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International Environmental Law-making and Diplomacy Review 2019

Tuula Honkonen and Seita Romppanen (editors)

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Foreword

The compilation of papers in the present volume of the *Review* is based on lectures presented during the sixteenth University of Eastern Finland – United Nations Environment Programme Course on Multilateral Environmental Agreements (MEAs), held from 14 to 24 October 2019 in Siena, Italy.

The publication is aimed at equipping present and future negotiators of MEAs with information in the area of international environmental law-making, including the experience of others, 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 sixteen years, the University of Eastern Finland has partnered with UNEP 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* (2004–2018), for the benefit of both Course participants and a wider audience, who are able to access these publications online.

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 2019 course was 'Emerging issues in international environmental law', 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 emerging issues in international environmental law and law-making. Under this theme, a broad range of topics related to the emerging issues were addressed during the MEA Course, such as the work done under the United Nations Environment Assembly, General Assembly resolution 72/277 entitled 'Towards a Global Pact for the Environment', whose ad hoc open-ended working group's recommendations were endorsed through General Assembly Resolution 73/333, emerging technologies and law, gaps within the current systems and Marine Biodiversity Areas Beyond National Jurisdiction. This compilation of papers informs the readers of this *Review* of the different emerging issues in the international environmental sphere and of the policy choices that can enhance bilateral and multilateral cooperation in addressing these issues.

The 16th MEA Course provided a unique opportunity for the participants to learn about emerging issues in international environmental law and law-making and to apply their enhanced knowledge and acquired skills in practice through several international environmental negotiation and drafting exercises. This *Review* presents to a wider audience a valuable collection of lessons and insights drawn from the Course.

UNEP is grateful to all the contributors for the successful outcome of the sixteenth Course. We would also like to thank Tuula Honkonen and Seita Romppanen for their skilful and dedicated editing of the *Review*, as well as the Editorial Board for providing guidance and oversight throughout this process.

Arnold Kreilhuber
Acting Director,
Law Division
United Nations Environment Programme

Editorial preface

1.1 General introduction

The lectures presented on the sixteenth annual University of Eastern Finland – UN Environment Course on Multilateral Environmental Agreements (MEAs), from which the papers in the present Review originate, were delivered by experienced MEA professionals, members of government and senior academics. 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 *Review* publication. The papers in this *Review* and the different approaches taken by the authors therefore reflect the professional backgrounds and experiences of the lecturers, resource persons and participants (some of whom are already experienced diplomats). The papers in the *Reviews* of different years, 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, students, teachers and different stakeholders who work with international environmental law-making and diplomacy. The *Review* encompasses different approaches in this field, including international environmental law and governance, international environmental law-making, environmental empowerment, and the enhancement of sustainable development generally. The special themes of the *Reviews* bring naturally their own approaches and special questions into the publication.

The first and second Courses were hosted by the University of Eastern Finland (UEF), 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 regularly 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 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, with the recurring special theme 'Climate Change'. The thirteenth Course was again hosted by the UEF in Joensuu, with the special theme 'Effectiveness of Multilateral Environmental Agreements'. The fourteenth Course was held at the Château des Comtes de Challes, Chambéry, France and at the International Environment House, Geneva, Switzerland. The special theme of the Course was 'Trade and Environment'. The fifteenth Course was hosted by the UEF in Joensuu. The special theme of the Course was 'Environment and Human Rights'. The most recent, sixteenth, Course was held in Italy, hosted by the University of Siena. The special theme of the Course was 'Emerging Issues in international Environmental Law' – 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 that it can make, and hopefully is making, to knowledge, learning and understanding in the field of international environmental negotiation and diplomacy. Over the years, the academic perspective of international environmental law and policy has gained a more prominent role in the *Review*. 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.

Many of the papers contained in the *Review* are 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 conclusions. In addition, the *Review* welcomes papers from the Course participants; one such paper is included in the present volume. Finally, from the present volume on, the *Review* has had an open call for papers, thus welcoming contributions, subject to editorial review and acceptance, from people not directly involved with the Course but active in the field of international environmental law, law-making and diplomacy.

Before publication in the *Review*, all papers undergo a rigorous editorial process. Each paper is read and commented on several times by both editors, is returned to the authors for rewriting and the addressing of queries. As is alluded to above, the papers published in the *Review* vary in nature. Some are based on rigorous academic

research (going through a strict peer-review process[1] before publication); others are review-type of papers or have a more practical focus, presenting valuable reflections from those involved in the real-world functioning of international environmental law and law-making; and still others are based on a combination of approaches.

1.2 Emerging issues in international environmental law

There are currently some 500 MEAs in existence.[2] In addition, a much larger number of non-legally binding (soft law) instruments are applicable in the international environmental field. They cover a wide variety of issues and recognized environmental threats and problems. However, with ever progressing social and economic development and increasing scientific understanding on environmental elements and processes, new areas of environmental concern emerge, and new threats and risks are recognized.

According to the precautionary principle of environmental law, when there is potential for serious and/or irreversible damage, a lack of absolute full scientific certainty shall not postpone cost-effective measures to prevent continued environmental degradation. However, the international community is typically awakened to a new environmental problem only 'after the fact', after the effects are visible and 100 per cent preventive measures are late to be taken. Environmental problems require timely action, but it is notoriously well-known that international environmental policy-making takes time. Therefore, linking science with policy is important in international environmental law. Emerging issues have then a better chance of penetrating to the attention of policy-makers in time for effective action to be taken.

The UN Environment Programme has defined an emerging environmental issue as 'an environmental or environmental-related issue that is not yet generally recognized but could have major impact on human wellbeing and the environment' and as an 'issue that is recognized as very important by the scientific community, but [is] not yet receiving adequate attention from the policy community'.[3]

How to proceed with recognized emerging issues of international environmental law, then? There are various routes and actions that can be taken. Enhancing the

[1] 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.

[2] Roland B. Mitchell, 'International Environmental Agreement Database Project' (2017), available at <https://iea.uoregon.edu/sites/iea1.uoregon.edu/files/MEAs-1857-2016.jpg> (visited 13 August 2020).

[3] UNEP, 'GEO6: Emerging issues', available at <https://sustainabledevelopment.un.org/content/documents/21112unep.pdf> (visited 13 August 2020).

scientific knowledge on them is naturally key. From the policy perspective, there must be broad enough agreement that an emerging issue needs a global regulatory response. When such has been reached, a decision needs to be taken on how and under which forum the issue will be addressed. Does it easily fall under an existing MEA that could adopt the new issue under its scope? Could the issue be first addressed in a non-legally binding instrument (for instance, emerging chemicals-related issues under the Strategic Approach to International Chemicals Management (SAICM)[4])? Would the United Nations Environmental Assembly (UNEA)[5] be an appropriate forum to tackle the issue, at least in the beginning? Should negotiations for a completely new MEA on the issue be launched? The Minamata Convention on Mercury[6] is the most recent example of a completed MEA on an emerging issue on which a new MEA was negotiated.

SAICM is a good example of an innovative approach to identifying and tackling emerging policy issues in the area of international chemicals management. The decision-making body of the framework, the International Conference on Chemicals Management (ICCM)[7] has so far adopted Resolutions on six 'emerging policy issues' and on two 'issues of concern' under the scope of SAICM. The Resolutions adopted recognize the policy imperatives to address identified concerns, agree on the actions needed and request specific stakeholders to consider undertaking certain actions. SAICM also has an open and transparent policy process for nominations of emerging issues.[8]

More generally, UNEA is currently the forum where emerging issues of international environmental law are globally discussed, and initiatives made for new policy processes to address them at the international level. The latest UNEA session, held in 2019, specifically addressed issues related to sustainable consumption and production. In this field, emerging international environmental issues under discussion included, for instance, marine plastic litter and microplastics, single-use plastic products pollution, and protection of the marine environment from land-based activities.

Emerging issues challenge the traditional understanding and existing framework of international environmental law. The urgencies highlighted in the form of emerging issues require international environmental law to develop its approaches and

4 See <http://www.saicm.org/>.
5 See <https://environmentassembly.unenvironment.org/>.
6 Minamata Convention on Mercury, Geneva, 19 January 2013, in force 16 August 2017, <http://www.mercuryconvention.org/>.
7 See <http://www.saicm.org/About/ICCM/tabid/5521/language/en-US/Default.aspx> (visited 13 August 2020).
8 See SAICM, 'SAICM Emerging Policy Issues and Other Issues of Concern', available at <http://www.saicm.org/Implementation/EmergingPolicyIssue/tabid/5524/language/en-US/Default.aspx> (visited 13 August 2020).

governance mechanisms. These developments require concerted action and a strong science – policy interface to succeed.

1.3 The papers in the 2019 *Review*

The present Review is divided into two Parts. Part I introduces selected perspectives on the theme of emerging issues of international environmental law. In the opening paper of Part I, James R. May (a lecturer on the 2018 MEA Course) and Erin Daly examine the connection between human dignity and Sustainable Development Goals (SDGs).[9] By human dignity, the authors understand the inherent humanness of each person, that every human being has equal worth. May and Daly argue that the SDGs should be understood as having as their purpose to advance human dignity. The paper examines the concept of dignity, what it means for law and environmental protection, and how taking it seriously could contribute to better outcomes guided by the SDGs. The authors conclude that the SDGs provide a useful framework for addressing global environmental challenges and do so by respecting and for the purpose of advancing human dignity. Human dignity cannot be achieved without sustainable practices, and vice versa.

In the second paper of Part I, Franz Xaver Perrez analyzes the role of UNEA in identifying and addressing emerging issues in international environmental law. Two case studies, focusing on mercury and geoengineering as emerging environmental issues, illustrate UNEA's role in this respect. In case of mercury, UNEP's governing body contributed to the formulation of international environmental law in several ways, culminating in the negotiation and adoption of the Minamata Convention on Mercury. In case of geoengineering, UNEA was not able to start a process for examining the relevant international governance needs. Perrez concludes that UNEA has all the ingredients needed to be an institution that provides for a well-informed and well-organized process for addressing emerging issues in international environmental law.

The third paper of the *Review* is written jointly by Salla Rantala, Gabriela Iacobuta, Stefania Minestrini and Julika Tribukait – all participants of the 2019 MEA Course. The paper continues the theme of the previous paper by examining the SDGs and the gaps and opportunities for synergies in climate action and halting biodiversity loss that international environmental law currently contains. The starting point for the paper is the fact that biodiversity, climate change and human well-being are inherently connected. The authors focus on the interactions between climate action (SDG13) and halting (terrestrial) biodiversity loss (SDG15) vis-à-vis the international legal framework. The paper examines the drivers behind biodiversity loss and climate change; the ways the current international legal framework addresses the

[9] 'Transforming Our World: The 2030 Agenda for Sustainable Development', UNGA Res. 70/1 of 25 September 2015.

common drivers; and the potential trade-offs and synergetic aspects in the relevant instruments. Finally, the paper studies the interactions between SDGs 13 and 15 addressed in the outcome documents of UNEA. It is concluded that international fora such as UNEA could play an important role in addressing the identified gaps and helping to harness synergies by building the necessary discussion and international consensus towards more legally binding instruments, with the ultimate aim of reducing the fragmentation of international environmental law.

In the final paper of Part I of the *Review*, Devika Kumar takes an Earth system approach to the Global Pact for the Environment.[10] The paper starts with an analysis of the challenges posed by the Anthropocene epoch to the scientific, legal and political communities; then proceeds to discuss Earth system complexities on sovereignty and international environmental law, with a special reference to 'ecological integrity' and 'public trusteeship'. Finally, the paper argues for the need to have a Global Pact for the Environment that adopts an Earth systems approach. For the Pact to achieve its goal of providing for Earth governance – the paper asserts and concludes that there is a need to see nation-states as stewards of the Earth, wherein states acting as trustees of the common good can potentially have important legal implications to stay within the scientifically defined planetary boundaries.

Part II of the Review reflects the interactive nature of the Course – and the fact that education and dissemination of knowledge are at the core of the Course and an important element of the *Review*. During the Course, negotiation simulation exercises were organized to introduce participants to the real-life challenges facing negotiators of MEAs. Excerpts from, explanation of, and consideration of the pedagogical value of, the main exercise are included in a paper in Part II of the *Review*. This paper describes a negotiation exercise that, based on experiences from exercises run in previous years of the Course, was devised and/or run by Tuula Honkonen, Kati Kulovesi, Elisa Morgera, Maria Eugenia Recio and Harro van Asselt. The scenario for the negotiation simulation focused on marine biodiversity of areas beyond national jurisdiction.

The exercise was set at the 4th session of the Intergovernmental Conference (IGC-4) on an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction. Negotiations took place within three drafting groups established to negotiate on three themes: benefit-sharing; environmental impact assessment; and the scientific and technical body or network and the clearing-house mechanism. Participants were given individual instructions and a hypothetical, country-specific negotiating mandate and were guided by international environmental negotiators. The general objectives of the simulation exercise were to promote among participants, through simulation experience:

[10] See <https://globalpactenvironment.org/en/>.

- understanding of the challenges and opportunities related to negotiating more specific infrastructure in a new MEA;
- understanding of the principles and practices of multilateral environmental negotiations, and appreciation of the value and role of the rules of procedure; and
- familiarity with specific substantive and drafting issues.

It could be said that 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. The inclusion of the simulation exercises has been a feature of every *Review* published to date, and the editors and Course organizers believe that the collection of these exercises has significant 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.

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 2019), all of which are easily accessible online through a website provided by the University of Eastern Finland,[11] to gain a broad understanding of international environmental law-making and diplomacy.

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

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Part I

Perspectives on Emerging Issues in International Environmental Law

The Role of Human Dignity in Achieving the UN Sustainable Development Goals

James R. May[1] *and Erin Daly*[2]

1 Introduction

'Sustainability' – the idea that those living have a responsibility to leave for future generations an environment at least as livable as presently enjoyed – has witnessed dispersive distribution, including applications to energy policy,[3] constitutionalism,[4] and the concept of 'sustainable development'.[5] The latter has become a common if not ubiquitous feature in legal expressions at the international, national and

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The authors thank John Dernbach for helpful comments to a draft of this paper.

[3] See, generally, John C. Dernbach and James R. May, *Shale Gas and the Future of Energy: Law and Policy for Sustainability* (Edward Elgar, 2016); James R. May and John C. Dernbach, 'Introduction: Shale Gas and the Future of Energy' in *ibid*. at 1-16; John C. Dernbach and James R. May, 'Shale Gas and Sustainable Future' in *ibid*. at 293-308; James R. May and Erin Daly, 'Ten Good Practices in Environmental Constitutionalism That Can Contribute to Sustainable Shale Gas Development,' in Jordi Jaria i Manzano, Nathalie Chalfour and Louis J. Kotzé (eds), *Energy, Governance and Sustainability* (Edward Elgar, 2016) at 30-55; John C. Dernbach and James R. May, 'Can Shale Gas Help Accelerate the Transition to Sustainability?', 57(1) *Environment: Science and Policy for Sustainable Development* (2015) 4-15.

[4] James R. May, 'Sustainability Constitutionalism', 86 *University of Missouri-Kansas City Law Review* (2018) 130; James R. May, 'Sustainability and Global Environmental Constitutionalism,' in James R. May et al (eds), *New Frontiers in Environmental Constitutionalism* (UN, 2017) 308-318.

[5] James R. May, 'Of Development, daVinci and Domestic Legislation: The Prospects for Sustainable Development in Asia and its Untapped Potential in the United States,' 3 *Widener Law Review* (1998) 197-212.

subnational levels, culminating in the United Nations setting 17 Sustainable Development Goals (SDGs) to achieve by 2030.[6]

The SDGs face myriad conceptual, structural and other challenges, most importantly that they are often treated as if disconnected from within.[7] For instance, the annual United Nations High Level Political Forum on Sustainable Development[8] (formerly the UN Commission on Sustainable Development) focuses on a few connected SDGs at a time, such as (in 2019) achieving SDGs 13 (climate action) and 17 (peace, justice and strong communities). Moreover, the concept of 'sustainability' has a growing cadre of critics who hold that the concept has reached the limits of its own utility, is not a reliable basis for governance, has not much improved environmental outcomes, is no match for the Anthropocene, and should be replaced by the goal of 'resilience.'[9]

Yet these criticisms and challenges overlook, if not ignore, the SDGs' core purpose: to advance human dignity, which coheres and complements them. Appreciating this profound, if simple, attribute warrants exploration of the concept of dignity, how it has evolved in law, what it means to environmental protection, and how taking it

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6 'Transforming Our World: The 2030 Agenda for Sustainable Development', UNGA Res. 70/1 of 25 September 2015.

7 See, for instance, John H. Knox, 'Human Rights, Environmental Protection, and the Sustainable Development Goals', 24 *Washington International Law Journal* (2015) 517-536 at 524 ('the specific targets are often written in language that is neither concrete nor closely linked to existing human rights obligations.'); Ranjula Bali Swain, 'A Critical Analysis of the Sustainable Development Goals' in Walter Leal Filho et al. (eds), *Handbook of Sustainability Science and Research* (Springer, 2017) 341-355 at 341 ('The ambitious UN adopted Sustainable Development Goals (SDGs) have been criticized for being inconsistent, difficult to quantify, implement and monitor.'); Jayati Ghosh, '3 obstacles that stand in the way of the UN's Sustainable Development Goals' (World Economic Forum, 2019), available at <https://www.weforum.org/agenda/2019/09/3-obstacles-that-stand-in-the-way-of-the-un-s-sustainable-development-goals> (visited 25 August 2020) ('For starters, the international economic architecture and associated patterns of trade and capital flows continue to drive inequality… Second, governments rely increasingly on regressive indirect taxation, because they do not generate enough revenue from direct taxes… Third, an ill-conceived focus on fiscal austerity is constraining governments around the world, aggravating existing inequalities and fueling new social tensions.'); Laura Ortiz Montemayor, 'The trouble with the UN SDGs 2030 global goals' (Medium, 2018), available at <https://medium.com/@lauraom/the-trouble-with-the-un-sdgs-2030-global-goals-99111a176585> (visited 25 August 2020) ('True Sustainable Development Goals would include individual empowerment, economy at the service of people and planet.')

8 See <https://sustainabledevelopment.un.org/hlpf>.

9 See, for instance, Melinda Harm Benson and Robin Kundis Craig, *The End of Sustainability. Resilience and the Future of Environmental Governance in the Anthropocene* (University of Kansas Press, 2017) ('The time has come for us to collectively reexamine – and ultimately move past – the concept of sustainability in environmental and natural resources law and management.'). Cf., Frederico Cheever and John C. Dernbach, 'Sustainable Development and its Discontents', 4(2) *Transnational Environmental Law* (2015) 247-287 (supporting concept). *See* also John C. Dernbach. 'Navigating the U.S. Transition to Sustainability: Matching National Governance Challenges With Appropriate Legal Tools', 44 *Tulsa Law Review* (2008) 93-120 at 120:

> The suggested legal structure includes a required national strategy, long-term and short-term goals, better integration of environment into decision making across and among various levels of government, public education and engagement, a broad range of legal and policy tools, feedback mechanisms to foster learning, and designated governmental entities for coordinating or managing this effort as well as providing an independent review of their efforts.

seriously would contribute to better outcomes in achieving the SDGs. Ultimately, taking due account of human dignity has the power to inform, if not transform, discourse about and implementation of the SDGs.[10]

Section 2 briefly summarizes how sustainability is reflected in law, primarily through the SDGs. Section 3 describes relevant legal expressions of human dignity. Section 4 then explores how human dignity informs understanding and implementation of sustainability, and Section 5 how advancing human dignity is the core purpose of the SDGs. Section 6 concludes the paper.

2 Sustainability, the SDGs, and law

Sustainability has a vast reach, embodying environmental, social and economic equity in a variety of contexts, including dignity,[11] human rights,[12] climate change, access to and availability of fresh water,[13] shale gas development,[14] corporate practices, and higher education, among others.

Sustainability is also a central feature in international and domestic relations.[15] It has long served as a general principle of international environmental law, including as an interpretive principle in international accords[16] and by international tribunals resolving environmental disputes.[17]

Domestically, sustainability has infiltrated constitutionalism around the globe. Presently, more than three-dozen countries incorporate sustainability in their constitutions by advancing 'sustainable development', the interests of 'future generations',

[10] See James R. May and Erin Daly, 'The Indivisibility of Human Dignity and Sustainability,' in Sumudu Atapattu, Carmen G. Gonzalez and Sara Seck (eds), *The Cambridge Handbook on Environmental Justice and Sustainable Development* (Cambridge University Press, forthcoming 2020).

[11] Erin Daly and James R. May, 'Bridging Environmental and Dignity Rights', 7(2) *Journal of Human Rights and the Environment* (2016) 218-242.

[12] See 'Report of the Independent Expert on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment', UN Doc. A/HRC/28/61 (2015) 11-12.

[13] May, 'Of Development, daVinci', *supra* note 5.

[14] Dernbach and May, *Shale Gas and*, *supra* note 3 (suggesting laws and policies needed to ensure that shale gas development fosters transition to sustainability).

[15] See, generally, James R. May and Patrick J. Kelly, 'The Environment and International Society: Issues, Concepts, and Context' in Alam Shawkat et al, *Routledge Handbook of International Environmental Law* (Oxford University Press, 2012) 13-24.

[16] See, for instance, Renee K. L. Panjabi, *The Earth Summit at Rio: Politics, Economics, and the Environment* (Northeastern University Press, 1997) 17 (describing how the Earth Summit in Rio led to a new global consciousness of sustainability in treaty-making).

[17] See Roslyn Higgins, 'Natural Resources in the Case Law of the International Court' in Alan Boyle and David Freestone (eds), *International Law and Sustainable Development* (Oxford University Press, 1999) (using the International Court of Justice to highlight environmental sustainability in international courts and other arenas).

or some combination of these themes.[18] Switzerland's constitution, for instance, contains a section entitled 'Sustainable Development', which provides that '[t]he Confederation and the Cantons shall endeavor to achieve a balanced and sustainable relationship between nature and its capacity to renew itself and the demands placed on it by the population.'[19] Albania's constitution proclaims that the state 'aims to supplement private initiative and responsibility with: Rational exploitation of forests, waters, pastures and other natural resources on the basis of the principle of sustainable development.'[20] Colombia's constitution requires policy-makers to 'plan the handling and use of natural resources in order to guarantee their sustainable development…'[21] These constitutional provisions help bridge the gap left by international and domestic laws, even given the array of sustainability provisions already in existence.

That is not to say, however, that sustainable development has been implemented as a governing legal principle. For instance, while South Africa's constitution was among the first to embrace sustainable development in 1996, the provision has had little practical effect.[22] Likewise, while Section 225 of the Brazilian constitution requires that governmental policies promote ecologically sustainable development, apex courts there rarely enforce this provision.[23] On the other hand, sustainability has earned a foothold with some international tribunals.[24] Nonetheless, even though the vast majority of these provisions do not create judicially enforceable rights, they affirm national values of environmental sustainability to which policy-makers and courts may advert.

The most significant international expression of sustainable development is the United Nations' 2015 Sustainable Development Goals, which are the culmination of four decades of multidisciplinary and legal thinking about what sustainable

[18] See James R. May and Erin Daly, *Global Environmental Constitutionalism* (Cambridge University Press, 2015), Appendix E and associated text (denoting the role of sustainability in the development of international and national law, and analyzing constitutional provisions that embed sustainability from around the world); James R. May, 'The North American Symposium on the Judiciary and Environmental Law: Constituting Fundamental Environmental Rights Worldwide', 23 *Pace Environmental Law Review* (2006) 113-182, Appendix B (listing countries that have constitutionally entrenched environmental policies as governing principles, some including sustainability).

[19] Constitution of Switzerland, Ch. II, § 4, Art. 73.

[20] Constitution of Albania, Part II, Ch. 5, art. 59(1)(dh).

[21] Constitution of Colombia, Title II, Ch. 3, Art. 80.

