Party. It shall be taken in the English alphabetical order of the names of the Parties participating in the session, beginning with the Party whose name is drawn by lot by the President. However, if at any time a Party requests a secret ballot, that shall be the method of voting on the issue in question.

The articles in the present Review are based on lectures given during the twelfth University of Eastern Finland – UNEP Course on Multilateral Environmental Agreements, which was held from 2 to 12 November 2015 in Shanghai, China. 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 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.

University of Eastern Finland
Joensuu Campus
Department of Law
P.O. Box 111
FI-80101 Joensuu
Finland
E-mail: mea-course@uef.fi
http://www.uef.fi/unep

United Nations Environment Programme (UNEP)
Law Division
P.O. Box 305521
Nairobi
Kenya
E-mail: delc@unep.org
http://www.unep.org/delc/

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