[22] *See* Louis J. Kotzé, 'Arguing Global Environmental Constitutionalism' 1(1) *Transnational Environmental Law* (2012) 199-233; Louis J. Kotzé, 'Sustainable Development and the Rule of Law for Nature: A Constitutional Reading' in ChristinaVoigt (ed.), *Rule of Law for Nature: New Dimensions and Ideas in Environmental Law* (Cambridge University Press, 2013).

[23] For instance, Associação Nacional do Transporte de Cargas e Logística v. Governador do Estado de São Paulo, S.T.F., ADPF 234 MC/DF, DJe 06.02.12 (Rel. Min. Marco Aurélio) (Braz.) (case brought by asbestos transporters against a state law on constitutional grounds).

[24] Rosalyn Higgins, 'Natural Resources in the Case Law of the International Court' in Alan Boyle and David Freestone (eds), *International Law and Sustainable Development: Past Achievements and Future Challenges* (Oxford University Press, 1999) 87-111 (using the International Court of Justice to highlight environmental sustainability in international courts and other arenas).

development means, and grasping that, how to effectuate it. The SDGs are 17 'Goals' to achieve by 2030, including protecting biodiversity; ensuring clean water, air, land and food; ending poverty, hunger and discrimination; and providing access to justice and opportunity for the future.[25] The SDGs

> are the blueprint to achieve a better and more sustainable future for all. They address the global challenges we face, including those related to poverty, inequality, climate, environmental degradation, prosperity, and peace and justice. The Goals interconnect and in order to leave no one behind, it is important that we achieve each Goal and target by 2030.[26]

The adoption of the SDGs has the potential to influence law (if soft at that) under international and domestic regimes.[27] Specifically, sustainable development has served as a mostly normative concept in international, regional and domestic law.[28] In addition to the SDGs and other mechanisms designed to advance sustainable development directly, the concept of sustainable development informs or animates international law under various international accords, including Article 12 of the Kyoto Protocol[29] (the 'Clean Development Mechanism') and in Article 6(4) of the Paris Agreement[30] (often called 'Sustainable Development Mechanism'). Regionally,

[25] *Ibid*.

[26] UN, 'About the Sustainable Development Goals', available at <https://www.un.org/sustainabledevelopment/sustainable-development-goals/> (visited 20 May 2020).

[27] See, for instance, Noora Arajärvi, 'The Rule of Law in the 2030 Agenda', KFG Working Paper Series, No. 9 (2017), available at <https://publishup.uni-potsdam.de/opus4-ubp/frontdoor/deliver/index/docId/42190/file/kfg_wps09.pdf > (visited 25 August 2020):

> The paper concludes, with reflections drawn from the process leading up to the 2030 Agenda and the final outcome document that the rule of law – or at least strong and precise formulations of the concept – may be in decline in institutional and normative settings. This can be perceived as symptomatic of a broader crisis of the international legal order.

Marcel Brus, 'Soft Law in Public International Law: A Pragmatic or a Principled Choice? Comparing the Sustainable Development Goals and the Paris Agreement' in Pauline Westerman et al (eds), *Legal Validity and Soft Law* (Springer, 2018) 243-266 at 243 ('Soft law is often regarded as non-law. However this qualification increasingly does not match the realities of the development of international law in which many legally relevant statements are made in the form of soft law, while many so-called hard law obligations are rather soft.'). However, see James R. May, 'Not at All: Environmental Sustainability in the Supreme Court,' 10 *Sustainable Development Law & Policy* (2009) 20-29 at 20:

> The principle of 'sustainability' is a concept that has experienced both evolution and stasis. It has shaken the legal foundation, often engaged, recited, and even revered by policymakers, lawmakers, and academics worldwide. This essay assesses the extent to which sustainability registers on the scales of the United States Supreme Court, particularly during the tenure of Chief Justice John Roberts.

[28] See, generally, Jorge E. Viñuales, 'Sustainable Development in International Law' in Lavanya Rajamani and Jacqueline Peel (eds), *The Oxford Handbook of International Environmental Law* (Oxford University Press, 2nd ed., 2019), available at <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3307841> (visited 25 August 2019).

[29] 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.

[30] Paris Agreement to the United Nations Framework Convention on Climate Change, Paris, 12 December 2015, in force 4 November 2016, 55 *International Legal Materials* (2016) 740.

sustainable development is also an explicit component of several bilateral and regional trade agreements, including the 2018 European Union Action Plan on Trade and Sustainable Development.[31]

Moreover, sustainable development has played an explicit or normative role in shaping the adjudication of international law. As to the former, the World Trade Organization (WTO) Appellate Body[32] invoked the General Agreement on Tariffs and Trade's[33] expressed objective of sustainable development when interpreting the terms 'exhaustible natural resources' under Article XX(g) ('relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption') as reflecting 'contemporary concerns of the community of nations about the protection and conservation of the environment.'[34] Similarly, in *China – Raw Materials*, the Panel noted 'that the international law principles of sovereignty over natural resources and sustainable development… are relevant to our interpretive exercise in this dispute.'[35]

The *Gabčíkovo-Nagymaros* case provides an example of the latter, where the International Court of Justice Court noted that sustainable development had 'to be taken into consideration, and... given proper weight, not only when States contemplate new activities but also when continuing with activities begun in the past.'[36]

Regional adjudicative bodies have made reference to sustainable development or, at least, to integration, even in the absence of a specific treaty basis, including in the *Ogoni* case, where the African Commission on Human and Peoples' Rights[37] reasoned that Article 24 of the African Charter on Human and Peoples' Rights[38] (the collective right to a generally satisfactory environment) required Nigeria 'to take reasonable and other measures to prevent pollution and ecological degradation, to promote conservation, and to secure an ecologically sustainable development and use of natural resources'.[39] Domestic courts have been least receptive to sustainable development, however, including in the United States.[40] These adjudicative developments noted, it is fair to observe that sustainable development seldom provides a

[31] Available at <https://ec.europa.eu/trade/policy/policy-making/sustainable-development/>.
[32] See <https://www.wto.org/english/tratop_e/dispu_e/appellate_body_e.htm>.
[33] General Agreement on Tariffs and Trade, Marrakech, 15 April 1994, available at <http://www.wto.org>.
[34] WTO Appellate Body Report on *U.S. – Import Prohibition of Certain Shrimp and Shrimp Products*, WTO Doc. WT/DS58/AB/R (1998), para. 129.
[35] WTO Appellate Body Report on *China – Measures Related to the Exportation of Various Raw Materials,* WTO Doc. WT/ DS 394/AB/R (2012) para 306.
[36] *Gabčíkovo-Nagymaros Project (Hungary* v. *Slovakia)*, Judgment, *ICJ Reports* (1997) 7, para. 140.
[37] See <https://www.achpr.org/>.
[38] African Charter on Human and People's Rights, Nairobi, 27 June 1981, in force 21 October 1986, 21 *International Legal Materials* 58.
[39] African Commission on Human Rights and Peoples' Rights, *Social and Economic Rights Action Center (SERAC) and the Center for Economic and Social Rights (CESR) v. Nigeria,* Communication No. 155/96, 2001 ('Ogoni case') para. 52.
[40] James R. May, 'Not at All: Environmental Sustainability in the Supreme Court', 10(1) *Sustainable Development Law & Policy* (2009) 20-29, 81-82.

'decision-making function', and should be 'considered a normative concept', rather than a rule.[41]

What can be lost in conversations about the SDGs is the elegant idea that dignity stitches them together. Understanding the implications of this simple step warrants exploration of the concept of dignity, how it has evolved in law, what it means to environmental protection, how it is a core purpose of the SDGs, and how taking it seriously would improve implementation of the SDGs, discussed below.

3 Human dignity and law

Dignity refers to the inherent humanness of each person; it is an elemental value that presupposes that every human being has equal worth. It emphasizes the fundamental value and equality of all members of society – humans not only are endowed with dignity, but each is endowed with an equal quantum of dignity.[42]

But it was not always thus. As a philosophical matter, in ancient Western traditions, for instance, dignity was ordinarily reserved to denote high social or political *status*. The Stoics then developed the *humanness* of dignity, that is, the idea that every person considered to be a person possesses dignity; this may have expanded the scope of application of the conception but still left out the half of the population that was female, as well as most immigrants, the conquered, the enslaved and the rest whose status as citizens could be questioned. Cicero's writings may have reflected both the status conception and the inherence conception applied slightly more broadly.[43] In the Islamic world, by contrast, a distinctive dignity was given to all 'children of Adam'.[44] Middle-ages Christian theology then aligned dignity with human suffering[45] and again limited its applications to those within the defined community.

Some early Renaissance humanist scholars wrote about man's distinctiveness from other planetary inhabitants and his – always *his* – capacity for the exercise of free

[41] *Viñuales*, 'Sustainable Development in', *supra* note at 28 (internal marks omitted).

[42] See, generally, Erin Daly, *Dignity Rights: Courts, Constitutions, and the Worth of the Human Person* (University of Pennsylvania Press, 2013); Erin Daly and James R. May, 'A Dignity Rights Primer', 3 *Juriste Internationale* (2018) 21; James R. May and Erin Daly, 'Why Dignity Rights Matter', 19 *European Human Rights Law Review* (2019) 129-134; Aharon Barak, *Human Dignity: The Constitutional Value and the Constitutional Right* (Cambridge University Press, 2015); Catherine Dupré, *Age of Dignity: Human Right and Constitutionalism in Europe* (Hart Publishing, 2018); Christopher McCrudden, 'Human Dignity and Judicial Interpretation of Human Rights', 19 *European Journal of International Law* (2008) 655-724 at 667 and 718.

[43] Marcus Tullius Cicero, *Cicero's letters to Atticus*, Vol. I, II, IV, VI (Cambridge University Press, 1965).

[44] Mohammad Hashim Kamali, *The Dignity of Man: An Islamic Perspective* (Ilmiah, 2002) 1. See Quran 17:70.

[45] See, generally, Kurt Bayertz, 'Human Dignity: Philosophical Origin and Scientific Erosion of an Idea' in Kurt Bayertz (ed), *Sanctity of Life and Human Dignity* (Springer, 1996) 73-90.

will, in sometimes uneasy conversation with Church teachings.[46] As notions of citizenship expanded and with it notions of humanity, Enlightenment and other philosophers began to consider that dignity inhered in the human person and did not have to be granted by the will of another. With Immanuel Kant in the lead, the seeds of universal dignity were sown.[47] Many Eastern traditions reflected congruent considerations of human dignity.[48] Twentieth century philosophers, including Hannah Arendt[49] and Ronald Dworkin,[50] also drew attention to the place of dignity in the human experience, now as an inherent and truly universal concept.

As understood in modern times, dignity has six interconnected elements. First, each person – every member of the human family – has value; no one can be dismissed, ignored, mistreated, or abused as if their humanity means nothing. Dignity stands for the proposition that each person's humanity *means something* and has *worth.* Each person has a right to live as if his or her life matters and to be treated 'as a person'.[51]

Second, each person's worth is equal to every other person's. As we have noted elsewhere,

> No one's life is more important than any other person's. If each person's right to agency, to self-development, to choose one's life course is the same as every other's, then no one can determine another person's choices, treat another as an object, or treat a person as if his or her life does not matter. Despite our differences, in our humanity, we are all equal. It is in dignity that we are united.[52]

Third, dignity inheres in the human person. The Universal Declaration of Human Rights[53] defines the scope in time and space: it applies to every person 'born' into

[46] Giovanni Pico della Mirandola, 'Oration on the Dignity of Man' in Ernst Cassirer, Paul Oskar Kristeller and John Herman Randall Jr. (eds), *The Renaissance Philosophy of Man* (University of Chicago Press, 1956) 223-254.

[47] Immanuel Kant, 'Groundwork of the Metaphysic of Morals' translated and analysed by Herbert James Paton (Harper & Row, 1964). See further, David Hume, 'Of the dignity or meanness of human nature' in Eugene F. Miller (ed. with a Foreword, Notes and Glossary), *Essays Moral, Political and Literary* (revised ed., Liberty Classics, 1987) 80–86; Jean Jacques Rousseau, 'Discourse on Inequality' in Charles W. Eliot (ed.), *French and English Philosophers. Descartes, Rousseau, Voltaire, Hobbes* (P. F. Collier & Son Company, 1938); John Stuart Mill, 'On Liberty' in John M. Robson (ed.), *Collected Works of John Stuart Mill*, *Vol XVIII: Essays on Politics and Society* (University of Toronto Press and Routledge & Kegan Paul, 1977).

[48] Alfons Brüning, 'Different Humans and Different Rights? On Human Dignity from Western and Eastern Orthodox Perspectives', 23 *Studies in Interreligious Dialogue*, (2013) 150-175, available at <http://www.academia.edu/8271912/_Different_Humans_and_Different_Rights_-_On_Human_Dignity_from_Western_and_Eastern_Orthodox_Perspectives> (visited 3 August 2019).

[49] Hannah Arendt, 'The Rights of Man: What Are They?', 3(1) *Modern Review* (1949) 24-36.

[50] Ronald Dworkin, *Justice for Hedgehogs* (Harvard University Press, 2011); see, generally, Salman Khurshid, Lokendra Malik and Veronica Rodriguez-Blanco (eds), *Dignity in the Legal and Political Philosophy of Ronald Dworkin* (Oxford University Press, 2018).

[51] May and Daly, *Why Dignity Rights*, *supra* note 42, at 130.

[52] *Ibid*.

[53] Universal Declaration of Human Rights (UDHR), Paris, 10 December 1948, <http://www.ohchr.org/EN/UDHR/Documents/UDHR_Translations/eng.pdf> (visited 10 May 2020).

'the human family.'[54] It requires only birth – not the granting or conferral of dignity by someone with greater dignity (which of course would be impossible given the equality of dignity). This is critically important for understanding dignity's relationship to law: human dignity transcends positive law; it exists whether law or other conditions recognize it or not. It thus can stand as a *measure* of the justness of law or of a legal regime. Dignity also exists regardless of the conditions in which people live: pollution, poverty, discrimination and so on threaten the ability to live with dignity, but human dignity remains inviolable and inherent in the human person.

Thus, fourth, dignity is universal; it applies to every 'member of the human family', wherever and whenever they live. This premise has special significance in the context of sustainability because it implies a principle of intergenerational equity: if those who are born after have the same quantum of dignity that we have, then they are entitled to the same (or better) living conditions, which necessitates an environmentally sustainable planet.

Fifth, dignity instantiates rights. As we will see, the post-war burgeoning of international human rights law rests on the foundation of human dignity, as if to say that once we know dignity, we must assure that people have the right to claim all other rights that will protect their dignity.[55] In this sense, it is what animates rights-based approaches to well-being.

And sixth, it represents a quality of life that every person is entitled to, which includes opportunities for human flourishing and the provision of a level of comfort that includes many of the specific goals that comprise the SDGs.

Despite its ancient roots in philosophical traditions, the idea of dignity is a fairly recent addition to the concept of global governance but, steeped in tradition, shaped by atrocity, and, formed by legal principles at every level and in all parts of the inhabited world, dignity is now reflected throughout the human rights enterprise including in the SDGs. While dignity's turn as a legal right was slow in coming, the second half of the twentieth century witnessed a maturity in the development of dignity as a legal right[56] and an indispensable component of democracy,[57] a process propelled by international and legal urgency in the aftermath of the atrocities of World War II. To be sure, human dignity is a foundation of the Charter of the United Nations[58] in 1945 (one of whose purposes is 'to reaffirm faith in fundamental human rights, in the dignity and worth of the human person, in the equal rights

[54] Article 1 of the UDHR.
[55] See Arendt, 'The Rights of', *supra* note 49.
[56] B. F. Skinner, *Beyond Freedom and Dignity* (Jonathan Cape, 1972).
[57] Erin Daly, 'Dignity in the Service of Democracy', Widener Law School Legal Studies Research Paper No. 11-07 (2011), available at <https://ssrn.com/abstract=1743773> (visited 10 May 2020).
[58] Charter of the United Nations, 26 June 1945, available at <http://www.un.org/en/documents/charter/index.shtml>.

of men and women and of nations large and small'[59]), and the cornerstone of the Universal Declaration of Human Rights in 1948 (adopting the recognition of human dignity in the United Nations Charter and affirming that 'All human beings are born free and equal in dignity and rights').[60] It is found in *identical* form as a tenet shared by both the Covenant on Civil and Political Rights[61] and the Covenant on Social, Economic and Cultural Rights[62] ('Considering that, in accordance with the principles proclaimed in the Charter of the United Nations, recognition of the inherent dignity and of the equal and inalienable rights of all members of the human family is the foundation of freedom, justice and peace in the world…'),[63] both adopted in 1966 and put into force in 1977.

Dignity has since been recognized in myriad international and regional laws – including the Convention on the Rights of the Child,[64] the United Nations Declaration on the Rights of Indigenous Peoples,[65] and the African Charter on Human and Peoples' Rights[66] – thus stitching international human rights law together with common dignity rights as the thread. In the Americas in particular, the coalescing nature of dignity is patent. The American Declaration of the Rights and Duties of Man,[67] which predated the Universal Declaration, presaged the foundational role of dignity in the first words of its preamble: 'All men are born free and equal, in dignity and in rights, and, being endowed by nature with reason and conscience, they should conduct themselves as brothers one to another.'[68] As the articulation of rights

[59] *Ibid*. at Preamble.

[60] Article 1.

[61] International Covenant on Civil and Political Rights, New York, 16 December 1966, in force 23 March 1976, 999 *United Nations Treaty Series* 171.

[62] International Covenant on Economic, Social and Cultural Rights, New York, 16 December 1966, in force 3 January 1976, 993 *United Nations Treaty Series* 195.

[63] Preamble.

[64] Convention on the Rights of the Child (New York, 20 November 1989, in force 2 September 1990, 28 *International Legal Materials* 1456), Art. 28(2): 'States Parties shall take all appropriate measures to ensure that school discipline is administered in a manner consistent with the child's human dignity and in conformity with the present Convention.'

[65] 'United Nations Declaration on the Rights of Indigenous Peoples', UNGA Res. 61/295 of 2 October 2007, Art. 15: 'Indigenous peoples have the right to the dignity and diversity of their cultures, traditions, histories and aspirations which shall be appropriately reflected in education and public information.'

[66] See, for instance, African Charter on Human and Peoples' Rights, Nairobi, 27 June 1981, in force 21 October 1986, 21 *International Legal Materials* 58 (Banjul Charter), Art. 5: 'Every individual shall have the right to the respect of the dignity inherent in a human being and to the recognition of his legal status'; and American Convention on Human Rights, San José, 22 November 1969, in force 18 July 1978, <https://treaties.un.org/doc/Publication/UNTS/Volume%201144/volume-1144-I-17955-English.pdf> (visited 10 May 2020) (Pact of San Jose, Costa Rica), Art. 11(1): 'Everyone has the right to have his honor respected and his dignity recognized.'

[67] Inter-American Commission on Human Rights (IACHR), American Declaration of the Rights and Duties of Man, Bogotá, 2 May 1948, available at <https://www.refworld.org/docid/3ae6b3710.html> (visited 9 May 2020).

[68] *Ibid*. at Preamble.

became more elaborate, so did the emphasis on dignity: the additional protocol to the American Convention on Human Rights[69] considers

> the close relationship that exists between economic, social and cultural rights, and civil and political rights, in that the different categories of rights constitute an indivisible whole based on the recognition of the dignity of the human person, for which reason both require permanent protection and promotion if they are to be fully realized, and the violation of some rights in favor of the realization of others can never be justified…[70]

It is at the constitutional level that dignity rights under law have been most dramatic. Nearly every constitution adopted or significantly amended since 1945 – that is, the constitutions of more than 160 countries – acknowledges a right to human dignity.[71] Simply, dignity matters under law. As constitutionalized, dignity is a fundamental value,[72] a stand-alone right,[73] or a right associated with particular pursuits (for instance, the right to work[74]) or segments of the population (women, disabled people, people in state custody, etc.[75]). Dignity has also been especially influential to constitutionalism in Europe (Dupré, The Age of Dignity, supra note 42) and in the constitutional jurisprudence of countries throughout Latin America, and parts of Asia and Africa. At the heart of dignity jurisprudence is the recognition that governments must respect people's capacity to fully develop their personalities and to control the course of their lives.[76]

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[69] Organization of American States (OAS), Additional Protocol to the American Convention on Human Rights in the area of Economic, Social and Cultural Rights, San Salvador, 17 November 1988, in force 16 November 1999, 28 *International Legal Materials* 156 (Protocol of San Salvador), Preamble.

[70] *Ibid*. at Preamble.

[71] Doron Shulztiner and Guy E. Carmi, 'Human Dignity in National Constitutions: Functions, Promises and Dangers', 62(2) *American Journal of Comparative Law* (2014) 461–490, 465–466. See also Dignity Rights Project, 'Database of Constitutional Provisions on Dignity Rights', available at <https://delawarelaw.widener.edu/prospective-students/jd-program/jd-academics/signature-programs/dignity-rights-project/dignity-rights/> (visited 10 May 2020). See also 'National Constitutions with Dignity Provisions 2015', available at <https://docs.google.com/spreadsheets/d/1Tn8w8hJ7HOly-HY9rkUEPjyOAIdCfaUw2X3a594RDA8/edit#gid=0> (visited 10 May 2020).

[72] Constitution of the Dominican Republic, Art. 42:

> 'The State [bases itself] on [ ] respect for the dignity of the person and [ ] organizes [itself] for the real and effective protection of the fundamental rights [that are] inherent to it. The dignity of the human being is sacred, innate, and inviolable; its respect and protection constitute an essential responsibility of the public powers.'

[73] The constitution of Kenya, Art. 28: 'Every person has inherent dignity and the right to have that dignity respected and protected.'. (emphasis added)

[74] The constitution of Nepal, Art. 51(i)(2): '[G]uarantee[ing] social security, [by] ensuring the basic rights of all laborers[] in [accordance] with the concept of [dignity of labor][.]'. (emphasis added)

[75] Constitution of the Republic of Haiti, Art. 44(1): 'Prisons must be operated in accordance with standards reflecting respect for human dignity according to the law on this subject.' (emphasis added)

[76] See, generally, Daly, *Dignity Rights: Courts*, *supra* note 42 (evaluating cases).

Courts around the globe have interpreted such dignity rights to protect people from improvident government action or inaction that adversely affects family relations, education, health, gender equality and against mistreatment while detained, imprisoned, or seeking asylum.[77]

Moreover, courts worldwide are increasingly enforcing constitutionally-recognized rights to dignity, such as the High Court of Justice of the Federal Capital Territory in Nigeria deciding that the police violated a prisoner's constitutional right to human dignity when it handcuffed and paraded him before his wife and children;[78] the Lahore High Court in Pakistan striking a law's use of the terms 'disabled', 'physically handicapped', and 'mentally retarded' as a violation of a constitutional right to dignity;[79] and the Constitutional Court of South Africa invalidating the death penalty as a violation of a constitutional right to dignity.[80]

Courts elsewhere are enforcing constitutionally recognized rights to dignity in an assortment of contexts. We see courts in the United States and Argentina identifying dignity as the foundation for freedom of speech and right of association,[81] and in South Africa protecting the 'civic dignity' of voting rights and other rights associated with the political process.[82] In some countries it is also associated with socio-economic justice including pensions in Germany,[83] health care in Colombia,[84] travel in India,[85] and a clean and stable environment in Nigeria.[86] In Israel, it is a 'mother right' whose 'daughters' include the right of family unity as well as the right

[77] *See ibid.*

[78] *Moses Egenokwu v. Attorney General of The Federation* (FCT High Court, 2011), available at <https://www.fcthighcourt.gov.ng/download/Microsoft%20Word%20-%20Christian%20onuigbo%20MN.pdf> (visited 10 May 2020).

[79] *Barrister Asfandyar Khan Tareen, etc.v. Govt. of the Punjab*, W-P No. 29131/2017 (Lahore High Court, 2017), available at <https://delawarelaw.widener.edu/files/resources/brasfandyara.pdf> (visited 10 May 2020).

[80] See, for instance, *S v Makwanyane and Another* (CCT3/94) [1995] ZACC 3; 1995 (6) BCLR 665; 1995 (3) SA 391; [1996] 2 CHRLD 164; 1995 (2) SACR 1 (6 June 1995), available at <http://www.saflii.org/za/cases/ZACC/1995/3.html> (visited 10 May 2020).

[81] *Asociación Lucha por la Identidad Travesti-Transexual v. Inspección General de Justicia*, Argentina Supreme Court of Justice (21 November 2006), available at <https://www.icj.org/sogicasebook/asociacion-lucha-por-la-identidad-travesti-transexual-v-inspeccion-general-de-just<icia-argentina-supreme-court-of-justice-21-november-2006/> (visited 10 May 2020).

[82] *August and Another v Electoral Commission and Others* (CCT8/99) [1999] ZACC 3; 1999 (3) SA 1; 1999 (4) BCLR 363 (1 April 1999), available at <http://www.saflii.org/za/cases/ZACC/1999/3.html> (visited 10 May 2020).

[83] BVerfG, Judgment of the First Senate of 09 February 2010, 1 BvL 1/09, paras 1-220, available at <http://www.bverfg.de/e/ls20100209_1bvl000109en.html> (visited 10 May 2020).

[84] Sentencia T-292/09 (Constitutional Court of Colombia), available at <http://www.corteconstitucional.gov.co/relatoria/2009/T-292-09.htm> (visited 6 February 2019).

[85] *Maneka Ghandi v. Union of India* (1978) 2 SCR 621, available at <https://indiankanoon.org/doc/1766147/> (visited 6 February 2019).

[86] *Gbemre v Shell Petroleum Development Company Nigeria Limited and Others* (2005) AHRLR 151 (NgHC 2005).

of prisoners to be treated humanely, among many other rights[87] while in Pakistan a narrow textual recognition of dignity has been interpreted as protecting the right to be treated as a person, and to be protected from discrimination.[88]

4 Dignity and sustainability

In understanding the role of dignity and sustainability, it is helpful to begin with recognizing that the concept of human dignity is no stranger to the development of environmental law.[89] International law already acknowledges that the right to human dignity embeds a right to live in a quality environment. The 1972 Stockholm Declaration[90] – largely viewed as the origin of modern global environmental law – recognizes the 'fundamental right to freedom, equality, and adequate conditions of life, in an environment of quality that permits a life of dignity and well-being'. The 1990 Hague Declaration expressly acknowledges 'the right to live in dignity in a viable global environment.'[91] In 1992, Principle 1 of the Rio Declaration[92] focused attention on the human-centered approach of environmental protection and sustainable development in particular: 'Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.' Two years later, the United Nation's influential Ksentini Report is also explicit on the subject:

> Environmental damage has direct effects on the enjoyment of a series of human rights, such as the right to life, to health, to a satisfactory standard of living, to sufficient food, to housing, to education, to work, to culture, to non-discrimination,

[87] *Golan v. Prison Services* (1996) IsrSC 50 (4) 136, available at <http://versa.cardozo.yu.edu/sites/default/files/upload/opinions/Golan%20v.%20Prisons%20Service.pdf> (visited 10 May 2020); *Gal-On v. Attorney General*, HCJ 466/07 (2012), available at <http://versa.cardozo.yu.edu/opinions/gal-v-attorney-general-summary> (visited 6 February 2019).

[88] *Ameen Masih v. Federation of Pakistan*, Lahore High Court, Case No: W.P. No.623/2016, available at <https://delawarelaw.widener.edu/files/resources/ameenmasiha.pdf> (visited 10 May 2020). See, generally, James R. May and Erin Daly, *Human Dignity and Environmental Outcomes in Pakistan*, 10 *Pakistan Law Review* (2019) 1-28.

[89] See Erin Daly and James R. May, 'Environmental Dignity Rights' in Sandrine Maljean-Dubois (ed.), *The Effectiveness of Environmental Law* (Intersentia, 2017) 125-148; James R. May and Erin Daly, 'Bridging Constitutional Dignity and Environmental Rights Jurisprudence', 7(2) *Journal of Human Rights and the Environment* (2016) 218-242 at 234; Dina Townsend, 'Taking Dignity Seriously: A Dignity Approach to Environmental Disputes before Human Rights Courts', 6(2) *Journal of Human Rights and the Environment* (2015) 204–225.

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

[91] Hague Declaration on the Environment, the Hague, 11 March 1989, 28 *International Legal Materials* 1308.

[92] 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.

> to dignity and the harmonious development of one's personality, to security of person and family, to development, to peace, etc.[93]

Recently, the principal human rights organs of the United Nations have become increasingly explicit about the relationship between life, dignity, and a sustainable environment. In its General comment No. 36 (2018) on article 6 of the International Covenant on Civil and Political Rights,[94] on the right to life, the UN Human Rights Committee expressly defined the right to life as the right to live with dignity and noted in particular the need for a healthy and sustainable environment in order to ensure a life of dignity. This recognition imposes on the state Parties the obligations to 'take appropriate measures to address the general conditions in society that may give rise to direct threats to life or prevent individuals from enjoying their right to life with dignity [including *inter alia*] degradation of the environment [and] deprivation of land, territories and resources of indigenous peoples.'[95] Moreover, the Committee explained that '[i]mplementation of the obligation to respect and ensure the right to life, and in particular life with dignity, depends, inter alia, on measures taken by States parties to preserve the environment and protect it against harm, pollution and climate change caused by public and private actors.'[96] This, in turn, requires a specific commitment to sustainability:

> States parties should therefore ensure sustainable use of natural resources, develop and implement substantive environmental standards, conduct environmental impact assessments and consult with relevant States about activities likely to have a significant impact on the environment, provide notification to other States concerned about natural disasters and emergencies and cooperate with them, provide appropriate access to information on environmental hazards and pay due regard to the precautionary approach.[97]

More recently, UN Human Rights Office of the High Commissioner has noted:

> All human beings depend on the environment in which we live. A safe, clean, healthy and sustainable environment is integral to the full enjoyment of a wide range of human rights, including the rights to life, health, food, water and

[93] UN Economic and Social Council Sub-Commission on Prevention and Protection of Minorities, 'Human rights and the environment: Review of further developments in fields with which the sub-commission has been concerned', Final Report of Fatma Zohra Ksentini, UN Doc. E/CN.4/4.Sub.2/1994/9 (1994) para. 248.

[94] International Covenant on Civil and Political Rights, Human Rights Committee, General comment No. 36 Article 6: right to life, UN Doc. CCPR/C/GC/36 (2019).

[95] *Ibid*. at para. 26.

[96] *Ibid*. at para. 62.

[97] *Ibid*.

> sanitation. Without a healthy environment, we are unable to fulfil our aspirations or even live at a level commensurate with minimum standards of human dignity.[98]

National constitutions are also beginning to appreciate the linkages between dignity and the environment. Belgium's constitution expressly entwines environmental and dignity rights constitutionally: 'Everyone has the right to lead a life worthy of human dignity… [including] the right to enjoy the protection of a healthy environment.'[99] South Africa's constitution is among those that echoes dignity dimensions by providing that 'everyone has the right to an environment that is not harmful to their health or wellbeing.'[100] Yet few other constitutions directly recognize the impact of the natural environment on the quality of human life, and none yet link dignity and sustainability.

Courts sometimes turn to effects on human dignity as a basis for recognizing a right to live in a healthy environment. One of the earliest cases to connect dignity and environmental harm is from Nigeria. In *Gbemre v. Shell Petroleum Development Company Nigeria Limited and Others*, the lower court held that gas flaring violated the petitioners' constitutional 'right to respect for their lives and dignity of their persons and to enjoy the best attainable state of physical and mental health as well as [the] right to a general satisfactory environment favourable to their development' and that the gas flaring activities formed 'a violation of their said fundamental rights to life and dignity of human person and to a healthy life in a healthy environment.'[101] Although a declaratory judgment without remedy or continuing judicial oversight,

[98] UN Human Rights Office of the High Commissioner, 'Special Rapporteur on human rights and the environment', available at <https://www.ohchr.org/EN/Issues/Environment/SREnvironment/Pages/SRenvironmentIndex.aspx> (visited 30 July 2019).

[99] The constitution of Belgium, Title II, Art. 23(4).

[100] Section 24 of the Constitution of the Republic of South Africa provides that

> 'everyone has the right to an environment that is not harmful to their health or well-being; and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that: (i) prevent pollution and ecological degradation; (ii) promote conservation; and (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.'

[101] *Gbemre v. Shell Petroleum Dev Corp & the Nigerian National Petroleum Corporation (2005). See, generally, James R. May and* Tiwajopelo O. Dayo, 'Dignity and Environmental Justice in Nigeria: The Case of Gbemre v. Shell', 25 *Widener Law Review* (2019) 269-284.

the case signals a growing appreciation of the connection between dignity and environmental conditions.[102]

Human dignity also informs conversations about the disproportionate effects of environmental policies on the most vulnerable, what is generally known as 'environmental justice.'[103] All of these developments in turn inform the role that human dignity can play in shaping narratives about implementing the SDGs.

5 Dignity and the SDGs

The SDGs – the embodiment of sustainability in the international legal order – are designed to advance human dignity, something reflected in the very text of the SDGs. The SDGs 'envisage a world of universal respect for human rights and human dignity, the rule of law, justice, equality and non-discrimination; of respect for race, ethnicity and cultural diversity; and of equal opportunity permitting the full realization of human potential and contributing to shared prosperity.'[104] Moreover, the SDGs expressly '[r]ecognize that the dignity of the human person is fundamental…'[105]

Dignity then informs and influences the implementation of myriad SDGs, including water and sanitation (Goal 6), energy (Goal 7), economic growth (Goal 8), infrastructure and industrialization (Goal 9), consumption and production (Goal 12), oceans, seas and marine sources (Goal 14), terrestrial ecosystems (Goal 15), the role of the rule of law (Goal 16), and global cooperation (Goal 17). In particular, the SDGs underscore the correspondence between poverty, hunger and dignity: 'We are determined to end poverty and hunger, in all their forms and dimensions, and to ensure that all human beings can fulfil their potential in dignity and equality and

[102] For instance, in 2017, the Irish High Court held that

> [a] right to an environment that is consistent with the human dignity and well-being of citizens at large is an essential condition for the fulfilment of all human rights. It is an indispensable existential right that is enjoyed universally, yet which is vested personally as a right that presents and can be seen always to have presented, and to enjoy protection. *Friends of the Irish Environment v Fingal County Council*, IEHC 695 at 292 (2017), available at <http://climatecasechart.com/non-us-case/friends-irish-environment-clg-v-fingal-county-council/> (visited 6 February 2019). (The Supreme Court of Ireland subsequently dismissed the constitutional claims in 2020.) See also *Ashgar Leghari v. Federation of Pakistan*, Lahore High Court Green Bench (W.P. No. 25501/2015) (establishing a Climate Change Commission to implement climate change mitigation and adaptation plans to fulfill constitutional rights to life and dignity), available at <https://www.informea.org/sites/default/files/court-decisions/COU-156302.pdf> (visited 6 February 2019).

[103] Erin Daly and James R. May, 'Exploring Environmental Justice Through the Lens of Human Dignity' 25 *Widener Law Review* (2019) 177-194.

[104] *Ibid*. at para. 8.

[105] *Ibid.*

in a healthy environment,'[106] and that '[b]illions of our citizens continue to live in poverty and are denied a life of dignity.'[107]

While the 17 SDGs are indivisible insofar as it is not possible either to realize human rights in a degraded environment or to protect the environment in the absence of human rights, the SDGs are often discussed as if they are stand-alone goals.[108] For instance, the High Level Political Forum focuses on a handful of connected SDGs at a time, such as (in 2019) achieving SDGs 13 (climate action) and 16 (peace, justice and strong communities). Yet what is clear is that advancing human dignity is what the SDGs have in common, and give it a unifying vision, a singular voice.

To be sure, poverty eradication and common but differentiated responsibilities has been a great undermining thrust of many international accords. Thus, non-discrimination is an essential tenet of the SDGs. Bodily integrity is also an essential aspect of human dignity, intimately linked to the other two. Threats to the ability to maintain the integrity of one's body have multiple manifestations, many of which are exacerbated by environmental degradation and climate change.[109] These can include everything from food insecurity and lack of clean water to unstable weather patterns that impede agricultural output or force migration and community displacement. Thus, dignity rights reflect that human suffering is experienced not so much as violations of abstract rights such as that to due process, equal protection, liberty, or property but as a violation of the principle that all human beings have equal worth.

6 Conclusion

The global surge in juridical attention to human dignity rights has taught us important lessons about what it means to be human in the 21st century,[110] all of which has implications for our understanding of the SDGs. We learn that human beings – perhaps by virtue of their 'conscience and reason' – have the capacity, and the need, to have agency over their own lives. As the SDGs recognize, poverty, environmental degradation, and other stressors impede the ability of billions of people around the world to effectively control the course of their own lives. Another lesson is that equality of dignity must be taken seriously: no one has the right to control or limit the exercise of another person's dignity. Relatedly, equality is not

[106] UNGA Res. 70/1, *supra* note 6, para. 4.
[107] *Ibid*. at para. 14.
[108] May and Daly, 'The Indivisibility of', *supra* note 10.
[109] See, generally, Global Initiative for Economic, Social and Cultural Rights, 'States' Human Rights Obligations in the Context of Climate Change – 2020 Update', available at <https://www.gi-escr.org/publications/states-human-rights-obligations-in-the-context-of-climate-change-2020-update> (visited 10 May 2020).
[110] Daly, *Dignity Rights: Courts*, *supra* note 42, at 105.

served when some fraction of the human population has their dignity realized while others do not.

Sustainable practices are necessary to protect human dignity and the full achievement of human dignity for all will ensure that development will proceed sustainably. Thus, the concerns of the SDGs – poverty, hunger and lack of education, equality and access to justice – can be affronts to dignity. The dignity implications of environmental degradation are especially trenchant, including climate change and the lack of access to potable water, clean air, and safe soils. At the same time, peaceful and inclusive societies based on human dignity will conduce to sustainable development.

This paper shows that sustainability can be better advanced if we understand the goal to be to advance and protect human dignity. The SDGs provide a useful framework for addressing global environmental challenges and do so by respecting and advancing human dignity. Dignity is the thread that runs through the SDGs, weaving them together into a coherent and comprehensive tapestry will help to protect the planet and improve the lives of its human inhabitants. Human dignity cannot be achieved without sustainable practices, and vice versa.

Viewing the SDGs through the lens of human dignity – the single idea that the drafters of the United Nations Charter itself thought was the foundation of peace, justice, and freedom in the world and that grounds human rights law today – can help to improve understanding and implementation. Simply, sustainability's virtue is in promoting the fundamental precept of human dignity: recognizing the equal worth of everyone, everywhere.

Emerging Issues in International Environmental Law: The Role of the United Nations Environment Assembly

Franz Xaver Perrez[1]

1 Introduction

International environmental law is a relatively young and dynamic area of international law. Over the last 50 years, the environment has emerged as an important policy area that needs international attention. The 1972 Stockholm United Nations Conference on the Human Environment is generally seen 'as the foundational moment of modern international environmental law'.[2] Since then, around 500 new international environmental treaties have been adopted[3] and a complex and multi-layered environmental governance structure has materialized over the past few decades.[4] However, with the evolution from the Stockholm Conference

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[2] Pierre-Marie Dupuy and Jorge E. Viñuales, *International Environmental Law* (Cambridge University Press, 2015) 8. See also Maria Ivanova, 'Coloring the UN Environmental: The Catalytic Role of the UN Environment Programme', 26 *Global Governance* (2020) 307-324 at 208.

[3] Roland B. Mitchell, 'International Environmental Agreement Database Project' (2017), available at <https://iea.uoregon.edu/sites/iea1.uoregon.edu/files/MEAs-1857-2016.jpg> (visited 4 August 2020).

[4] On pros and cons of multiplicity and overlaps, see Maria Ivanova and Jennifer Roy, 'The architecture of global environmental governance: pros and cons of multiplicity' in Lydia Swart and Estelle Perry (eds), *Global Environmental* Governance (Center for UN Reform Education, 2007) 48-66.

on the Human Environment to the 1992 Rio UN Conference on Environment and Development and the 2002 Johannesburg World Summit on Sustainable Development, not only the notion 'environment' disappeared from the name of the conferences, it also seems that the focus on environment concerns has weakened,[5] that the balance of the environment-development equation was changing towards economic development,[6] and that 'the right to a wholesome environment embodied in the Stockholm Declaration was abandoned in favor of a right to development'.[7] This happened despite the fact that in the last decade, it has become increasingly clear that threats to the environment undermine the resource base of human development and well-being. As UN Secretary-General Kofi Annan held in 2005, '[w]e fundamentally depend on natural systems and resources for our existence and development. Our efforts to defeat poverty and pursue sustainable development will be in vain if environmental degradation and natural resource depletion continue unabated.'[8] Action on the environment is more needed than ever.

While the adoption of the Sustainable Development Goals (SDGs)[9] in 2015 was seen as an important step to integrate environmental concerns into a more traditional development policy,[10] the international community has been and still is addressing environmental problems issue by issue. This has led to numerous issue specific international environmental treaties, an institutional proliferation, and mushrooming of partial solutions on the one hand.[11] On the other hand, important gaps in international environmental policy still remain.[12] The existing international frameworks and regulation for cooperation and action to address the challenge of global environmental degradation and natural resource depletion clearly need to be further strengthened.

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5 See for instance, Steve Charnovitz, 'Toward a World Environment Organization: Reflections upon a Vital Debate' in Frank Biermann and Stefen Bauer (eds.), *A World Environment Organization: Solution or Threat for Effective International Environmental Governance?* (Ashgate, 2005), 87-115 at 100-101 (indicating that the environment has lost in the change of the focus from environment to development).

6 Dupuy and Viñuales, *International Environmental Law*, *supra* note 2, at 20-21.

7 Lakshman Guruswamy, 'International Environmental Law: Boundaries, Landmarks, and Realities', 10 *Natural Resources and the Environment* (1995) 43–77.

8 Kofi Annan, *In Larger Freedom – Towards Security, Development and Human Rights for All* (UN Doc. A/59/2005) para. 57.

9 'Transforming our world: The 2030 Agenda for Sustainable Development', UNGA Res. 70/1 of 25 September 2015.

10 See, however, Dupuy and Viñuales, *International Environmental Law*, *supra* note 2, arguing at 20-21 that the Rio+20 Summit has changed the balance of the environmental-development equation in favour of economic development and that sustainable development thus 'is turning brownish'.

11 See, for instance, Adil Najam, Mihaela Papa and Nadaa Taiyab, *Global Environmental Governance: A Reform Agenda* (International Institute for Sustainable Development, 2006) 13-17; Franz Perrez and Daniel Ziegerer, 'A Non-institutional Proposal to Strengthen International Environmental Governance', 38 *Environmental Policy and Law* (2008), 253-261 at 254-255 with further references.

12 Perrez and Ziegerer, 'A Non-institutional Proposal', *supra* note 11, at 255, referring explicitly to the areas of heavy metals, forests, water and liability rules and indicating that several of the existing processes and MEAs still lack accepted rules of procedures or an agreed compliance mechanism.

There are several fora where environmental issues are discussed at the international level, and several of them have the potential of not only creating cooperative frameworks, but also politically and legally binding regimes. This paper will discuss the role of the United Nations Environment Assembly (UNEA)[13] as one – if not the central – forum for identifying and addressing emerging issues in international environmental policy and law. It will begin with a description of the reasons and forms for international environmental cooperation and regulation. Therefore, it will briefly recall important concepts from economic and social sciences that explain why international cooperation and regulation is desired and needed. It will then present the United Nations Environment Programme (UNEP)[14] and its governing body, i.e. the Governing Council which later became UNEA, its function as an authoritative body to address emerging issues of international environmental concern, and how UNEA can contribute to the emergence of new international environmental law. Two case studies will finally illustrate UNEA's potential catalytic role and its limits in formulating international approaches to emerging issues.

2 Reasons for international environmental cooperation and regulation

Today, environmental concerns belong to the most problematic and pressing challenges for the well-being and prosperity of the international community. While there are many examples of environmental improvement over the last decades, especially where problems have been well understood, where regulatory and technical solutions have been readily available, and where societal costs were easily manageable, the overall condition of the global environment has nevertheless continued to deteriorate.[15] The major environmental threats remain unresolved and put humanity at risk: there is a sharp and continuing rise in greenhouse gas emissions; the current biodiversity changes are the fastest in human history; the release of harmful and persistent pollutants, such as heavy metals and organic chemicals, remains a problem for the terrestrial and aquatic ecosystems; there is continued deforestation in the tropics; and the per capita availability of freshwater is declining.[16] Most of these challenges cannot be solved by nations alone, they require cooperation. This section will further describe the reasons for international cooperation and regulation.

[13] See <https://environmentassembly.unenvironment.org/>.
[14] See <https://www.unenvironment.org/>.
[15] UNEP, *Global Environmental Outlook – GEO-6: Summary for Policymakers* (2019), available at <https://wedocs.unep.org/handle/20.500.11822/27652> (visited 13 April 2020) at 4.
[16] UNEP, *Global Environmental Outlook (GEO) 6* (2019), available at <https://www.unenvironment.org/resources/global-environment-outlook-6> (visited 13 April 2020) at Chapters 4-9.

2.1 Game theoretical explication of the need for international cooperation

A functional analysis, i.e. an utilitarian analysis how in certain situation wellbeing can be maximized, and examples from game theory provide a theoretical explication and illustration, why cooperation and regulation are desirable to address emerging issues of international environmental concern.[17]

The concept of the *tragedy of the commons* describes a situation where several actors have access to a common resource and where the benefit of access to and use of this common resource falls to the individual user, while the costs are not borne by the user alone but shared by all. This creates an incentive to maximise the individual use of the common resource, leading to its overuse and underprotection and ultimately to the ruin of the common or shared resource.[18] The traditional example of the tragedy of the commons involves a pasture open to all,[19] contemporary examples are the overuse of the atmosphere leading to climate change, the destruction of the ozone layer, the overuse of biodiversity, fisheries, water and air quality.

The *prisoner's dilemma* describes a situation where individuals because of their non-cooperation follow a strategy leading to a Pareto-inferior outcome,[20] while they could have reached a better result through cooperation. In the classical example, two prisoners who have committed armed robbery are interrogated separately. Due to the weak evidence the weak evidence available, the prisoners could be sentenced only to one year of prison for the illegal possession of weapons if neither confesses. In order to get a confession by one of the prisoners, the prosecution offers to let the confessing prisoner free if the other does not also confess. With a confession of one of the prisoners, the non-confessing prisoner could be sentenced to ten years of prison. If both confess, each will receive a sentence of five years. Confronted with the possible alternatives, each of the prisoners has the dominant strategy to confess although both would be better off if neither had confessed. Even if the two prisoners could communicate secretly, inform each other of their strategies and enter into an agreement not to confess, there would be an incentive to defect and to confess. First, none of the prisoners could be sure that the other does not break the agreement; second, if the other would keep the agreement, the defecting prisoner is even better off. The only possibility to reach the Pareto-optimal outcome would be to enter

[17] See, generally, Franz Perrez, 'The Efficiency of Cooperation: A Functional Analysis of Sovereignty', 15 *Arizona Journal of International Law* (1998) 515-582 at 516ff. and 581.

[18] For a further description of the tragedy of the commons, see Garett Hardin, 'The Tragedy of the Commons', 162(3859) *Science* (1968) 1243-1248, arguing at 1244 that 'freedom in the commons brings ruin to all'.

[19] *Ibid*. at 1244.

[20] An outcome is Pareto-inferior if at least one person could be made better off without making another worse off, thus the overall benefit could be increased through reallocation or transaction between the participants; an outcome is Pareto-optimal if no change in circumstances can make one actor better off without making someone else worse off. See, for instance, Alfred Endres, *Umweltökonomie: eine Einführung* (Wissenschaftliche Buchgesellschaft, 1994) 10.

into an enforceable agreement.[21] Climate change is again a good concrete example of a prisoners' dilemma situation: no state can prevent climate change alone. While preventive emissions reduction implemented by all would be in the interest of all,[22] without assurance that the other states will also implement emissions reduction measures, the incentive of individual states would be to prioritize adaptation and not mitigation.

The *race to the bottom* is a form of the prisoner's dilemma involving a regulatory competition between states for more competitive local conditions for their industry, which is leading to a lowering of environmental standards.[23] In prescribing lax environmental standards, a state may provide to its industry a competitive advantage vis-à–vis foreign industries. Thereby, states may adopt low standards not only in order to compete for and attract new industry, but also in order to prevent a loss of industry. Even if there is no risk of industry leaving because of high relocation costs, a state may hope that the favourable regulatory environment leads to a competitive advantage of its industry, growth in exportation, tax revenues and wealth of its citizens. Cooperation by agreeing on optimal environmental standards – which can but do not have to be harmonized – could allow states to prevent a race to the bottom and maximize social welfare.[24]

While these game theoretical examples advance our understanding of the basic forces that are at work and explain the need for cooperation and regulation,[25] it is important to acknowledge that a purely functional, economic and rationalist analysis is always limited, as it assumes rational behaviour motivated by self-interest and people. States do not always make objectively rational choices in line with the maximization of their self-interest.[26] Despite these limits, the examples nevertheless illustrate well

[21] For a further description of prisoner's dilemma, see, for instance, Russel Hardin, *Collective Action* (Johns Hopkins University Press, 1982) 2-3; or Neil Duxbury, 'Games and Rules', 83 *Archiv für Rechts- und Sozialphilosophie* (1997) 1-13 at 4. See also Anne van Aaken, 'Behavioral Aspects of the International Law of Global Public Goods and Common Pool Resources', 112(1) *American Journal of International Law* (2018) 67-79, at 69, indicating that empirical research based on experiments may assist to identify factors which help to produce cooperation in prisoner's dilemma or other common pool resources or public good situations.

[22] See, for instance, OECD, *Investing in Climate, Investing in Growth* (2017), available at <https://www.oecd-ilibrary.org/docserver/9789264273528-en.pdf?expires=1586809383&id=id&accname=guest&checksum=386343075B86F1D0970B9A8E33FE63E7> (visited 13 April 2020) at 4; Nicholas Stern, 'Cost of global warming is worse than I feared' (Interview with N. Stern by Robin McKie), *The Observer* (6 November 2016).

[23] For a perfect illustration in an example how non-cooperation between states may lead to a prisonders' dilemma and a race to the bottom, see Richard B. Stewart, 'Environmental Regulation and International Competitiveness', 102 *Yale Law Journal* (1993) 2039-2106 at 2059. See also Perrez, 'The Efficiency of', *supra* note 17, at 538-552.

[24] Richard L. Revesz, 'Rehabilitating Interstate Competition: Rethinking the "Race-to-the-Bottom" Rationale for Federal Environmental Regulation', 67 *New York University Law Review* (1992) 1210-1254 at 1216; Stewart, 'Environmental Regulation and', *supra* note 23, at 2059.

[25] Douglas G. Baid et al., *Game Theory and the Law* (Harvard University Press, 1994) 7; Ottfried Höffe, *Ethik und Politik: Grundmodelle und Probleme der Praktischen Philosophie* (Suhrkamp, 1992) at 425-26.

[26] See Perrez, 'The Efficiency of', *supra* note 17, at 517-520, with further references, summarizing some of the limits of purely economic analysis.

the desirability of cooperation and international regulation to address emerging issues of environmental concern. This does not mean that all environmental issues are best addressed through international approaches, and there are different forms of international cooperation. The following subsections will therefore further address concrete reasons for and forms of international cooperation.

2.2 Reasons for local or international approaches

Regulation does not necessarily have to happen at the international level – thus, it seems that not all issues require international cooperation. In fact, there may be reasons favouring de-centralized approaches and local regulation:[27] local approaches may better reflect geographical variations, different preferences and different capacities. There may be a benefit of experimentation with different policies and of competition between systems. At the local level, the political participation may be easier and more direct, leading to enhanced self-determination, ownership and responsibility. In addition, local approaches may be faster and they may not need consensus and allow thus for higher ambition and standards.

However, there may also be strong reasons for international approaches:[28] international externalities and spill-overs, and the risks of overusing common natural resources leading to their destruction need international approaches. The desire to avoid unfair competition at the cost of the environment, which could lead to a race to the bottom and lax environmental standards, could lead to international coordination. Harmonized standards may lead to economies of scale and common rules may facilitate trade. Costs of international approaches may be less visible at the local level and sacrifices may be more palatable if internationally shared. The pooling of competence and expertise may lead to more effective policies. Finally, political failure at the local level and the fact that the interests of the socially and economically disadvantaged may sometimes be better and more effectively represented in international fora may speak similarly in favour of international regulation. In short: in today's interdependent world, states have to cooperate in order to deal efficiently with problems of social policy, economic development, or use of natural resources. These problems cannot be solved effectively and efficiently by the states independently, as each unilateral measure impacts other state, making cooperation desirable.[29]

[27] See, generally, Richard Stewart, 'Pyramids of Sacrifice? Problems of Federalism in Mandating State Implementation of National Environmental Policy', 86 *Yale Law Journal* (1977) 1196-1272, at 1219ff.
[28] See, generally, *ibid*. at 1211ff.
[29] See Perrez, 'The Efficiency of', *supra* note 17, at 524 with further references.

2.3 Forms of international cooperation

There are different forms, intensities, and stages of cooperation.[30] Some entail close collaboration, for instance, in the investigation of problems, in the research for means and measures to solve these problems, and in the adoption and enforcement of such measures. Others merely signify that certain activities are coordinated or that decisions are not made independently and unilaterally, but that the interests of others are taken into account. Cooperation implies the rejection of claims to be fully free and independent, and involves instead the taking into account of the interests of the others and a sharing of certain authority, competence, or power.[31]

Cooperation can happen based on a purely voluntary and ad hoc basis. However, the more it involves more complex issues, the interest that cooperation becomes more systematic, more structured, more durable and more predictable grows, both with regard to the assurance that cooperation will happen and with regard to the form, pattern and content of such cooperation. Systematics, structure, durability and predictability are influenced by the political and legal framework that is guiding and shaping the decisions and the behaviour of states and actors concerned. States have therefore established different frameworks promoting such cooperation. Some simply enable and facilitate voluntary cooperation by creating a forum for exchange.[32] Others motivate and direct cooperation by providing guidance through legally non-binding recommendations and soft law.[33]

The strongest form of requiring and regulating cooperation is binding international law, which includes international treaty law, international customs, and general principles of law.[34] While international law has the most binding force, soft law has

[30] Franz Perrez, *Cooperative Sovereignty: From Independence to Interdependence in the Structure of International Environmental Law* (Kluwer Law International, 2000) 259-262.

[31] *Ibid*. at 259-260.

[32] An example would be the technical expert meetings established by the United Nations Framework Convention on Climate Change (UNFCCC, New York, 9 May 1992, in force 21 March 1994, 31 *International Legal Materials* (1992) 849, <http://unfccc.int>). These bring together experts from national and subnational governments and the private sector, financial institutions, leading international institutions and other stakeholders to facilitate the identification of policy options, examine opportunities for implementation, and increase support and cooperation for climate action. See UNFCCC, 'Technical Expert Meetings', available at <https://unfccc.int/resource/climateaction2020/tep/technical-expert-meetings/> (visited 13 April 2020).

[33] On the guiding force of soft law, see, generally, Bryan H. Druzin, 'Why does Soft Law have any Poer anyway', 7 *Asian Journal of International Law* (2016) 1-18.

[34] Article 38(1) of the Statute of the International Court of Justice. See, generally, Jutta Brunnée, 'Sources of International Environmental Law: Interactional Law' in Samantha Besson and Jean d'Aspremont (eds), *The Oxford Handbook on the Sources of International Law* (Oxford University Press, 2017) 960-983, arguing at 963 that

> the notion of 'sources' is best understood as referring to the role of distinctively legal materials in the continuous practices through which legal norms are made, maintained, and changed. A robust account of law, therefore, is 'circular' in the sense that authority derives from a 'web' of 'intrinsic qualities' that are internal to law, maintained by as well as shaping interactions among the participants in the legal system.

gained increasing influence[35] and the 'orthodox categories of custom and treaty' are no longer adequately capturing the subtlety of the processes by which contemporary international law can be created and can influence state behaviour.[36] Soft legalization, i.e. the creation of legally non-binding and legally non-enforceable norms,[37] has a number of significant advantages, including that it is easier to achieve, provides strategies for dealing with uncertainty, infringes less on sovereignty, and facilitates compromise among differentiated actors.[38] Moreover, soft law has a range of political and legal effects, it interacts or overlaps with or is a precursor to one or more of the traditional sources of law.[39] It is thus like the traditional 'hard' law an expression of cooperation and a tool to guide behaviour. At the core of these hard and soft legal norms and frameworks facilitating, requiring and guiding cooperation lies an understanding of sovereignty not as a simplistic concept of freedom, independence and autonomy, but as a notion of authority, responsibility and duty to participate as a member of the international community and to cooperate to address and solve the pressing challenges of a complex and interdependent world.[40]

After having seen the game theoretical examples and the concrete reasons why international cooperation and international regulation may be needed to effectively address emerging environmental concerns, the next section will assess how far UNEP and its governing body were established to address these reasons and to promote international cooperation, and how far they are indeed able to do so and to stimulate different forms of cooperation.

3 The United Nations Environment Assembly and its function to contribute to the emergence of new international environmental law

This section will now look at UNEP and its assembly, the United Nations Environment Assembly (UNEA), a framework for facilitating, requiring and guiding cooperation to address international environmental challenges.

UNEP was established by the UN General Assembly following the recommendation of the United Nations Conference on the Human Environment of June 1972

[35] See, for instance, Joost Pauwelyn, Ramses A. Wessel and Jan Wouters, 'When Structures Become Shackles: Stagnation and Dynamics in International Law-making', 25 *European Journal of International Law* (2015) 733-763.

[36] Alan Boyle, 'Some Reflections on the Relationship of Treaties and Soft Law', 48 *International and Comparative Law Quarterly* (1999) 901-913 at 901.

[37] *Ibid*. at 901-902.

[38] Kenneth W. Abbott and Duncan Snidal, 'Hard and Soft Law in International Governance', 54 *International Organization* (2000) 421-456 at 423.

[39] Alan Boyle, 'Soft Law in International Law-Making' in Malcom D. Evans (ed.), *International Law* (Oxford University Press, 3rd ed., 2010) 118 at 122-124 and 134-147.

[40] See, generally, Perrez, *Cooperative Sovereignty*, *supra* note 30, at 331-343.

as an institutional arrangement for international environmental cooperation.[41] The UN General Assembly also decided to establish UNEP's Governing Council (GC) as a body with 58 states as its members.[42] The UNEP GC, which later became UNEA,[43] had the main functions and responsibilities to

a) promote international co-operation in the field of the environment and to recommend policies to this end;
b) provide general policy guidance for the direction and co-ordination of environmental programmes within the United Nations system and
c) review their implementation;
d) keep under review the world environmental situation in order to ensure that emerging environmental problems with international significance receive appropriate and adequate consideration by Governments;
e) promote the contribution of the relevant international scientific and other professional communities to the environmental knowledge and information; and
f) to maintain under continuing review the impact of national and international environmental policies and measures.[44]

Thus, the core functions of UNEP and its governing body can be clustered into three categories:[45] First, a *scientific function* to keep the world environment under review and identify emerging environmental problems with international significance. Second, a *policy function* to promote international cooperation, provide general policy guidance, and coordinate the environmental activities within the UN. And third, a *catalytic function* to stimulate environmental cooperation, action and policy implementation. These three functions form a cycle: science, policy, and the catalysis or promotion of action should be followed again by reviewing the environmental situation, including an assessment of the impact of environmental policies and whether they effectively help to address the identified environmental challenges, or whether additional policies are needed.

These three functions reflect the theoretical concepts explaining the desirability of cooperation outlined in section 2. By keeping the environment under review, the *scientific function* serves to assess the existence of international externalities, spillovers, or the risk of overusing common natural resources that may, in the absence of international cooperation and regulation, lead to a tragedy of the commons, a prisoners' dilemma situation or a race to a bottom. The *policy function* then serves

[41] 'Institutional and financial arrangements for international environmental cooperation', UNGA Res. 2997 of 15 December 1972. On the creation of UNEP, see, generally, Maria Ivanova, 'Designing the United Nations Environment Programme: A Story of Compromise and Confrontation', 7 *International Environmental Agreements: Politics, Law and Economics* (2007) 337-361.
[42] UNGA Res. 2997, *supra* note 35, at para 1.
[43] See *infra*, text accompanying note 61.
[44] UNGA Res. 2997, *supra* note 41, at para 2.
[45] Perrez, 'The Role of', *supra* note 1, at 5 and 13-14.

to establish an institutional and regulatory framework for cooperation through voluntary or legally binding approaches to address problems identified through the scientific function. The development of coordinated policy approaches may also help to avoid unfair competition and races to the bottom, the formulation of harmonized standards may lead to economies of scale, and common rules may facilitate trade. Furthermore, the *catalytic function* finally aims to facilitate and promote the implementation of the policies and of concrete action and cooperation, namely by stimulating and coordinating environmental activities and capacity-building within the UN system. Finally, all three functions involve a pooling of competence and expertise. This pooling leads not only to a more authoritative scientific assessment and hopefully better decision-making, but it also allows to circumvent political failures at the local level and to take better into consideration the interests of those socially, economically and politically more disadvantaged. By using an already existing international machinery and sharing the incremental costs, this makes costs less visible.

Over time, UNEP's structure and functions have been reinforced and further clarified.[46] In 2002, its GC adopted a package of measures aimed at strengthening the international environmental regime and UNEP.[47] Including requiring that the UNEP GC should be utilized more effectively in promoting international environmental cooperation, in providing broad policy advice and guidance, in identifying global environmental priorities, and in making policy recommendations.[48] Moreover, in order to ensure that all states are able to fully engage in the political work and guidance undertaken by the UNEP, it was decided that universal participation in the work of the UNEP GC should be ensured and universal membership should be considered.[49] The World Summit on Sustainable Development and the UN General Assembly endorsed these decisions later in the year.[50]

Ten years later, in 2012, the Rio+20 Conference adopted another set of measures to strengthen UNEP's scientific, policy and catalytic function,[51] which was endorsed by the UN General Assembly the same year.[52] The decision underlined the importance

[46] See, for instance, Maria Ivanova, 'Reforming the Institutional Framework for Environment and Sustainable Development: Rio+20's Subtle but Significant Impact', 12 *International Journal of Technology Management and Sustainable Development* (2013) 211-231.

[47] See Philippe Roch and Franz Perrez, 'International Environmental Governance: The Strive Towards a Comprehensive, Coherent, Effective and Efficient International Environmental Regime', 16(1) *Colorado Journal of International Environmental Law and Policy* (2005) 1-25 at 12-15.

[48] 'International environmental governance', UNEP GC Dec. SS.VII.1 (2002) para. 11.

[49] *Ibid*. at para. 11(a).

[50] 'Report on the World Summit on Sustainable Development', UN Doc. A/CONF.199/29 (2002) para. 140(d); 'World Summit on Sustainable Development', UNGA Res. 57/253 of 21 February 2003, para. 2. This confirmation was central because it broadened the relevance of the decision taken by the Special Session of UNEP's GC and made it a part of the overarching global commitment to sustainable development. See Lee Kimball, Franz Xaver Perrez and Jacob Werksman, 'The Results of the World Summit on Sustainable Development: Targets, Institutions, and Trade Implications', 13(1) *Yearbook of International Environmental Law* (2002) 3-19 at 12.

[51] Rio +20 Outcome Document 'The Future We Want', UNGA Res. 66/288 of 11 September 2012, Annex, paras 87-90.

[52] *Ibid*. at para 2.

of a strong science-policy interface for bringing together information and assessment to support informed decision-making, of the dissemination and sharing of evidence-based environmental information and raising public awareness on critical and emerging environmental issues, and of a regular review of the state of the Earth's changing environment.[53] It decided to enhance UNEP's ability to fulfil its coordinating mandate within the UN system,[54] and to strengthen its role as the 'leading global environmental authority that sets the global environmental agenda, promotes the coherent implementation of the environmental dimension of sustainable development within the United Nations system and serves as an authoritative advocate for the global environment.'[55] In this context, it also recognized the significant contributions of multilateral environmental agreements to sustainable development.[56] Moreover, it was decided to establish universal membership in the UNEP GC.[57]

Introducing universal membership to UNEP's governing body, thus making it, at that time, only subsidiary organ in the United Nations with universal membership, was 'a logical, feasible and potentially effective legal measure to upgrade UNEP's current institutional structure'.[58] While UNEP legally had the authority to provide political guidance, this authority was politically weakened by the fact that not all states directly engaged in UNEP's decision-making. Furthermore, the Conferences of Parties of multilateral environmental agreements (MEAs), for instance, had much broader membership than the UNEP GC. Introducing universal membership thus strengthened the legitimacy of the UNEP GC as an authoritative voice that sets the global environmental agenda.[59] Subsequently, the UNEP GC further clarified its mandate to be to set the global environmental agenda, to provide overarching policy guidance, to define policy responses to address emerging environmental challenges, to undertake policy review, dialogue and exchange of experiences, and to promote a strong science-policy interface by reviewing the state of the environment.[60] Building on this decision, the UN General Assembly decided to change the designation of the 'Governing Council of the United Nations Environment Programme' to the 'United Nations Environment Assembly of the United Nations Environment Programme'.[61]

UNEP's scientific, policy and *catalytic* functions and its role to promote and coordinate international policies and efforts to protect the environment, to 'provide the

[53] *Ibid*. at Annex, paras 88(d), 88(e) and 90.
[54] *Ibid*. at Annex, para. 88(c).
[55] *Ibid*. at Annex, para. 88.
[56] *Ibid*. at Annex, para. 89.
[57] *Ibid*. at Annex, para. 88 (a).
[58] Ivanova, 'Reforming the Institutional', *supra* note 46, at 224.
[59] John E. Scanlon, 'Enhancing environmental governance for sustainable development: Function-oriented options', University of Massachusets Boston Center for Governance and Sustainability Issue Brief Series No. 5 (2012) 4.
[60] 'Implementation of paragraph 88 of the outcome document of the United Nations Conference on Sustainable Development', UNEP GC Dec. 27/2 (2013) paras 5(a)-(c) and 8.
[61] 'Change of the designation of the Governing Council of the United Nations Environment Programm, UNGA Res. 67/251 of 25 July 2013, para. 2.

center of gravity for environmental affairs within the UN system',[62] and to be the United Nation's 'leading global environmental authority'[63] and 'anchor institution'[64] have been clarified, re-confirmed and strengthened several times since UNEP's creation in 1972. Thereby, its governing body, the United Nations Environment Assembly, has the critical role to bring together and engage all the UN members and to provide the forum for concrete decision-making on environmental coordination, cooperation and policy. In doing so, it has the potential of directly contributing not only to the identification and better understanding of critical and emerging international environmental concerns,[65] but also to the emergence of international environmental law. It does so by identifying available standards and best practices, by formulating policy advice and recommendations, by adopting, confirming and clarifying political and legal principles, and by deciding on specific mandates to develop new MEAs. UNEA thus contributes to the growing body of soft law, to the emergence of general principles of law, to the crystallization and affirmation of customary international law, and to the codification and formulation of new international law through treaty law.

In this process of creating hard and soft law, UNEA would have to follow typically three steps: First, it identifies an issue of critical international environmental concern. This step is inherently linked to its scientific function as reflected in UNEP's and UNEA's mandate to 'keep under review the world environmental situation in order to ensure that emerging environmental problems with international significance receive appropriate and adequate consideration by Governments.[66] to 'disseminate and share evidence-based environmental information',[67] and to 'promote a strong science-policy interface by reviewing the state of the environment'.[68] In order to trigger further measures, this scientific information has to show that an environmental issue is not only of local relevance, but of global concern requiring action at the international level.[69] Second, after the identification of an issue that warrants international action, UNEA will try to address this concern through soft measures such as raising awareness, creating a voluntary framework for cooperation, identifying best practices and models, and providing non-binding guidance. If the UNEA concludes that these voluntary approaches are not sufficient to effectively address the identified issue of environmental concern, it may move to the third step of more binding approaches and launch negotiations of a legally binding instrument.

[62] Ivanova, "Reforming the Institutional', *supra* note 41, at 345–.
[63] UNGA Res. 66/288, *supra* note 51, at Annex, chapeau of para. 88.
[64] For UNEP as anchor institution of the international environmental regime, see Maria Ivanova, 'Can the Anchor Hold? Rethinking the United Nations Environment Programme for the 21st Century' (Yale Center for Environmental Law and Policy, 2005), available at <https://elischolar.library.yale.edu/cgi/viewcontent.cgi?article=1026&context=fes-pubs> (visited 23 April 2020) at 15-30.
[65] I.e. concerns that need international cooperation, see *supra* text accompanying notes 27-29.
[66] UNGA Res. 2997, *supra* note 41, at para. 2(d).
[67] UNGA Resolution 66/288, *supra* note 51, at Annex, para. 88(e).
[68] UNEP GC Dec, 27/2, *supra* note 60, at para. 8. See also UNGA Res. 66/288, *supra* note 51, at Annex, para. 88(d).
[69] See above text accompanying notes 27-29.

The second and third steps of developing voluntary or legally binding instruments to address global environmental concerns are linked to UNEA's policy function as reflected in its mandate to 'promote international co-operation in the field of the environment', to 'recommend policies', to 'provide general policy guidance',[70] and to define 'policy responses to address emerging environmental challenges'.[71] It is important to note that the evolution from the second step of voluntary measures to the third step of creating 'hard' and binding law is fluid. Thus, the creation of voluntary frameworks, the identification of best practices, the formulation of recommendations and the confirmation of international environmental principles could contribute to the emergence of international environmental law through the crystallization of customary law and recognition of binding general principles of law.

4 UNEA's contribution to the emergence of new international environmental law: 2 examples

After having presented UNEA's mandate and functions and its potential role in the process of international environmental law-making, this section will turn to two concrete examples. These case studies illustrate the cumbersome process of following the three steps from identifying an issue of critical international environmental concern, to developing voluntary tools and frameworks of cooperation, and finally to agreeing on legally binding approaches.[72]

[70] UNGA Res. 2997, *supra* note 41, at paras 2a) and b). See also UNEP GC Dec. SS.VII.1, *supra* note 48, at para. 11.

[71] UNEP GC Dec. 27/2, *supra* note 60, at para 5(b).

[72] See also Daniel Bodansky, Jutta Brunnée, and Lavanya Rajamani, *International Climate Change Law* (Oxford University Press, 2017) 73, referring to the pre-negotiation phase (at 74-75) and the negotiation process (at 75-82) of the Paris Agreement (Paris Agreement to the United Nations Framework Convention on Climate Change, Paris, 12 December 2015, in force 4 November 2016; 55 *International Legal Materials* (2016) 740). The process described by Bodansky, Brunnéee and Rajamani follow similar patterns and difficulties as the process within UNEP.

4.1 Minamata Convention on Mercury[73,74]

First reports of methyl mercury poisoning date back to 1865.[75] However, the severe risk to human health and the environment of methyl mercury was only recognized a century later. The most notable event was the catastrophic pollution in Minamata, Japan, where industrial releases of methyl mercury caused the epidemic known as the Minamata disease in the 1950s and onwards.[76] Over time, the understanding of the risks of methyl mercury, of its capability to be transported over long-range distances, and of the increase of anthropogenic releases of mercury into the environment was growing, and in the 1990s, national and regional initiatives were undertaken to reduce or eliminate mercury releases.[77]

In 2000, concerned about the global dimension of mercury pollution, regional fora such as the Arctic Council[78] and the Executive Body for the Convention on Long-range Transboundary Air Pollution[79] called upon UNEP to initiate work on mercury,[80] and in 2001, the UNEP GC requested UNEP to undertake a global assessment of mercury and its compounds.[81] Norway, Iceland, the Netherlands and the Czech Republic proposed that the assessment should also cover other heavy metals of concern. However, this proposal did not gain sufficient support.[82] UNEP was, nevertheless, requested to consider whether there was a need for assessments of other heavy metals of concern as well.[83] UNEP's Chemicals Division in Geneva produced

[73] Minamata Convention on Mercury, Geneva, 19 January 2013, in force 16 August 2017, <http://www.mercuryconvention.org/>.

[74] This section draws on Henrik Hallgrim Eriksen and Franz Perrez, 'The Minamata Convention: A Comprehensive Response to a Global Problem', 23 *Review of European, Comparative & International Environmental Law* (2014) 195-210, which gives a more comprehensive overview of global risks posed by mercury, the process leading up to the negotiations of the Minamata Convention, the negotiation process and the key provisions of the Minamata Convention.
It should be noted that the author of this paper has been actively involved as Switzerland's lead negotiator in the negotiations of the mandate for and of the Minamata Convention itself, and that he had tabled, together with Norway's lead negotiator Henrik Eriksen, in 2003, the first proposal for a legally binding instrument on mercury. While this gives him special insights into the process, it also implies a certain partisanship.

[75] Julia R. Barrett, 'An Uneven Path Forward: The History of Methylmercury Toxicity Research', 118(8) *Environmental Health Perspectives* (2010) A352.

[76] Norio Iriguchi, *Minamata Bay 1932* (Nippon Hyoron Sha, 2012) at x, xiii, xiv, 59, 65-67, 115 and 133-134.

[77] Eriksen and Perrez, 'The Minamata Convention', *supra* note 73, at 195.

[78] See <https://arctic-council.org/en/>.

[79] Convention on Long-Range Transboundary Air Pollution, Geneva, 13 November 1979, in force 16 March 1983, 18 *International Legal Materials* (1979) 1442, <http://www.unece.org/env/lrtap/>.

[80] Barrow Declaration on the Occasion of the Second Ministerial Meeting of the Arctic Council (12-13 October 2000), available at <https://1997-2001.state.gov/global/oes/oceans/001013_barrow_declar.html> (visited 23 April 2020); 'Report of the eighteenth session of the Executive Body for the Convention on Long-range Transboundary Air Pollution', UN Doc. ECE/EB.AIR/71 (2001).

[81] 'Mercury Assessment', UNEP GC Dec. 21/5 (2001), para. 1. See also 'The Minamata Convention', *supra* note 73, at 196, discussing the different views of whether this assessment should be limited to mercury or also address other heavy metals of concern.

[82] 'Summary of the 21st session of the UNEP Governing Council and second global Ministerial Environment Forum: 5-9 February 2001', 16(16) *Earth Negotiations Bulletin* (2001) 9.

[83] UNEP GC, Dec. 21/5, *supra* note 81, para. 2.

in 2002 UNEP's first Global Mercury Assessment report, which concluded that mercury levels in the environment have increased considerably since the on-set of the industrial age, that mercury is persistent and travels in cycles, that mercury exposure has serious effects, and that due to long-range transport local or regional action is not sufficient.[84] It also concluded that significant trade in mercury and mercury-containing products is ongoing, and that coal-fire power and heat generation, cement production and mining, including small-scale gold and silver mining, and chlor-alkali production are some of the more important anthropogenic emission sources.[85] The report did not specifically address other heavy metals of concern.

When the Global Mercury Assessment was presented in 2003, the UNEP GC accepted the assessment's findings and concluded that 'there is sufficient global adverse impacts from mercury and its compounds to warrant further international action to reduce the risks to human health and the environment.'[86] Norway and Switzerland proposed to begin negotiations of a legally binding instrument, arguing that in light of the global dimension of the problem, including transboundary externalities and trade implications, voluntary actions alone would be insufficient to reduce the use and emissions of mercury, and that a legally binding instrument would be the most robust and most effective framework for concrete action, including international cooperation and support. While the EU, the African Group and some Latin American Countries supported this proposal, several countries, including the US, Canada, Australia and New Zealand opposed a legally binding approach and advocated focusing on voluntary approaches. They argued that negotiating a legally binding instrument would require a lot of time and resources and that direct voluntary action would be more effective and less costly. Moreover, China and India argued that a legally binding approach could limit their right to economic development for which mercury emissions were unavoidable.[87] A number of countries also called for global assessments of other heavy metals, in particular lead and cadmium.[88] However, no agreement could be achieved on the proposal to expand the focus on heavy metals.

After long discussions and compromises on both sides, it was agreed to request the UNEP Executive Director to establish a programme for international action on mercury and to invite submissions of governments' views on medium- and long-term actions on mercury These views were to be compiled and synthesized, including a

[84] UNEP Chemicals, *Global Mercury Assessment* (2002), available at <https://wedocs.unep.org/bitstream/handle/20.500.11822/12297/final-assessment-report-25nov02.pdf?sequence=1&isAllowed=y> (visited 23 April 2020). The key findings are summarized at iii-viii.

[85] *Ibid*. at v-vii.

[86] 'Chemicals', UNEP GC, Dec. 22/4 (2003), Sectin V para 1.

[87] Steinar Andresen, Kristin Rosendal and Jon Birger Skjærseth, 'Why Negotiate a Legally Binding Mercury Convention?', 13(4) *International Environmental Agreements: Politics, Law and Economics* (2013) 425-440, at 431-434.

[88] 'Proceedings of the Governing Council at its 22nd session', UN Doc. UNEP/GC.22/11 (2003) para. 70. Switzerland, for instance, objected to the name 'Mercury Programme', as this could eliminate possibilities for further action on other heavy metals under the same framework. See 16(30) *Earth Negotiations Bulletin* (2003) 2.

review on the possibility of developing a legally binding instrument, a non-legally binding instrument or other measures or actions for consideration by the 23rd UNEP GC.[89]

Over the next four years, the debate on whether a legally binding instrument on mercury and possibly other heavy metals was needed or not, continued.[90] In 2007, Norway and Switzerland, together with the Gambia, Iceland and Senegal, tabled a proposal for initiating negotiations for a legally binding instrument on mercury which is 'open for the possibility to include other chemicals of global concern should this be warranted'. The African Group, the EU, Brazil, Japan, Russia, and Uruguay supported the call for a legally binding instrument, while the US and Canada opposed it, introducing alternative draft decisions highlighting the need for further voluntary action through an enhanced UNEP Mercury Programme.[91] The US and Canada, supported by Australia, China and India, argued that partnerships are more effective than legally binding mandates, and that there is no sufficient information suggesting a need for additional work on lead and cadmium. After intense negotiations, the UNEP GC concluded that further long-term international action was required and agreed on a two-track approach: on the one side, it decided to continue and strengthen the voluntary actions under UNEP's Mercury Programme.[92] On the other side, it agreed to establish an Ad Hoc Open-ended Working Group (OEWG) to review and assess options for enhanced voluntary measures and new or existing international legal instruments.[93] Moreover, it requested UNEP to collect additional specific information on mercury such as on best available data on mercury emissions and trends, results from modelling on a global scale on emissions, on best practices for reducing mercury emissions, and on contaminated sites.[94] Finally, with regard to lead and cadmium, the GC requested UNEP to provide available information to address the identified data and information gaps.[95]

Until then, several options of legally binding approaches to address mercury were discussed, including amending the Stockholm Convention on Persistent Organic Pollutants[96] or establishing a new, freestanding convention on mercury.[97] Switzerland, in close cooperation with Norway, therefore initiated and led an informal process to narrow down the legally binding options and to broaden the support for

[89] UNEP GC Dec. 22/4 (2003), *supra* note 76, section V, operative paras 4 and 9 and annex. See also Eriksen and Perrez, 'The Minamata Convention', *supra* note 73, at 196-197 with further references.
[90] *Ibid*. at 197-198.
[91] 16(75) *Earth Negotiations Bulletin* (2007) 2.
[92] 'Chemicals Management' UNEP GC Dec. 24/3 (2007) paras 25-27.
[93] *Ibid*. at (Ibid. at paras 28-33).
[94] *Ibid*. at para. 24.
[95] *Ibid*. at para. 14.
[96] Convention on Persistent Organic Pollutants, Stockholm, 22 May 2001, in force 17 May 2004, 40 *International Legal Materials* (2001) 532, <http://chm.pops.int>.
[97] See Andresen et al, 'Why Negotiate a', *supra* note 87, at 430; Noelle Eckley Selin and Henrik Selin, 'Global Politics of Mercury Pollution: The Need for Multi-scale Governance', 15(3) *Review of European Community and International Environmental Law* (2006) 258-269 at 264-266.

a legally binding instrument. Switzerland invited a small group of countries that all shared an ambitious approach to international chemicals and waste policy. In order to have maximum impact on the work of the OEWG, on the regional deliberations and the next UNEP GC, Switzerland invited at least two countries from each of the UN regions that were active and outspoken and that were not afraid of defending their position also in difficult negotiation situations with a lot of tension and pressure. During this process, it became clear that a legally binding approach could best be realized through a new, freestanding legally binding instrument on mercury. One of the reasons for this was that a new convention could also become a framework for future regulation of other chemicals of global concern, such as lead and cadmium.[98]

Finally, in 2009, the UNEP GC agreed to launch negotiations of a legally binding instrument on mercury.[99] In order to gain support also from those countries that still favoured voluntary approaches, the decision explicitly highlighted that the new convention could include both binding and voluntary approaches and that it should consider flexibility in that some provisions could allow countries' discretion in the implementation of their commitments.[100] The negotiation mandate foresaw a comprehensive approach addressing mercury throughout its life-cycle, i.e. supply, trade, demand, emissions and waste.[101] While it limited the focus of the new convention to mercury, it explicitly recognized that the mandate of the intergovernmental negotiating committee could be supplemented by further decisions of the GC.[102] However, in the dynamics of the negotiations, proposals for doing so through a the concept of an "open door" that would have allowed to include at a later stage also other heavy metals of global concern did not gain traction.

[98] Franz Perrez and Georg Karlaganis, 'Emerging Issues in Global Chemicals Policy' in Philip Wexler and Jan van der Kolk (eds), *Chemicals, Environment, Health: A Global Management Perspective* (CRC Press, 2012), 689-725 at 694; Federal Office for the Environment, Report from the first Glion Like-Minded Meeting (May 2008), on file with the author.

[99] 'Chemicals Management, Including Mercury', UNEP GC Dec. 25/5 (2009) paras 25-31. For a description of the negotiations leading up to that decision, including the impact of the change of administration in the US, see also Eriksen and Perrez, 'The Minamata Convention', *supra* note 73, at 198. See also Henrik Selin, 'Global Environmental Law and Treaty-Making on Hazardous Substances: The Minamata Convention and Mercury Abatement', 14(1) *Global Environmental Politics* (2013) 1-19 at 7; Andresen et al, 'Why Negotiate a', *supra* note 87, at 432-437. See also 16(72) *Earth Negotiations Bulletin* (2008) 3 and 7; and 16(78) *Earth Negotiations Bulletins* (2009) 3 and 7.

[100] UNEP GC Dec. 25/5, *supra* note 99, paras 25 and 28(a).

[101] *Ibid*. at para. 27.

[102] *Ibid*. at para. 30.

The negotiation mandate adopted by the UNEP GC in 2009 foresaw that the negotiations should begin in 2010 and be completed prior to the GC session in 2013.[103] Although each of the main thematic areas of negotiations involved specific difficulties, the negotiations progressed well, and the intergovernmental negotiating committee was able to agree in Geneva in January 2013 on the text of the Minamata Convention on mercury. Later the same year, the Diplomatic Conference of Plenipotentiaries formally adopted the Convention and opened it for signature in Kumamoto, Japan, in October 2013.[104]

Interestingly, one of the most contentious issues in the negotiations related to the question whether and how the Convention should differentiate between countries.[105] Invoking Principle 7 of the Rio Declaration on common but differentiated responsibilities (CBDR),[106] several developing countries argued that the new instrument should differentiate between developed and developing countries. Others argued that while differentiation according to responsibilities and capabilities may in some cases be important, such differentiation should be based on the specific circumstances of countries and reflect the prevailing socio-economic realities where developing countries are the largest source of atmospheric emissions of mercury, and where several developing countries currently have a higher per capita gross domestic product than some developed countries. A differentiation according to two rigid, historical classes of countries would therefore neither be equitable nor effective.[107]

Countries were able to agree not to differentiate between developed and developing countries in the Convention's substantive provisions and obligations nor with regard to the compliance procedure. They also agreed that all Parties, within their capabilities, are invited to contribute to the financial mechanism;[108] all Parties are called to cooperate to provide, within their respective capabilities, capacity-building and technical assistance to developing country Parties;[109] and developed country Parties and other Parties within their capabilities shall promote and facilitate the development, transfer and diffusion of, and access to relevant technologies to developing countries.[110]

[103] *Ibid*. at para. 26. Other mandates to negotiate a new legally binding instrument included similar timeframes. See, for instance, the mandate to adopt a new instrument under the UNFCCC which later became the Paris Agreement, which was adopted in 2011 in Durban and foresaw conclusions of the negotiations no later than in 2015: 'Establishment of an Ad Hoc Working Group on the Durban Platform for Enhanced Action', UNFCCC Dec. 1/CP.17 (2011) paras 3 and 4.

[104] For a general description of the negotiation process, see Eriksen and Perrez, 'The Minamata Convention', *supra* note 73, at 199-200. For a description of the specific negotiations in the main thematic areas and a summary of the key provisions of the Minamata Convention, see *ibid*. at 200-209.

[105] *Ibid*. at 200-203.

[106] 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, Principle 7.

[107] 28(8) *Earth Negotiations Bulletin* (2011) 13.

[108] Article 12(12).

[109] Article 14(1).

[110] Article14(3).

The negotiations on how to reflect the principle of CBDR in the preamble continued into the last phases of the negotiations and could not be solved within normal negotiations and had to be addressed by a small Friends of the Chair group. These discussions were especially difficult because of the ongoing parallel negotiations of the Paris agreement, where differentiation and reference to the CBDR principle were one of the most divisive issues involving similar overarching political concerns about the engagement or non-engagement of the more advanced developing countries.[111] The small group finally found a compromise, which combined the reference to the principle with an acknowledgment of the 'States' respective circumstances and capabities and the need for global action'.[112] Linking CBDR to the states' respective circumstances and capabilities makes clear that the concept should not be understood as dividing the world into fixed categories of developed and developing countries, but that it provides for 'targeted differentiation and flexibility'.[113] One year later, the US-China Joint Announcement on Climate Change similarly qualified CBDR[114] 'in the light of different national circumstances',[115] and this solution became later the basis for how the Paris Agreement addressed the issue.[116] Like in the Minamata Convention, this formulation represented a 'political signal of flexibility and dynamisms', underlining that given the differences in national circumstances among states, a simple categorization of states as developed or developing might not be appropriate.[117] Thus, the negotiations of the Minamata Convention have contributed to the evolution of the understanding of the CBDR principle. At the same time, they have also strongly influenced the Paris Agreement.

Mercury is a good example how UNEP and its governing body successfully addressed an emerging issue in international environmental law: the *scientific function* identified the need for international action and cooperation. Based on this, the *policy function* developed the Mercury Programme as a voluntary tool and framework for cooperation. Noting that the catalytic function of the voluntary approach was not sufficient, UNEP and its governing body then moved to the development of a

[111] See Bodansky et al, *International Climate Change*, *supra* note 72, at 219-222, indicating that differentiation was one of the most divisive overarching issues in the Paris Agreement negotiations. For an in-depth discussion of the CBDR principle in the Paris Agreement, see Lavanya Rajamani and Emmanuel Guérin, 'Central Concepts in the Paris Agreement and How They Evolved' in Daniel Klein et al (eds), *The Paris Climate Agreement: Analysis and Commentary* (Oxford University Press, 2017) 74-90. See also Christina Voigt and Felipe Ferriera, 'Differentiation in the Paris Agreement', 6(1-2) *Climate Law Special Issue* (2016) 58-74.

[112] Preambular para. 4 of the Minamata Convention. See also 28(22) *Earth Negotiations Bulletins* (2013) 4.

[113] Eriksen and Perrez, 'The Minamata Convention', *supra* note 73, at 203.

[114] The Climate Change Convention uses the term 'common but differentiated responsibilities and respective capabilities', which is referred to often as 'CBDR-RC' and not only as 'CBDR'.

[115] US-China Joint Announcement on Climate Change (Beijing, China, 12 November 2014), available at <https://obamawhitehouse.archives.gov/the-press-office/2014/11/11/us-china-joint-announcement-climate-change> (visited 23 April 2020). Interestingly, the US lawyer involved in finding the compromise in the small group in Geneva later negotiated the reference to CBDR in the US-China Joint Announcement.

[116] Paris Agreement, preambular para. 3, Arts 2(2), 4(3) and 4(19), ('common but differentiated responsibilities and respective capabilities, in the light of different national circumstances').

[117] Bodansky et al, *International Climate Change*, *supra* note 72, at 221.

legally binding framework. However, as successful as this example seems to be, it should not be forgotten that proposals to address also other heavy metals such as lead and cadmium were not successful and the scope of the new binding framework had to be limited to mercury.

4.2 Geoengineering

While the international community has agreed on the objective to holding 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,[118] the current policies, measures and declared nationally determined emission reduction targets are not in line with this objective.[119] This motivates the search for additional solutions such as technical interventions in the climate system, often referred to by collective terms such as 'geoengineering', 'climate engineering' or 'climate intervention'.[120] All these measures, for the purpose of simplicity referred to in this paper as 'geoengineering', have in common that they do not reduce anthropogenic greenhouse gas emissions, but aim at reducing global warming by means of large-scale technical measures which directly intervene in the climate system.[121] Typically, two categories of geoengineering are distinguished: Carbon Dioxide Removal (CDR) and Solar Radiation Management (SRM).[122] Examples of CDR include the capturing of CO_2 from the atmosphere or directly at an emission source and its geological storing, the fixation of CO_2 from atmosphere in forests through largescale afforestation, or the fertilization of oceans to enhance algae growth with associate CO_2 fixation.[123] On the other hand, SRM tries to reduce warming by artificially increasing the reflection of solar radiation in the atmosphere or at the Earth surface, by, for instance, introducing aerosols into higher atmospheric layers. SRM does not reduce the CO_2 concentration in the atmosphere but can be used to save time until the CO_2 concentration in the atmosphere can be sufficiently reduced.[124] SRM could

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

[119] See, for instance, UNEP's Emissions Gap Report 2019, available at https://www.unenvironment.org/resources/emissions-gap-report-2019 (visited 5 August 2020), noting at XVIII that '[t]he emissions gap is large. In 2030, annual emissions need to be 15 GtCO2e lower than current unconditional NDCs imply for the 2°C goal, and 32 GtCO2e lower for the 1.5°C goal.'

[120] Swiss Academies of Arts and Science, 'Reverse emissions or influence solar radiation: Is "geoengineering" worthwhile, feasible and if so, at what price?', 13(4) *Swiss Academies factsheets* (2018), available at <http://www.swiss-academies.ch/en/index/Publikationen/Swiss-Academies-Factsheets.html> (visited 24 April 2020) at 1.

[121] German Environment Agency, 'Policy Brief: Governance of Geoengineering' (2019), available at <https://www.umweltbundesamt.de/sites/default/files/medien/2378/dokumente/policy_brief_governance_of_geoengineering_0.pdf> (visited 24 April 2020) at 1.

[122] IPCC, *Special Report: Global Warming of 1.5° C* (2018) at 550. For an excellent overview of the two categories of geoengineering, see Paul Rouse, 'A Review of Climate-Altering Technologies' in Marie-Valentine Florin (ed.), *International Governance of Climate Engineering* (International Risk Governance Center EPFL, 2020) 18–47, available at <https://www.epfl.ch/research/domains/irgc/climate-engineerin> (visited 3 August 2020).

[123] Swiss Academies of Arts and Sciences, 'Reverse emissions or', *supra* note 120, at 2 and 4 (with a table comparing the main characteristics and differences of emission reduction, CDR and SRM).

[124] *Ibid*. at 2.

be attractive, as it would work much faster than emission reductions or CRM and is comparably less expensive.[125] However, it does not address the rising greenhouse gas concentration that causes climate change, nor the non-temperature related consequences of climate change, such as ocean acidification.[126]

While technical knowledge regarding feasibility, especially in large scale dimensions, is still lacking for SRM but also for many CDR measures, their application is tested and becomes a real option.[127] All the scenarios of the IPCC for meeting the 1.5° target include negative emissions, i.e. measures to remove CO_2 from the atmosphere. At the same time, all measures deployed at large-scale can have significant adverse side effects: SRM involves risks, such as changes in precipitation patterns with sometimes serious regional effects.[128] Furthermore, if once started, SRM would have to be continued in a controlled manner until greenhouse gas concentrations have fallen back to the level prior to the use of SRM, as if stopped abruptly, temperature would immediately increase at a pace to which it would be difficult to adapt.[129] Ocean fertilization could similarly involve risks such as intervention in the highly complex structure of ocean food chains and create adverse effects on the marine environment, and it is argued that the costs of the ecological consequences of ocean fertilization are incalculable.[130] Deployed at large scale, CDR measures such as large scale afforestation could create land use conflicts, risks for food security, conflict with the Sustainable Development Goals and with the conservation of natural resources.[131]

In the light of these uncertainties and risks, some international fora have started to address geoengineering:[132] the Conference of the Parties to the Convention on Biological Diversity[133] recommended a broad moratorium on geoengineering in 2010.[134] The Parties to the London Protocol on Prevention of Marine Pollution[135] adopted an amendment prohibiting ocean fertilization in 2013.[136] The Federated

[125] Rouse, 'A Review of', *supra* note 122, at 41, providing an overview of SRM potential cooling and costs in Table 4.
[126] *Ibid*.
[127] *Ibid*. at 3.
[128] Rouse, 'A Review of', *supra* note 122, at 46, Table 5 providing a summary of associated uncertainties.
[129] *Ibid*. at 4.
[130] See, for instance, German Environment Agency, 'Policy Brief: Governance', *supra* note 121, at 3-4.
[131] *Ibid*. at 3, Rouse, 'A Review of', *supra* note 122, at 46, Table 3.
[132] For an overview, see Anna-Maria Hubert, 'International Legal and Institutional Arrangements relevant to the Governance of Climate Engineering Technologies' in Marie-Valentine Florin (ed.), *International Governance of Climate Engineering* (International Risk Governance Center EPFL, 2020), 49-73. See also Susan Biniaz and Daniel Bodansky, *Solar Climate Intervention: Options for International Assessment and Decision-Making* (C2ES and SilverLining, 2020), available at <https://www.c2es.org/document/solar-climate-intervention-options-for-international-assessment-and-decision-making/> (visited 7 August 2020), assessing different fora as to how well they would be suited to address solar climate interventions.
[133] 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>.
[134] 'Biodiversity and climate change', CBD Dec. X/33 (2010).
[135] Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, London, 17 November 1996, in force 24 March 2006, 36 *International Legal Materials* (2006) 1.
[136] IMO Res. LP.4(8) on the amendment to the London Protocol to regulate the placement of matter for ocean fertilization and other marine geoengineering activities (2013).

States of Micronesia, Mali, Morocco and Nigeria submitted a proposal at the meeting of Parties to the Montreal Ozone Protocol[137] in November 2018 requesting a report on SRM by the Montreal Protocol's Scientific Assessment Panel, but withdrew it due to time constraints.[138] And, because of the uncertainties, knowledge gaps and substantial risks and ethical questions they involve, the IPCC has decided not to include SRM or ocean acidification in its scenarios.[139] However, despite the uncertainties and complex environmental and ethical question involved, a comprehensive assessment of the potential, risks and governance needs of geoengineering is so far missing.[140]

In the light of the significant environmental and geopolitical risks and the existing substantial knowledge gaps associated with the utilization of geoengineering, Switzerland, supported by 11 other countries representing small and big economies from all UN regions,[141] submitted a draft Resolution for consideration for the 4th UNEA in March 2019, mandating UNEP to prepare an assessment of geoengineering.[142] Switzerland argued that given its core scientific function to keep the environment under review and to identify emerging environmental problems with international significance and in the light of its environmental expertise, credibility and its trans-sectorial approach, UNEP is well placed to prepare such an assessment.[143] The proposal asked UNEP's Executive Director to prepare a report that assesses criteria to determine SRM and CDR technologies, actors and activities with regard to research and deployment, the current state of science surrounding such technologies, including as related to risk, benefits and uncertainties, the current state and challenges of governance frameworks, and possible future governance frameworks.[144]

The proposal received a lot of support.[145] However, a group of countries including the European Union and Bolivia was concerned that it would weaken existing

[137] 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/>.

[138] 'Report of the Thirtieth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer' (2018) at paras 211-214 and 226. 19(145) *Earth Negotiations Bulletin* (2018) 2-3 and 13.

[139] IPCC, *Summary for Policymaker of the IPCC special report on global warming of 1.5° C* (2018), available at <https://www.ipcc.ch/site/assets/uploads/2018/10/SR15_SPM_version_stand_alone_LR.pdf> (visited 24 April 2020) at 12-13.

[140] Swiss Academies of Arts and Sciences, 'Reverse emissions or', *supra* note 120, at 4 and 6. Similarly, see German Environment Agency, 'Policy Brief: Governance', *supra* note 121, at 4.

[141] The resolution of Switzerland was co-sponsored by Burkina Faso, Federated States of Micronesia, Georgia, Liechtenstein, Mali, Mexico, Monaco, Montenegro, New Zealand, Niger and Senegal.

[142] For an excellent discussion of the proposal and the negotiation at UNEA-4, see Sikina Jinnah and Simon Nicholson, 'The hidden politics of climate engineering', 12 *Naturel Geoscience* (2019) 876–879.

[143] 'Switzerland, Accompanying Note to Draft Resolution for the 4th Session of the United Nations Environment Assembly of UNEP' (November 2018), available at <https://papersmart.unon.org/resolution/uploads/4.5_draft_guidance_on_submission_of_resolutions.pdf> (visited 24 April 2020).

[144] 'Switzerland, Draft Resolution for consideration for the 4th United Nations Environment Assembly' (21 January 2019), available at <https://papersmart.unon.org/resolution/uploads/switzerland_-_resolution_submission_-_geoengineering_and_its_governance_-_unea_4_.pdf> (visited 24 April 2020). See also Jinnah and Nicholson, 'The hidden politics', *supra* note 142, at 2.

[145] For a more detailed analysis of the reactions to the proposal, including from experts and academics, see Perrez 'The Role of UNEA', *supra* note 45, at 11-12.

international efforts to govern CDR and SRM under, for example, the Convention on Biological Diversity, and that it could create an enabling framework for geoengineering. The US and Saudi Arabia criticized the proposal for not sufficiently differentiating between the technologies, that UNEP is not sufficiently 'scientific' and neutral to make such an assessment, that it would lead to a polarized and ideological debate and limit future decision space.[146] The subsequent negotiations focused on four issues:[147] whether the decision should include a reference to the precautionary principle; whether the mandate to UNEP comes too early and the ongoing work of the IPCC on geoengineering should be waited; whether the mandate is too broad; and, finally, whether UNEP should at all look at the geoengineering governance issue.

After long formal and informal negotiations, Switzerland and the 11 co-sponsors presented a revised proposal that attempted to address the different concerns. It replaced in the operative paragraphs the term geoengineering by CDM and SRF, it avoided references to assessment or governance recommendations, it referred more explicitly to the other fora where the issue is discussed, and it introduced a reference to precaution[148] in the preambular section. While the EU and Bolivia would have supported this compromise, the US refused to accept the text and Switzerland withdraw the proposal in the closing session of the Committee of the Whole due to lack of consensus achieved.[149] However, in the closing session of UNEA 4, several countries expressed regret that the draft resolution was withdrawn and they announced to raise the issue again at UNEA-5.[150]

Thus, in difference to mercury, it was not possible to initiate an assessment of the risks, potentials and possible governance needs of geoengineering within UNEP. In the light of UNEP's scientific function to keep the world environment under review and identify emerging environmental problems with international significance, this seems to be surprising. However, as seen in the first example, this scientific function may well identify areas that need, according to the theoretical framework described in Section 2, international cooperation and thus trigger UNEP's policy function. This may lead to the formulation of a voluntary framework for cooperation and action or even to new binding norms of international environmental law limiting

[146] See also *ibid*. at 2. See also reactions from experts on the Swiss proposal: Forum for Climate Engineering Assessment, 'Geoengineering on the Agenda at the United Nations Environment Assembly: The Swiss Resolution on Geoengineering and its Governanc (2019), available at <http://ceassessment.org/geoengineering-on-the-agenda-at-the-united-nations-environment-assembly/> (visited 24 April 2020).

[147] For a more detailed discussion of the negotiations, see Perrez 'The Role of UNEA', *supra* note 45, at 12-13.

[148] For a more detailed discussion of the arguments for and against such reference to precaution, see *ibid*. at 12-13.

[149] See 16(151) *Earth Negotiations Bulletin* (2019). See also Jean Chemnik, 'U.S. Blocks U.N. Resolution on Geoengineering', *Scientific American* (15 March 2019), available at <https://www.scientificamerican.com/article/u-s-blocks-u-n-resolution-on-geoengineering/> (visited 24 April 2020).
In principle, UNEA could also take a decision by vote, but Switzerland and its co-sponsors felt that it would be preferable to invest more efforts to achieve consensus at the next UNEA.

[150] 16(153) *Earth Negotiations Bulletin* (2019) 20.

the use of certain geoengineering technologies. It is not surprising that a state with much expertise and capacity in different areas of geoengineering was concerned that such an assessment by UNEP could set off a process that might limit its future decision space. Further, it is also not surprising that a state with a big interest promoting geoengineering as a possible alternative to drastic reduction in emissions from oil consumption was similarly not interested in launching a process that could limit future application of this new technology. Thus, several factors prevented UNEA from addressing successfully the emerging issue of geoengineering, including the direct economic and/or political interest not to limit the future use of geoengineering technologies; the fear that a scientific assessment of problems by UNEP could trigger a political process leading to such limitation; the absence of sufficiently strong political pressure to better understand the risks of geoengineering technologies; and finally a few states not believing that a better common understanding of the risks and potentials of geoengineering and of the benefit of international cooperation in this area is ultimately also in their interest.

5 Conclusions

This article has argued in section 2 that providing a framework for and regulating cooperation is a key function of international environmental law, and in section 3 that UNEP was established to provide such a framework. Its governing body, the UNEA and its predecessor the UNEP GC, has the mandate to identify critical environmental issues of global concern, to provide general policy guidance, and catalyze environmental cooperation, action and policy implementation. By doing so, it can contribute to the growing body of soft law, to the emergence of general principles of law, to the crystallization and affirmation of customary international law, and to the codification and formulation of new international law through treaty law.

The example of the Minamata Convention has illustrated how UNEP's governing body has indeed contributed to the formulation of international environmental law in several ways: first, it mandated UNEP to collect scientific information to better understand the mercury problem as an issue of global environmental concern and to support informed decision-making. Second, it established a Mercury Programme as framework for voluntary action – and by collecting best practices and developing voluntary guidance, the Mercury Programme has contributed to the emergence of soft law. Third, by launching negotiations of a new legally binding agreement, it triggered the development of new environmental treaty law. Fourth, it shaped through the negotiation process of the Minamata Convention international environmental principles such as the CBDR principle. And finally, it also influenced the content of other MEAs such as the Paris Agreement on Climate Change.

The second example, the proposal to start in UNEA a process for better understanding the risks, benefits and potential international governance needs of geoengineering,

was less successful. The first example has shown that mandating UNEP to undertake a scientific assessment of an issue of concern could lead to new legally binding norms. It seems that in the second example, the political concerns by some were too big that this could happen with regard to geoengineering as well and that this could ultimately lead to an undue limitation of their future decision space. However, as shown by the first example, it had also required several steps until UNEP agreed to launch negotiations of a legally binding instrument on mercury. Several countries have already indicated that they will continue their efforts to develop a better understanding of the implications of geoengineering. The presentation of the resolution on geoengineering at UNEA-4 may thus have marked the beginning of further multilateral conversation of geoengineering,[151] and it is therefore too early to say whether UNEA will finally similarly be able to contribute to the emergence of a new normative framework that coordinates international action on geoengineering. Other issues may also require international action. These include the risks posed by lead, cadmium and arsenic,[152] but also new challenges like microplastics, endocrine disruptors, antibiotics, and nutrients such as nitrogen and phosphorus.[153] Based on its scientific, policy and catalytic functions, UNEP may engage in each of these issues.

Key factors that contributed to the success of the first example included agreement on the existence of a clear global risk, the realization that dealing with this risk unilaterally would be ineffective and cooperation therefore desirable, a dedicated group of countries pushing for a legally binding approach, and last but not least the existence of an institution that provided for a well informed and well organized process.[154] UNEA has all the ingredients needed to be such an institution; however, countries have to be ready to make use of it. The 50th anniversary of the Stockholm Conference on the Human Environment which led to the foundation of UNEP may be a good opportunity for this.

[151] Janos Pasztor, 'Recalibrating Our Work after the UNEA Resolution' (2019), available at <https://www.c2g2.net/recalibrating-our-work-after-the-unea-resolution> (visited 3 August 2020).

[152] See, for instance, UNEP, *An Assessment Report of Issues of Concern* (forthcoming 2020), Summary, Chapter 6.3

[153] For a general overview of existing and emerging environmental issues that may require international action, see, generally, UNEP, *Global Environmental Outlook*, *supra* note 16.

[154] Eriksen and Perrez, 'The Minamata Convention', *supra* note 73, at 209.

Gaps and Opportunities for Synergies in International Environmental Law on Climate and Biodiversity to Promote the Sustainable Development Goals

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1 Introduction

The Sustainable Development Goals (SDGs)[5] represent a new mode of governance through shared goals instead of legally binding international agreements.[6] Nevertheless, global action is required as the sustainability challenges transcend national boundaries. This is particularly true for global environmental commons that make

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

[6] Frank Biermann, Norichika Kanie, and Rakhyun E Kim, 'Global Governance by Goal-Setting: The Novel Approach of the UN Sustainable Development Goals', 26 *Current Opinion in Environmental Sustainability* (2017) 26–31.

up the stock of global natural capital and sustain life on Earth. International law recognizes four specific areas of global commons that fall outside of any national jurisdiction: the high seas, the atmosphere, Antarctica and outer space. In the context of sustainable development, other commons which may lie within national or regional jurisdictions, but whose continuing existence confers benefits beyond them, are often mentioned: the tropical rain forests, land and biodiversity.[7]

Although the environmental dimension has been deemed as the main priority for ensuring sustainable development in the long run,[8] the global environmental commons are currently deteriorating at an unprecedented rate, and the impacts are felt across borders[9] – unevenly across the world.[10] Moreover, SDG 13 (climate action), 14 (life under water) and 15 (life on land) are expected to be further affected by progress on the socio-economic SDGs in a business-as-usual scenario.[11] The required action to reverse the negative trends also includes cooperation through appropriate international legal frameworks.[12]

The global environmental commons are intrinsically linked. For instance, biodiversity is affected by climate change, with negative consequences for human well-being. At the same time, biodiversity, through the multiple ecosystem services it supports, also makes important contributions to both climate-change mitigation and adaptation.[13] Consequently, conserving and sustainably managing biodiversity is critical for addressing climate change, and vice versa. In order to harness the synergies and achieve cost-effective action in safeguarding the global commons and to reverse their deterioration, these interactions need to be better understood and accounted for in actions spanning multiple scales.

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7 Independent Group of Scientists Appointed by the Secretary-General (IGS), 'Global Sustainable Development Report 2019: The Future Is Now – Science for Achieving Sustainable Development' (2019), available at <https://sustainabledevelopment.un.org/globalsdreport/2019#home> (visited 29 May 2020).

8 David Griggs et al, 'Sustainable development goals for people and planet', 495(7441) *Nature* (2013) 305-307.

9 Independent Group of Scientists Appointed by the Secretary-General (IGS), 'Global Sustainable Development', *supra* note 7.

10 UN Environment, 'Global Environment Outlook GEO-6: Summary for Policymakers' (2019), available at <https://wedocs.unep.org/bitstream/handle/20.500.11822/27652/GEO6SPM_EN.pdf?sequence=1&isAllowed=y> (visited 29 May 2020).

11 Randers, Jorgen, et al, 'Achieving the 17 Sustainable Development Goals within 9 planetary boundaries', 2 *Global Sustainability* (2019) e24, 1–11.

12 Malgorzata Blicharska et al, 'Biodiversity's Contributions to Sustainable Development', 2 *Nature Sustainability* (2019) 1083–1093. 'Gaps in international environmental law and environment-related instruments: towards a global pact for the environment', Report of the UN Secretary-General, UN Doc. A/73/419 (2018).

13 Blicharska et al, 'Biodiversity's Contributions to', *supra* note 13; 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' (2019), available at <https://www.cbd.int/doc/publications/cbd-ts-41-en.pdf> (visited 29 May 2020).

In general, it has been argued that achieving the SDGs requires knowledge about the interactions between different SDGs; i.e., how action to promote a specific goal or target supports or hinders the achievement of the other goals. Previous analysis has identified both trade-offs as well as synergies between efforts that intend to promote different goals.[14] Though the SDGs are grounded in existing commitments expressed in various international agreements and soft law instruments,[15] there is scarce explicit empirical analysis of how the interactions between different SDGs are addressed by the international legal framework, particularly international environmental law (IEL).[16] Most international institutional arrangements tend to operate in relative isolation, and the potential of the SDGs, as 'integrated and indivisible', to introduce coherence remains an open question.[17] At the same time, international law provides a normative context in which the SDGs and targets should operate and interact with each other – and hence the fragmented structure of IEL[18] is likely to affect the trade-offs and synergies between various SDGs.[19]

In this paper, we focus on the interactions between climate action (SDG 13) and halting (terrestrial) biodiversity loss (SDG 15) vis-à-vis the international legal framework; in particular, the relevant major legal instruments: the United Nations Framework Convention on Climate Change (UNFCCC)[20] and the Convention on Biological Diversity (CBD).[21] First, we review the drivers of climate change and biodiversity loss and identify actions that would likely harness synergies in efforts to promote SDGs 13 and 15 based on existing literature (section 2). An analytical framework, including a set of focus areas and related keywords, is derived from the review. The UNFCCC and CBD are then analyzed for their potential to support harnessing those synergies, as well as the extent to which they address potential trade-offs between SDGs 13 and 15 (section 3). Our focus is on the global goals at the level of their main intent (i.e., halting biodiversity loss and climate change), although we also make some reference to interactions at the level of specific targets under the SDGs.

[14] International Council for Science (ICSU), 'A Guide to SDG Interactions: From Science to Implementation' (2017), available at <http://www.icsu.org/cms/2017/05/SDGs-Guide-to-Interactions.pdf> (visited 19 December 2019); Måns Nilsson, Dave Griggs, and Martin Visbeck, 'Map the Interactions between Sustainable Development Goals', 534 *Nature News* (2016) 320-322; IGS, 'Global Sustainable Development', *supra* note 7.

[15] Rakhyun E. Kim, 'The Nexus between International Law and the Sustainable Development Goals', 25 *Review of European, Comparative & International Environmental Law* (2016) 15–26.

[16] But see: Mara Ntona and Elisa Morgera, 'Connecting SDG 14 with the Other Sustainable Development Goals through Marine Spatial Planning', 93 *Marine Policy* (2017) 214-222; Dona Azizi, Frank Biermann, and Rakhyun E. Kim, 'Policy Integration for Sustainable Development through Multilateral Environmental Agreements: An Empirical Analysis, 2007–2016', 25 *Global Governance: A Review of Multilateralism and International Organizations* (2019) 445–75.

[17] Kim, 'The Nexus between', *supra* note 15.

[18] UN Doc. A/73/419, *supra* note 12.

[19] Kim, 'The Nexus between', *supra* note 15.

[20] 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>.

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

The UNFCCC and the CBD are two of the conventions that opened for signatures at the Rio 'Earth Summit' in 1992. The CBD is the main international legal instrument addressing the conservation and sustainable use of biodiversity,[22] ratified today by 196 parties.[23] The three overarching objectives of the Convention are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of benefits from the utilization of genetic resources.[24] The UNFCCC also has nearly universal membership, ratified today by 197 parties. Its ultimate objective is the stabilization of greenhouse gas concentrations in the atmosphere 'at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system'.[25] Together with the third Rio Convention, the Convention to Combat Desertification (CCD),[26] these Conventions are intrinsically linked at the outset. A Joint Liaison Group is to boost cooperation among the three Conventions and to develop synergies in their activities on issues of mutual concern.[27]

Here, we analyze how those synergies are reflected in the CBD convention text,[28] Conference of Parties (COP) decisions, primarily those adopted after 2015 (the starting year of the Agenda 2030 and the SDGs), the Strategic Plan 2011-2020 and its Aichi targets,[29] as well as the Zero Draft of the new post-2020 Global Biodiversity Framework[30] published in January 2020. These documents reflect the most current status of the ongoing discussion on how to address drivers, potential trade-offs and co-benefits between SDGs 13 and 15 and how to promote synergies under the CBD. COP decisions on biodiversity and climate change that have been adopted before 2015 were taken into account additionally.[31] Key UNFCCC agreements and relevant COP decisions were analyzed in parallel. The focus was on a large set of COP decisions that addressed land use, land-use change and forestry, including the most recent decisions on agriculture. Additionally, decisions taken at the last two Climate COPs in Katowice (December 2018) and Madrid (December 2019), including those serving as the meetings of the Parties under the Kyoto Protocol[32] and

[22] UN Doc. A/73/419, *supra* note 12.

[23] Convention on Biological Diversity (CBD), 'List of parties', available at <https://www.cbd.int/information/parties.shtml> (visited 1 October 2020).

[24] Article 1 of the CBD.

[25] Article 2 of the UNFCCC.

[26] United Nations 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>.

[27] UNFCCC, 'The Joint Liaison Group', available at <https://unfccc.int/about-us/about-the-secretariat/the-joint-liaison-group> (visited 29 April 2020).

[28] CBD, 'Text of the Convention', available at <https://www.cbd.int/convention/text/> (visited 20 April 2020).

[29] 'The Strategic Plan for Biodiversity 2011–2020 and the Aichi Biodiversity Targets', CBD Dec. 10/2 (2011).

[30] CBD, WG2020-02 documents, available at <https://www.cbd.int/conferences/post2020/wg2020-02/documents> (visited 20 April 2020).

[31] All CBD COP decisions can be accessed through <https://www.cbd.int/decisions/cop/>.

[32] 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.

under the Paris Agreement,[33] were assessed. The overarching UNFCCC agreements included were the Convention itself, the Kyoto Protocol, the Copenhagen Accord[34] and the Paris Agreement.

Concurrently, we analyze how the interactions between SDGs 13 and 15 are addressed in the context of the United Nations Environment Assembly (UNEA)[35] in section 4. UNEA was created at the United Nations Conference on Sustainable Development ('Rio+20') in 2012, when world leaders called for United Nations Environment Programme (UNEP)[36] to be strengthened and upgraded.[37] It is considered to be the world's highest-level decision-making body on the environment, with the specific role in setting the global environmental agenda and providing overarching policy guidance and defining policy responses to address emerging environmental challenges.[38] Though UNEA outcomes – resolutions, decisions and Ministerial declarations – are not international legal instruments, they constitute the outcome of a global political process which is part of the institutional architecture for international environmental governance. This consists of a decentralized web of multilateral institutions, agreements, processes and consultative mechanisms that address environmental and environment-related matters within the broader context of sustainable development.[39] Consequently, UNEA outcomes can be considered a complementary source of guidance within the international environmental policy context. In particular, UNEA outcomes influence UNEP which is responsible for supporting governments to develop and implement multilateral environmental agreements (MEAs), fostering collaboration between different intergovernmental environmental institutions, and supporting the science-policy interface.

The outcome documents of the past four UNEA sessions are analyzed in a chronological order to understand the evolution of attention to drivers and SDG interactions in the international discussion, since UNEA-1 held in June 2014 until UNEA-4 held in March 2019 (UNEA-2 and UNEA-3 were held respectively in May 2016 and December 2017). A list of all analyzed CBD, UNFCCC and UNEA documents can be found in Annex 1 of this paper.

In the following sections of this paper, we thus address the questions:

1. What are the drivers behind climate change and biodiversity loss, and what kind of actions would be likely to create co-benefits for SDGs 13 and 15?

[33] Paris Agreement to the United Nations Framework Convention on Climate Change, Paris, 12 December 2015, in force 4 November 2016; 55 *International Legal Materials* (2016) 740.
[34] 'Copenhagen Accord', UNFCCC Dec. 2/CP.15 (2009).
[35] See <https://environmentassembly.unenvironment.org/>.
[36] See <https://www.unenvironment.org/>.
[37] 'The future we want', UNGA Res. 66/288 of 27 July 2012, para. 88.
[38] 'Delivering on the 2030 Agenda for Sustainable Development', UNEA Res. 2/5 (2016).
[39] 'Relationship between the United Nations Environment Programme and multilateral environmental agreements', UNEA Doc. UNEP/EA.1/INF/8 (2014).

2. How do the key international legal instruments, UNFCCC and CBD, currently address the common drivers of climate change and biodiversity loss? Can potential to support co-benefits for climate and biodiversity action be identified, and how are potential trade-offs between advancing the two goals addressed? Which synergetic aspects are currently not addressed in these instruments?
3. How are interactions between SDGs 13 and 15 addressed in the outcome documents of UNEA? Do they emphasize new or different aspects with regard to interactions, compared to the CBD and UNFCCC?

2 Understanding interactions: drivers of climate change and biodiversity loss

Though climate and biodiversity are interlinked in numerous ways, we focus on a particular angle of investigation that allows us to explore synergies and trade-offs between SDGs 13 and 15 in IEL: the fundamental drivers that contribute to both climate change and terrestrial biodiversity loss at the global level. These drivers are increasingly well-understood and, despite being complex and interlinked, there is considerable scientific consensus on them.[40] Likewise, there is mounting evidence of the type of actions with potential to produce co-benefits for climate efforts and biodiversity conservation.[41]

Biological diversity comprises genetic, species and ecosystem diversity,[42] underpinning the functioning of ecological systems and human well-being. There is scientific consensus that globally, biodiversity is being lost at an unprecedented rate,[43] and the five targets of SDG 15 with a timeline to 2020 (15.1, 15.2, 15.5, 15.8 and 15.9; see below) have mostly seen little or insufficient progress, making them likely to be missed.[44] The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)[45] has identified the direct drivers with the largest global impact on biodiversity (starting with those with most impact): changes in land and

[40] Naomi Oreskes, 'The Scientific Consensus on Climate Change: How Do We Know We're Not Wrong?' in Elisabeth A. Lloyd and Eric Winsberg (eds), *Climate Modelling: Philosophical and Conceptual Issues*, (Springer International Publishing, 2018) 31–64; Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), 'Summary for Policymakers of the Global Assessment Report on Biodiversity and Ecosystem Services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services' (2019), available at <https://www.ipbes.net/document-library-catalogue/summary-policymakers-global-assessment-report-biodiversity-ecosystem> (visited 30 May 2020).

[41] See, for instance, Kristen E. Dybala et al, 'Optimizing Carbon Storage and Biodiversity Co-Benefits in Reforested Riparian Zones', 56 *Journal of Applied Ecology* (2019) 343–53; Hong-Mei Deng et al, 'Co-Benefits of Greenhouse Gas Mitigation: A Review and Classification by Type, Mitigation Sector, and Geography', 12 *Environmental Research Letters* (2017) 123001; Brett A. Bryan et al, 'Designer Policy for Carbon and Biodiversity Co-Benefits under Global Change', 6 *Nature Climate Change* (2016) 301–305.

[42] Article 2 of the CBD.

[43] IPBES, 'Summary for Policymakers', *supra* note 40.

[44] UN, 'The Sustainable Development Goals Report 2020' (2020), available at <https://unstats.un.org/sdgs/report/2020/The-Sustainable-Development-Goals-Report-2020.pdf> (visited 1 October 2020).

[45] See <https://ipbes.net/>.

sea use (causing habitat change, loss and degradation[46]); direct exploitation of organisms; climate change; pollution; and invasion of alien species.[47]

Those direct drivers result from an array of underlying, indirect drivers that include production and consumption patterns, human population dynamics and trends, trade, technological innovations and local through global governance. Agricultural expansion has had the most significant effect on land-use change, along with rapid urbanization and expansion of infrastructure, linked to growing population and consumption. These dynamics support the notion that SDG interactions need to be accounted for to make progress on or to achieve the SDGs. Climate change is a direct driver of biodiversity loss, linked to many of the same underlying drivers mentioned above and compounding the effects of the other drivers.[48] Hence, the drivers of biodiversity loss are complex, multiple and interlinked. Many of the threats, as well as the habitats, ecosystems or species to which they apply, do not respect national boundaries or are found in areas beyond national jurisdiction.[49] For instance, international trade and consumption in developed countries drive biodiversity threats in developing countries.[50]

Climate change is among the most important drivers of biodiversity loss. Thus, addressing the drivers of climate change will have indirect benefits for biodiversity – as long as the actions chosen to mitigate climate change do not imply trade-offs for biodiversity. Climate change is caused by anthropogenic greenhouse gas (GHG) emissions resulting from a similarly complex web of interacting drivers,[51] including fossil-fuel combustion related to energy, industry and transportation as well as land use, land-use change, agriculture and forestry (addressed under SDGs 7, 9, 2 and 15, respectively, but also influenced by other SDGs). These, in turn, are driven by economic and population growth, consumption and international trade (addressed in particular under SDGs 8, 12 and 17).[52] There is great regional variation in the GHG emission patterns. A considerable share of emissions in developing countries is released in the production of goods and services exported to developed countries.[53]

An estimated 23 per cent of the total anthropogenic GHG emissions (2007-2016) derive from Agriculture, Forestry and Other Land Use (AFOLU). These net emissions are mostly due to deforestation, partly offset by afforestation/reforestation, and

[46] UN Environment, 'Global Environment Outlook', *supra* note 10.
[47] IPBES, 'Summary for Policymakers', *supra* note 40.
[48] *Ibid*.
[49] UN Doc. A/73/419, *supra* note 12.
[50] Manfred Lenzen et al, 'International Trade Drives Biodiversity Threats in Developing Nations', 486 *Nature* (2012) 109–112.
[51] Gabriel Blanco, Reyer Gerlagh, and Sangwon Suh, 'Drivers, Trends and Mitigation' in Edenhofer et al (eds), *Climate Change 2014, Mitigation of Climate Change: Working Group III Contribution to the IPCC 5th Assessment Report* (2014) 351-411.
[52] UN Environment, 'Global Environment Outlook', *supra* note 11; Blanco et al, 'Drivers, Trends and', *supra* note 38.
[53] *Ibid*.

emissions and removals by other land use activities. Also changes in land conditions – such as degradation of soils, forests and peatlands as well as desertification – contribute to climate change.[54] Management of land and forests is particularly important as degradation and deforestation contribute to carbon sources, whereas when well-managed, they function as carbon sinks.[55]

Thus, land use change and degradation contribute to both biodiversity loss and climate change, linked to many of the same interacting drivers. Land use change due to agricultural expansion is projected to increase, driven by population and income growth and changes in consumption patterns.[56] Conversely, addressing the drivers of land use change and land degradation has potential to create co-benefits for climate action and halting biodiversity loss.

The Intergovernmental Panel on Climate Change (IPCC)[57] has estimated synergies and trade-offs of climate change mitigation options for different SDGs. Mitigation options that target energy supply with bioenergy and large-scale hydropower (also contributing to SDG 7 on energy) may have trade-offs with SDG 15 due to increased demand for land for bioenergy crops and for dam construction. Those targeting energy demand (behavioural responses, energy efficiency etc.) and land-based mechanisms are largely characterized by synergies.[58] Such land-based options include limiting the demand for land through sustainable intensification of land-use practices, soil carbon sequestration, livestock and manure management, reduced deforestation, afforestation and reforestation, sustainable forest management, ecosystem and land restoration and changes towards less resource-intensive diets and reduced food waste.[59]

In particular, conservation, restoration, sustainable management and use of forests is often emphasized when seeking co-benefits for the climate and biodiversity, as well as for other SDGs.[60] Reducing Emissions from Deforestation and Forest Degradation (REDD+),[61] a mechanism developed by Parties to the UNFCCCC, seeks

[54] Valérie Masson-Delmotte et al (eds), *Summary for policy-makers*: *Climate Change and Land. An IPCC Special Report on Climate Change, Desertification, Land Degradation, Sustainable Land Management, Food Security, and Greenhouse Gas Fluxes in Terrestrial Ecosystems* (IPCC, 2020), available at <https://www.ipcc.ch/site/assets/uploads/sites/4/2020/02/SPM_Updated-Jan20.pdf> (visited 30 May 2020).

[55] See, for instance, Edward T. A. Mitchard, 'The Tropical Forest Carbon Cycle and Climate Change', 559 *Nature* (2018) 527–534; Lan Qie et al, 'Long-Term Carbon Sink in Borneo's Forests Halted by Drought and Vulnerable to Edge Effects', 8 *Nature Communications* (2017) 1966.

[56] Masson-Delmotte et al (eds), *Climate Change and Land*, *supra* note 54.

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

[58] Allen et al (eds), *Summary for Policymakers*: *Global Warming of 1.5 C. An IPCC Special Report on the Impacts of Global Warming of 1.5 C above Pre-Industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global* (IPCC, 2018), available at <https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_SPM_version_report_LR.pdf> (visited 30 May 2020) at 20. Figure SPM.4.

[59] *Ibid*.; Masson-Delmotte et al (eds), *Climate Change and Land*, *supra* note 54.

[60] Pia Katila et al, (eds) *Sustainable Development Goals: Their Impacts on Forests and People* (Cambridge University Press, 2019).

[61] UNFCCC, 'REDD+ - Home', available at <https://redd.unfccc.int/> (visited 16 January 2020).

to mitigate climate change through results-based payments for carbon storage and enhancement from halting forest area loss and forest degradation, with incremental co-benefits for biodiversity and sustainable development. A large body of academic literature on the biodiversity co-benefits of climate change mitigation efforts focuses on the potential of REDD+ to deliver them.[62] Yet, the co-benefits are not automatic but context-specific, depending on how the actions are carried out.[63] For instance, the impacts on biodiversity of large increases in forest cover would depend on the nature of the land affected, how it is afforested, and the tree species involved. It might also have negative impacts on biodiversity by displacing other land uses, with potential knock-on effects for a range of SDGs.[64]

Kroll et al have found that the associations between SDGs 13 and 15 have strengthened in recent years (2017-2018), showing both clear trade-offs and synergies, but synergies are expected to increase slightly by 2030.[65] Three key targets of SDG 15 are directly linked to climate action: 15.1 on freshwater ecosystems, including forests and wetlands (which act as carbon sinks and could turn into carbon sources when degraded); 15.2 on sustainable forest management and halting net deforestation; and 15.3 on soil protection and restoration (which will support carbon storage in soil and ensure sufficient land for agriculture and biofuel production). Moreover, four other targets of SDG 15 can be affected by or support climate action under specific circumstances: 15.4 on mountain ecosystems (which will be affected by climate change, with particularly strong impacts on glacier ecosystems); 15.5 on protection of natural habitats (which will contribute to maintaining carbon sinks and may be affected by climate change); 15.8 on invasive species (whereby biofuel and forest plantations can introduce non-native species); and 15.9 on integrating ecosystem and biodiversity values into national and local planning (which will also lead to protection of carbon sinks). All these targets are also linked to climate adaptation as the protection, restoration and appropriate management of ecosystems will ensure resilience and will be much needed actions to adapt to climate change impacts. As the targets of SDG 13 are broadly defined around climate action for both adaptation and mitigation in fairly general terms, all of them are expected to interact with the aforementioned targets of SDG 15. This further justifies an approach that pays attention to the interactions primarily at the level of the goals instead of individual target interactions.

In sum, various land-based actions have potential to create synergies for climate action and halting biodiversity loss. However, the actual mechanisms need to be tailored to local conditions to attain co-benefits and to avoid trade-offs, and they need

[62] Deng et al, 'Co-Benefits of Greenhouse', *supra* note 41.

[63] Wil de Jong et al, 'Synergies, Trade-Offs and Contextual Conditions Shaping Impacts of the Sustainable Development Goals on Forests and People' in Katila et al (eds), *Sustainable Development Goals*, *supra* note 46; Allen et al, *Summary for Policymakers*, *supra* note 44.

[64] Blicharska et al, 'Biodiversity's Contributions to', *supra* note 13.

[65] Christian Kroll, Anne Warchold, and Prajal Pradhan, 'Sustainable Development Goals (SDGs): Are we successful in turning trade-offs into synergies?', 5(1) *Palgrave Communications* (2019) 1-11.

to be adaptive.[66] At the same time, it is acknowledged that governing land requires approaches that better manage globalized flows of land-based resources and address power asymmetries between actors across scales and locations.[67]

We also anticipate that international regulation that addresses the underlying drivers, such as global trade flows, production and consumption patterns (targeted by SDG 12), especially in developed and emerging economies, is highly relevant. Institutional and governance factors, such as policy coherence (SDG target 17.14), capacity-building (SDG target 17.9), promoting cross-sectoral and cross-jurisdictional integration and mainstreaming, adaptive management and strengthening the implementation of environmental laws and policies at various scales, are widely recognized to be crucial.[68]

The following analysis of CBD, UNFCCC and UNEA is based on a thorough reading of the relevant documents, guided by the research questions and an analytical framework based on the above identified drivers and synergy-enhancing actions. This framework includes fossil fuels, climate change and land use change as direct drivers. These drivers will be particularly influenced in the future by the approach and extent of implementation of SDGs 2, 7, 13 and 15. Moreover, the framework includes indirect drivers, namely demographic and socio-cultural, economic and technological, and governance, corresponding to the IPBES categorization of indirect drivers.[69] These indirect drivers are expected to change in the future as a result of the implementation (or lack thereof) of the SDGs at large. We complemented the direct and indirect drivers in the analytical framework with keywords on key areas of intervention that allow for synergies or easily imply trade-offs: 1) agriculture, food security, food production and consumption (related to SDG 2); 2) biodiversity, ecosystems, environment and forests (most closely associated with SDG 15); 3) sustainable consumption and production (SDG 12); and 4) policy coherence.[70] Finally, the nature of the legal language used in association with the drivers and keywords and the implications of the relevant provisions (acknowledgement, concrete measure, tool or implementation mechanism) were assessed. While the presentation of the results in sections 3 and 4 focuses on the synergies, trade-offs and gaps, a more detailed analysis of how the direct and indirect drivers are addressed by CBD, UNFCCC and UNEA can be found in Annex 2 of the paper.

[66] IGS, 'Global Sustainable Development', *supra* note 7.
[67] *Ibid*.
[68] *Ibid*.; UN Environment, 'Global Environment Outlook', *supra* note 11; IPBES, 'Summary for Policymakers', *supra* note 40.
[69] *Ibid*.
[70] Policy coherence was considered as particularly important for potential to enhance synergies, reflecting attention to interlinkages and the indivisibility of environmental, social and economic sustainability underlying Agenda 2030. In our analysis, it was understood to include vertical coherence across levels of governance, in addition to horizontal coherence across sectors.

3 CBD, UNFCCC and the potential to mitigate the drivers of climate change and biodiversity loss

3.1 CBD

3.1.1 Addressing direct and indirect drivers with potential for co-benefits

Concrete co-benefits of biodiversity conservation and climate change action are repeatedly pointed out through a variety of CBD COP decisions.[71] The CBD COP of 2004 included 'biodiversity and climate change' as a cross-cutting issue under its work.[72] Since then, *climate change* has been increasingly addressed under the CBD, both as a driver of and being driven by biodiversity loss.[73] To address interactions of climate change and biodiversity loss, Parties to the CBD are encouraged to integrate climate concerns in their National Biodiversity Strategies and Action Plans (NBSAPs), and biodiversity and ecosystem-based approaches into their Nationally Determined Contributions (NDCs) under the UNFCCC.[74] Voluntary guidelines for the design and effective implementation of ecosystem-based approaches to climate change adaptation and disaster risk reduction were adopted by COP14.[75] Most of the relevant legal documents and guidelines under the CBD have focused on contributions to adaptation, even though Aichi target 15 explicitly includes the 'contribution of biodiversity to carbon stocks' and of ecosystem restoration to climate change mitigation and adaptation.[76] Climate change is reflected in none of the SDG 15 targets or indicators, underlining the Agenda 2030 logic of expressing interdependency at the level of goals rather than of targets.

Preventing *land-use change* through the designation of networks of protected areas is one of the core aims of the CBD (Article 8). The scope of this essential tool is defined in Aichi Target 11 of the current Strategic Plan, which calls for conservation of 'at least 17% of terrestrial and inland waters and 10% of coastal and marine areas, … are conserved' by 2020. This target is reflected in SDG target 15.1 which does not provide a percentage but refers to existing international agreements. In addition, Aichi Target 5 calls for halving and striving to completely reduce the loss of natural habitats and their degradation and fragmentation,[77] reflected in SDG target 15.3 ('By 2030, (…) strive to achieve a land degradation-neutral world.')

[71] CBD, 'Climate change and biodiversity: background' (2017), available at <https://www.cbd.int/climate/background.shtml> (visited 28 March 2020).
[72] *Ibid*.
[73] 'Biodiversity and climate change', CBD Dec. 14/5 (2018).
[74] *Ibid*. at para. 4.
[75] *Ibid*. at para. 1.
[76] CBD Dec. 10/2, *supra* note 29, Annex, para. 13.
[77] *Ibid*., Annex

The post-2020 Global Biodiversity Framework (GBF) draft suggests an increase in ambition to 60 per cent coverage of sites of particular importance for biodiversity, including at least 30 per cent of land and seas globally, and at least 10 per cent under strict protection by 2030.[78] Building on this target, the zero draft of the post-2020 GBF calls for zero 'net loss' of ecosystems by 2030[79] and identifies restoration (also part of SDG targets 15.1, 15.2 and 15.3) as an important means to achieve 'net increase' of intact areas and wilderness by 2030.[80] In that sense, the post 2020 GBF is likely to increase ambition over the related SDG 15 targets, especially those that end by 2020 (15.1, 15.2 and 15.3).

Rehabilitation and restoration were first comprehensively addressed at COP11.[81] COP13 adopted a short-term plan of action and respective guidance on ecosystem restoration and integration of biodiversity concerns.[82] The CBD considers restoration as complementary to conservation, not substitute.[83] The most recent decision on biodiversity and climate change drives special attention to the role of wetlands (also included in SDG target 51.1) and states support for a joint declaration by relevant MEAs on peatland conservation and restoration.[84]

The CBD also addresses land use change through national and sectoral mainstreaming, incentive measures, environmental impact assessments (EIAs), strategic environmental assessments (SEAs) and, more recently, spatial planning.[85] To facilitate mainstreaming at the national level, Parties are requested to submit and regularly update their NBSAPs in accordance with Article 6 of the Convention.[86]

The importance of the conservation and sustainable use of forests (SDG targets 15.1, 15.2 and 15b) for the achievement of the CBD objectives was acknowledged already at the very first COP in 1994. After COP2, forest issues were dealt with under the programme of work on forest biodiversity. Thereafter, highlights have been the introduction of the ecosystem approach to be applied to forest management as well as identification of synergies with the forest landscape restoration approach.[87] Focus of work on forests under the CBD has been much on developing indicators

[78] 'Zero Draft of the post 2020 Global Biodiversity Framework', CBD Doc. CBD/WG2020/2/3 (2020), Annex, para. 12(a).
[79] *Ibid*. at para. 10(a).
[80] *Ibid*. at para 12(a).
[81] CBD, 'Ecosystem restoration: background' (2016), available at <https://www.cbd.int/restoration/Background/> (visited 16 March 2020).
[82] 'Ecosystem restoration: short-term action plan', CBD Dec. 13/5 (2016) para. 1 and Annex.
[83] *Ibid*. at para. 8.
[84] CBD Dec. 14/5, *supra* note 73, at para. 8.
[85] 'Mainstreaming of biodiversity in the energy and mining, infrastructure, manufacturing and processing sectors', CBD Dec. 14/3 (2018) para. 13.
[86] Melina Sakiyama and Christian Schwarzer , *CBD in a Nutshell* (2nd ed., Global Youth Biodiversity Network, 2018).
[87] Till Pistorius and Laura Kiff, 'From a biodiversity perspective: risks, trade-offs, and international guidance for Forest Landscape Restoration (UNIQUE forestry and land use GmbH, 2018) 19-20.

for forest biodiversity as well as streamlining of reporting.[88] In more recent decisions, CBD COP has acknowledged 'the strong congruence among the forest-related Aichi Biodiversity Targets, the four global objectives on forests, the forest-related provisions under the Paris Agreement'[89] and called on Parties to 'give due consideration to the conservation and sustainable use of natural forests and native vegetation and avoiding the potential negative impacts of afforestation of non-forest biomes'.[90] At COP14, the CBD Secretariat was requested to continue close collaboration with the United Nations Forum on Forests,[91] the Global Partnership on Forest Landscape Restoration[92] and the Collaborative Partnership on Forests,[93] on, *inter alia*, data collection and spatial assessments to advance on biodiversity commitments.[94]

Further co-benefit potential lies in the CBD COP decision on mainstreaming of biodiversity in the energy and mining, infrastructure, manufacturing and processing sectors, which also takes the role of cities into account.[95] This relates much to *consumption and production patterns* as indirect drivers of both biodiversity loss and climate change that are reflected in Aichi target 4.[96] Despite repeated CBD calls for Sustainable Consumption and Production (SCP),[97] a clear definition and strong legal language are lacking. The same applies to the term 'transformational change' that has recently entered discussions on how to address drivers of biodiversity loss under the CBD.[98]

Economic and technological drivers are mainly addressed in sectoral approaches under the CBD, on, for instance, agriculture and forestry, energy and mining. The most concrete references to trade and supply chains as well as strong legal language on sustainable production can be found in the decision text dealing with forestry[99] and fisheries.[100] Parties are urged, *inter alia*, to 'encourage sustainable forest management to achieve biodiversity outcomes, including by promoting sustainable consumption

[88] CBD, 'Forest biodiversity', available at <https://www.cbd.int/forest/> (visited 27 April 2020).
[89] 'Forest biodiversity: the role of international organizations in supporting the achievement of the Aichi Biodiversity Targets', CBD Dec. 13/7 (2016) preamble.
[90] *Ibid*. at para. 6.
[91] See <https://www.un.org/esa/forests/index.html>.
[92] See <https://www.forestlandscaperestoration.org/>.
[93] See <http://www.cpfweb.org/en/>.
[94] 'Cooperation with other conventions, international organizations and initiatives', CBD Dec. 14/30 (2018) para. 35.
[95] CBD Dec. 14/3, *supra* note 85.
[96] CBD Dec. 10/2, *supra* note 29, at Annex.
[97] See, inter alia, *ibid*.; 'Strategic actions to enhance the implementation of the Strategic Plan for Biodiversity 2011-2020 and the achievement of the Aichi Biodiversity Targets, including with respect to mainstreaming and the integration of biodiversity within and across sectors', CBD Dec. 13/3 (2016); 'Updated assessment of progress towards selected Aichi Biodiversity Targets and options to accelerate progress', CBD Dec. 14/1 (2018); 'Scenarios for the 2050 Vision for Biodiversity', CBD Dec. 14/2 (2018); CBD Dec. 14/3, *supra* note 75; 'Second work programme of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services', CBD Dec. 14/36 (2018).
[98] See, for instance, *ibid*. at para. 2(a).
[99] See, for instance, CBD Dec. 14/1, *supra* note 96; CBD Dec. 13/3, *supra* note 97.
[100] *Ibid*. at paras 69, 71 and 72.

and production of forest products'[101] and 'improve enforcement and monitoring of sustainable forest management and the sustainability of timber trade'.[102] Moreover, COP decisions request the continuation or enhancement of collaboration with international organizations dealing with trade and production patterns such as the World Trade Organization (WTO)[103] or sector-relevant organizations such as the Food and Agriculture Organization (FAO)[104] and the International Tropical Timber Organization.[105,106] Domestically, CBD recommends mainstreaming of biodiversity considerations throughout sectors, national legislation and financial flows[107] and highlights the need to eliminate harmful incentives, including subsidies, and to increase positive incentives.[108]

Adverse impacts of fossil fuel extraction on biodiversity have gained attention, with the increased efforts to address mainstreaming of biodiversity into the energy and mining, infrastructure, manufacturing and processing sectors.[109] An according decision adopted in 2018 recognizes not only that these sectors affect biodiversity but also 'that the loss of biodiversity can impact these sectors negatively'.[110]

To address *governance and institutional drivers,* the mainstreaming approach, anchored in the Convention text itself,[111] can be considered the key tool promoted by the Convention. The CBD COP decisions also strongly call for increased policy coherence, at the national as well as at the international level. Close cooperation with other conventions and alignment with the Agenda 2030 are commonly referred to as central measures to alleviate incoherent governance.[112] Enhanced cooperation with other conventions, international organizations and initiatives has been explicitly dealt with by an informal advisory group on synergies under the CBD as well as through stand-alone COP decisions.[113] Initially highlighting primarily synergies with other biodiversity-related conventions, the scope has broadened over the past years through encouragement of 'consideration of actions for enhanced synergies among… the Rio Conventions, and other conventions… as they are essential for the implementation of the 2030 Agenda… and the Sustainable Development Goals'.[114]

[101] *Ibid*. at para. 56.
[102] CBD Dec./14/1, *supra* note 97, at para. 14(e).
[103] See <http://www.wto.org>.
[104] See <http://www.fao.org>.
[105] See <http://www.itto.int>.
[106] CBD Dec. 14/30, *supra* note 94.
[107] See, for instance, CBD Dec. 13/3, *supra* note 98; and CBD Dec. 14/3, *supra* note 85.
[108] CBD Dec. 10/2, *supra* note 29, at Annex, target 3.
[109] CBD Dec. 13/3, *supra* note 97.
[110] CBD Dec. 14/3, *supra* note 83, at preamble.
[111] CBD, 'Biodiversity mainstreaming', available at <https://www.cbd.int/mainstreaming/> (visited 26 March 2020).
[112] See, for instance, CBD Dec. 14/1, *supra* note 97, at Annex, para. 2(h).
[113] See, for instance, CBD Dec. 14/30, *supra* note 94.
[114] *Ibid*. at paras 3 and 4.

The CBD is also increasingly drawing on information provided by the IPCC and referring to provisions made under the UNFCCC.[115]

Nevertheless, strong legal language on coherence only applies to national planning obligations and mainstreaming, as set out in Article 6 of the Convention.[116] In addition, Parties are encouraged 'to explore possible synergies at the national level, involving all relevant biodiversity-related reporting processes, in order to enhance the alignment and consistency of information and data in national reports'.[117] COP14 also highlighted the related need for indicator alignment 'across different reporting processes on biodiversity and sustainable development'.[118]

3.1.2 Addressing potential trade-offs

Potential *trade-offs from climate action for biodiversity* are addressed most specifically by the CBD with regard to forests, in particular REDD+, climate-related geoengineering and biofuels.

The special attention given to forests and their emission mitigation potential under the UNFCCC through, inter alia, REDD+ has been addressed at CBD COP10 when Parties called for the enhancement of benefits for, and avoidance of negative impacts on biodiversity from REDD+.[119] At CBD COP11, Parties adopted advice on biodiversity safeguards to be applied by REDD+ and other efforts under the UNFCCC.[120]

Geoengineering activities affecting biodiversity are largely rejected. In COP decision X/33, Parties commit to 'ensure […] that no climate-related geo-engineering activities** that may affect biodiversity take place, until there is an adequate scientific basis on which to justify such activities and appropriate consideration of the associated risks'.[121]

Biofuels are addressed by the CBD, but without clear rules, guidelines or legal implications. COP9 broadly discussed biofuels as part of the work programme on agricultural biodiversity and Parties agreed that 'biofuel production and use should

[115] CBD Dec. 14/5, *supra* note 73.
[116] Articles 6(a) and 6(b) of the CBD.
[117] 'Process for aligning national reporting, assessment and review', CBD Dec. 14/27 (2018) para. 2.
[118] 'Tools to evaluate the effectiveness of policy instruments for the implementation of the Strategic Plan for Biodiversity 2011-2020', CBD Dec.14/28 (2018), para. 2.
[119] 'Biodiversity and climate change', CBD Dec. 10/33 (2010) para. 8(q).
[120] 'Biodiversity and climate change related issues: advice on the application of relevant safeguards for biodiversity with regard to policy approaches and positive incentives on issues relating 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', CBD Dec. 11/19 (2012).
[121] CBD, 'Climate-related Geoengineering and Biodiversity', available at <https://www.cbd.int/climate/geoengineering/> (visited 25 March 2020); CBD Dec. 10/33, *supra* note 119.

be sustainable in relation to biological diversity'.[122] To ensure this, Parties were urged to develop coherent policy frameworks and to support technology transfer and best practice exchange.[123] At COP10, Parties were explicitly invited to develop national inventories and conduct spatial assessment to identify potential areas for biofuel production without harming biodiversity.[124] At the same time, the Secretariat was requested to compile tools and approaches 'to assess direct and indirect effects and impacts on biodiversity of the production and use of biofuels'.[125]

Trade-offs from biodiversity protection measures for climate change mitigation are poorly addressed in the CBD. For instance, the designation of protected areas as one of the major tools of the CBD can bear potential trade-offs for renewable energy projects, but such limitations are not addressed. Moreover, there is no mention of the time needed for restored ecosystems to provide the full extent of their ecosystem services which may also cause (temporary) trade-offs for mitigation targets, depending on the purpose they have been designed for.[126] This is especially relevant for the current suggestion of a long-term goal on '[n]o net loss by 2030 in the area and integrity of freshwater, marine and terrestrial ecosystems, and increases of at least [20 per cent] by 2050, ensuring ecosystem resilience' in the zero draft of the post-2020 GBF,[127] which allows for offsetting ecosystem destruction by restoring an equal area elsewhere. Time lags in regaining the full carbon stocks of the lost areas in the restored areas have not been resolved.[128] The most explicit recognition of the need to avoid trade-offs from biodiversity conservation measures affecting climate change mitigation can be found in the safeguards of the voluntary ecosystem-based approaches (EbA) guidelines: 'EbA and Eco-DRR[129] should neither result in unsustainable resource use nor enhance the drivers of climate change and disaster risks'.[130]

3.1.3 Gaps concerning potential for synergies

Overall, the CBD and the analyzed legal documents maintain a fairly holistic approach in addressing drivers and pointing out potential for co-benefits and synergies. However, a clear gap can be perceived in terms of obligations: the overall legal language of the CBD and its COP decisions is rather weak, and the majority of measures suggested remain at the level of recommendations to Parties – except for the obligation to develop, update and report on national plans and to designate

[122] 'Agricultural biodiversity: biofuels and biodiversity', CBD Dec. 9/2 (2008) para. 1.
[123] *Ibid*. at paras 3 and 6.
[124] Biofuels and biodiversity'. CBD Dec. 10/37 (2010) para 7.
[125] *Ibid*. at para. 11(a).
[126] Nicola Favretto et al, 'Links between Climate Change Mitigation, Adaptation and Development in Land Policy and Ecosystem Restoration Projects: Lessons from South Africa', 10(3) *Sustainability* (2018) 779 at 781.
[127] CBD Doc. CBD/WG2020/2/3, *supra* note 78, Annex, para. 10
[128] David Moreno-Mateos et al, 'The true loss caused by biodiversity offsets', 192 *Biological Conservation* (2015) 552–559.
[129] Ecosystem-based approaches to disaster risk reduction.
[130] CBD Dec. 14/5, *supra* note 73, at Annex, Section 2.2.

networks of protected areas. The Strategic Plan sets concrete targets, but these refer to the global level and hence only provide guidance for individual national goals.

In addition, several fields of potential synergies need further consideration, as they are not yet sufficiently explored or anchored in legal text. This is the case for addressing most of the socio-cultural and technological drivers, for instance through joint capacity-building across sectors and with other conventions. Accordingly, COP13 and COP14 decisions requested the Executive Secretary to further promote more systemic and integrated approaches.[131] Progress in this regard, and thereby towards the achievement of the SDGs, relies on enhanced technical and scientific cooperation. Potential for increased synergy can also be identified regarding communication, education and public awareness efforts.

Streamlining of future mainstreaming and reporting obligations represents a necessary enhancement of governance mechanisms and reporting requirements set under the Agenda 2030. They are key in enabling governments to better align their efforts on biodiversity conservation and climate change mitigation, harness synergies and lower administrative burden which is of particular importance for developing countries. Incentives and subsidies are clearly another field under the CBD where synergies could be investigated further.

Regarding land use, attempts to increase synergies could make use of more comprehensive guidance on the application of the land- and seascape approach and integrated spatial planning in the legal documents of the CBD. While synergies in forestry have been addressed in particular concerning REDD+, co-benefits in the field of agriculture are not specified in an equal manner. Regarding specific measures to address common direct drivers, the contribution of biodiversity conservation to climate change mitigation efforts clearly necessitates practical guidance for Parties.

The highest potential for enhanced synergies lies with no doubt in more decisively addressing indirect drivers such as consumption and production, but also more specifically, setting ambitious and binding sectoral targets, in line with relevant SDG targets, for instance on food production (SDG target 12.3) and pollution (SDG targets 12.4 and 12.5). Limitations in this regard arise from the legal mandate of the CBD.

[131] 'Capacity-building, technical and scientific cooperation, technology transfer and the clearing-house mechanism', CBD Dec. 13/23 (2016) preamble; 'Capacity-building and technical and scientific cooperation', CBD Dec. 14/24 (2018) preamble.

3.2 UNFCCC

3.2.1 Addressing direct and indirect drivers with potential for co-benefits

Land use change is one of the key drivers of climate change, accounting for a substantial share of GHG emissions globally. As a result, land use, land-use change and forestry (LULUCF) is one of the major sectors addressed by the UNFCCC legal documents, with multiple decisions exclusively dedicated to this sector, addressing interaction between SDGs 13 and 15; in particular targets 15.1-15.5 which focus on the protection, restoration and sustainable management of forest and other ecosystems, as well as land restoration and degradation prevention. Moreover, the importance of terrestrial and marine ecosystems as sinks and reservoirs of GHG emissions was already recognized in the Convention and the development of methodologies for estimating their net effect on GHG emissions (including as sources) was tasked to the COP.

While forestry and ecosystems were initially not included in the list of core sectors of the Kyoto Protocol (only agriculture, Annex B), countries where LULUCF represented a source of emissions in 1990 were requested to include these net emissions in their baseline. Common reporting formats for LULUCF GHG emissions are imposed through the COP Decision 14/CP.11,[132] where countries are required to use guidelines and methodologies developed by the IPCC.[133] Yet, under the Paris Agreement, it is compulsory only for developed countries to account for economy-wide emission in their NDCs, including LULUCF as a sector, while developing countries can limit their sectoral reporting. Through Decision 1/CP.16,[134] developing countries that wish to have land-use activities funded must prepare national strategies or action plans. In such situations, they are requested to develop national monitoring systems for forest-related GHG emissions levels or reference levels, and to report on consideration of safeguards (strengthened in subsequent decisions[135]), including environmental protection. Decision 9/CP.19[136] establishes an information hub web platform to ensure transparency and mutual learning from these activities. In the

[132] 'Tables of the common reporting format for land use, land-use change and forestry', UNFCCC Dec. 14/CP.11 (2005).

[133] Jim Penman et al, 'Good Practice Guidance for Land Use, Land-Use Change and Forestry' (Institute for Global Environmental Strategies (IGES) for IPCC, 2003), available at <https://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf_files/GPG_LULUCF_FULL.pdf> (visited 29 April 2020).

[134] '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).

[135] See, for instance, 'Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention', UNFCCC Dec. 2/CP.17 (2011); 'The timing and the frequency of presentations of the summary of information on how all the safeguards referred to in decision 1/CP.16, appendix I, are being addressed and respected', UNFCCC Dec. 12/CP.19 (2013); 'Guidelines and procedures for the technical assessment of submissions from Parties on proposed forest reference emission levels and/or forest reference levels', UNFCCC Dec. 13/CP.19 (2013); 'Modalities for measuring, reporting and verifying', UNFCCC Dec. 14/CP.19 (2013).

[136] 'Work programme on results-based finance to progress the full implementation of the activities referred to in decision 1/CP.16, paragraph 70', UNFCCC Dec. 9/CP.19 (2013).

forestry sector specifically, the following activities apply: reducing emissions from deforestation and from forest degradation; conservation of forest carbon stocks; sustainable management of forests; and enhancement of forest carbon stocks.[137] These activities are facilitated through the REDD+ mechanism, supporting SDG target 15.2 on forests.

The Paris Agreement encourages Parties 'to implement and support… the existing framework [on forest-related activities]… while reaffirming the importance of incentivizing, as appropriate, non-carbon benefits associated with such approaches'.[138] Earlier relevant decisions on LULUCF-related matters recognize that promoting sustainable management of forests and co-benefits, including biodiversity and ecosystem resilience would lead to synergies with national and international forestry objectives.[139] Moreover, climate change itself is recognized as a driver of biodiversity loss in the UNFCCC and key documents, including the Paris Agreement, indicating that adaptation measures should be taken to enhance the resilience of ecosystems.[140]

Economic and technological drivers are primarily addressed through references to production and clean technologies in the international climate legislation. 'Accelerating, encouraging and enabling innovation is critical for an effective, long-term global response to climate change… Such effort shall be, as appropriate, supported, including by the Technology Mechanism and, through financial means, by the Financial Mechanism of the Convention'.[141] In that regard, developed countries (under Annex I and Annex II of the UNFCCC) were strongly requested to promote, facilitate and finance the development and transfer of 'environmentally sound technologies' to other Parties already through the Convention. To that end, the Subsidiary Body for Scientific and Technological Advice (SBSTA) is mandated to support countries with the latest available information. Moreover, the Copenhagen Accord decided the establishment of the Technology Mechanism to enhance development and transfer of relevant technologies across countries. The Kyoto Protocol provides a number of measures that countries could take to reduce their emissions, including enhancement of energy efficiency and promotion of technologies such as renewables and carbon dioxide sequestration.[142] More complete lists of technologies and potential measures are provided through guiding documents and the reports of the IPCC.[143]

[137] UNFCCC Dec. 1/CP.16, *supra* note 135.
[138] Article 5(2) of the Paris Agreement.
[139] 'Methodological guidance 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', UNFCCC Dec. 4/CP.15 (2009); UNFCCC Dec. 2/CP.17, *supra* note 136.
[140] See, for instance, Art. 4 of the Paris Agreement.
[141] Article 10(5) of the Paris Agreement.
[142] Article 2 of the Kyoto Protocol.
[143] See, for instance, UNFCCC Consultative Group of Experts on National Communications from parties not included in Annex I to the Convention, 'Training Handbook for Mitigation Assessment for Non-Annex I parties' (2006), available at https://unfccc.int/resource/cd_roms/na1/mitigation/Handbook/MitigationHandbook_11May2006.pdf (visited 24 April 2020); Edenhofer et al, *Climate Change 2014*, *supra* note 52.

The UNFCCC strongly highlights that climate measures should seek to avoid adverse effects on national economies and should be taken within a timeframe that 'enable[s] economic development to proceed in a sustainable manner', recognizing 'the special difficulties of those countries… whose economies are particularly dependent on fossil fuel production, use and exportation'[144] to reduce GHG emissions. Specific measures to address economic drivers of climate change are not provided in the main legal documents assessed in this paper (except for agriculture and forest-related activities specifically), but the economic sectors (including subsectors) of climate action are made most concrete in Annex A of the Kyoto Protocol: energy (fuel combustion and fugitive emissions from fuels); industrial processes; solvent and other products; agriculture; and waste, plus related subsectors. Relevant co-benefits of economic diversification plans are officially accepted as contributions to mitigation action in the Paris Agreement.[145]

The strength of international climate legislation is in addressing *governance drivers*. It is meant to support coordination across the international community, strongly encouraging and facilitating cooperation amongst all countries in tackling the climate crisis. Strong legal language is used to ensure cooperation in providing international financial, technological and capacity-building support and to establish supporting bodies such as the Green Climate Fund[146] or the Technology Mechanism.[147] Moreover, instruments such as Emissions Trading, Clean Development Mechanism and Joint Implementation were developed under the Kyoto Protocol[148] to facilitate cooperation within and between countries in reaching climate goals through trading of Emissions Reduction Units (REUs), including from land-related activities. These measures are aligned with the SDG 13 demand that developed countries keep their commitment of climate finance provision to developing countries (target 13.a) as well as the promotion of mechanisms that support capacity-building for climate-related planning and management in the least developed countries and the small island developing states (target 13.b). In particular, the Paris Agreement's request for all countries to put forward NDCs to jointly reach the global target of a maximum temperature increase of 2°C, is a strong example of global coordination of action.

Moreover, key governance measures to tackle emissions nationally are suggested in some of the agreements and decisions, such as to directly address market imperfections, fiscal incentives, tax and duty exemptions and subsidies that lead to GHG emissions in all sectors.[149]

[144] UNFCCC, Objective and Preamble.
[145] Article 10(5) of the Paris Agreement.
[146] See <https://www.greenclimate.fund/>.
[147] See <https://unfccc.int/ttclear/support/technology-mechanism.html>.
[148] See Arts 6, and 12 and 17 of the Protocol.
[149] Article 2(1) of the Kyoto Protocol.

The UNFCCC also shows extensive support for capacity-building (also reflected under SDG targets 13.b and 17.9). Already in the Convention, SBSTA was tasked to 'identify ways and means of supporting endogenous capacity-building in developing countries'[150] and it remains a key part of international support in global climate governance. Additionally, promoting education, training and awareness raising on climate-related issues (with an assigned SDG 13 target, see 13.2) is emphasized throughout, with a dedicated article in the Convention itself, Article 6, which uses strong legal language.

3.2.2 Addressing potential trade-offs

While the UNFCCC recognizes that 'various actions to address climate change can be justified economically in their own right and can also help in solving other environmental problems',[151] it also stays mindful of potential trade-offs with other social, environmental and economic dimensions. Since the establishment of the Climate Convention, countries were expected to 'take climate change considerations into account… in their relevant social, economic and environmental policies and actions, and employ appropriate methods… to minimizing adverse effects on the economy, on public health and on the quality of the environment, of projects or measures undertaken by them to mitigate or adapt to climate change'.[152] This is also in line with the SDG target 13.2 'Integrate climate change measures into national policies, strategies and planning' and reflects the call for policy coherence under target 17.14. While the specific potential environmental trade-offs that need to be addressed are not clarified in the legal documents, a reference is made to key strands of international environmental law that Parties should ensure consistency with in their actions, such as the United Nations Forum on Forests, the United Nations Convention to Combat Desertification and the Convention on Biological Diversity.[153]

Decision 1/CP.16 is a key decision in this regard, establishing relevant guidelines for Parties activities in the LULUCF sector and requesting countries to consider essential safeguards. This decision provides that activities should 'd) Be consistent with the objective of environmental integrity and take into account the multiple functions of forests and other ecosystems;', 'f) Be consistent with Parties' national sustainable development needs and goals;' and 'k) Promote sustainable management of forests'.[154] The safeguards to be promoted include consistency with the objectives of national forest programmes and international agreements and conventions (with no specific mention) and ensured consistency with natural forest conservation and biodiversity protection while also enhancing other social and environmental benefits

[150] Article 9 of the UNFCCC.
[151] Preamble of the UNFCCC.
[152] Article 4(1f) of the UNFCCC (emphasis added).
[153] 'Reducing emissions from deforestation in developing countries: approaches to stimulate action', UNFCCC Dec. 2/CP.13 (2007).
[154] UNFCCC Dec. 1/CP.16, *supra* note 134, Appendix I, para. 1.

(with relevance for SDG targets 15.1-15.5 and 15.8).[155] Subsequent decisions request parties to report on these safeguards.

While extensive use of biofuels as well as agricultural activities for food production or other purposes can also lead to significant trade-offs with SDG 15, current strands of work under UNFCCC do not specifically address these potential issues. In general, agriculture and biofuels have not been addressed as extensively as forest-related activities and the current Koronivia Joint Work on Agriculture is still relatively recent and under further development.[156]

3.2.3 Gaps concerning potential for synergies

A sector that could be better addressed to ensure synergies is the *agricultural sector*. While agriculture has been recognized as a relevant sector for GHG emissions reductions and was included in the list of reporting under the Kyoto Protocol, there is limited mention of related trade-offs and synergies and little work has been done so far. In fact, the most important work on agriculture has been initiated at COP23, where Decision 4/CP.23 adopted the 'Koronivia Joint Work on Agriculture'.[157] In the initial phase of this joint work, the work group was mandated to address a number of issues, including with a view to soil health and fertility (SDG target 15.3), improving sustainability of the agricultural systems, and the socioeconomic and food security dimensions. However, no reference is made to the environmental dimension and the lack of a clear definition of the meaning of 'sustainability' could leave this dimension inadequately addressed.

Another key area that could be enhanced to address both biodiversity loss and climate change is *trade*. So far UNFCCC makes very little reference to trade as a driver of climate change. The Convention only highlights that climate measures should not take the form of 'disguised restriction on international trade'[158] further enforced by the Kyoto Protocol.[159]

Yet, adequate standards along supply chains could ensure global improvements in production from the perspective of GHG emissions and of biodiversity loss. Such standards could reduce consumption of fossil fuels and would ensure sustainability in the use of land resources and ecosystems. However, given the fact that countries determine their emissions levels only based on domestic production activities, there is little incentive to reduce imported GHG emissions and the related consumption.

[155] *Ibid*. at Appendix I, para. 2
[156] UNFCCC, 'Issues Related to Agriculture', available at <https://unfccc.int/topics/land-use/workstreams/agriculture> (visited 29 April 2020).
[157] 'Koronivia joint work on agriculture', UNFCCC Dec. 4/CP.23 (2017).
[158] Article 3(5) of the UNFCCC.
[159] Article 4(8h) of the UNFCCC.

While UNFCCC's work addresses production through various measures, very little emphasis is placed on *consumption*. In the early years of international climate negotiations, consumption was mainly discussed in the context of vulnerability to climate mitigation measures, where countries with high consumption of fossil fuels or energy-intensive products were seen as particularly vulnerable and in need of international support.[160] The Paris Agreement is the first to recognize that 'sustainable lifestyles and sustainable patterns of consumption and production, with developed country Parties taking the lead, play an important role in addressing climate change'.[161] A stronger emphasis on, for instance, sustainable consumption nudges, such as sustainability labels, could support achieving the targets of both Conventions.

4 UNEA and SDG interactions

The four United Nations Environment Assembly sessions convened so far, since 2014, have taken place in the post-2015 Development Agenda era. The first UNEA session was themed 'Sustainable Development Goals and the Post-2015 Development Agenda, including sustainable consumption and production', the second one 'Delivering on the Environmental Dimension of the 2030 Agenda, the third one 'Towards a pollution-free planet' and the fourth one 'Innovative solutions for environmental challenges and sustainable consumption and production'. These titles hold promise for addressing interactions between different sustainable development challenges, including those concerning SDGs 13 and 15. However, the UNEAs have done so to varying degrees.

References to halting climate change and biodiversity loss have gradually increased in the outcome documents of the four UNEA sessions. The Ministerial declaration of UNEA-1 called on the international community 'To undertake urgent actions to address climate change... and to reinforce efforts to halt biodiversity loss and combat desertification.'[162] At the second session, UNEA adopted five specific resolutions addressing climate change and biodiversity out of 25 resolutions totally adopted.[163] Within the third session and its Ministerial declaration, climate change and biodiversity loss drivers were addressed in four resolutions out of a total number of eleven

[160] *Ibid*.

[161] Preamble of the Paris Agreement.

[162] 'Ministerial outcome document of the first session of the United Nations Environment Assembly of the United Nations Environment Programme', UNEA Res. 1/1 (2014).

[163] 'Supporting the Paris Agreement', UNEA Res. 2/6; 'Sustainable coral reef management', UNEA Res. 2/12; 'Sustainable management of natural capital for sustainable development and poverty eradication', UNEA Res. 2/13; 'Mainstreaming of biodiversity for well-being', UNEA Res. 2/16; 'Enhancing the work of the United Nations Environment Programme in facilitating cooperation, collaboration and synergies among biodiversity-related conventions', UNEA Res. 2/17 (2006).

adopted resolutions.[164] Both direct and indirect drivers have been addressed in the UNEA resolutions, but typically in a separate manner.

Attention to interactions has been largely implicit, though a few explicit references to synergies between efforts to halt biodiversity loss and climate action could also be found. Resolution 1/8 of UNEA-1 on 'Ecosystem-based adaptation' explicitly recognized the importance 'to include and improve ecosystem-based adaptation and community-based adaptation in their national policies, including those on climate change adaptation, food security and sustainable management of forests'. The Resolution addressed the ecosystem-based adaptation mainly from the governance perspective and urged 'all Member States to ratify, accept or approve the Paris Agreement'. UNEA-2 Resolutions 2/6 'Supporting the Paris Agreement' and 2/17 'Enhancing the work of the United Nations Environment Programme in facilitating cooperation, collaboration and synergies among biodiversity-related conventions' address both climate change and biodiversity loss from a governance and policy coherence perspective. In Resolution 2/17, climate change as highlighted was a direct driver of biodiversity loss, but later UNEA sessions did not emphasize this interlinkage.

Despite its focus on pollution, an increased attention to interactions is reflected in the Ministerial declaration of UNEA-3. In the declaration, the Ministers of environment 'acknowledge the links between pollution, climate change, biodiversity loss and ecosystem degradation'. Specific attention was also given to unsustainable land use: 'unsustainable land use and management can lead to soil degradation and pollution and create phenomena such as forest and biodiversity loss.'[165] In the specific Resolution 3/6, soil pollution and land use are connected to achieving the SDGs: 'soil is one of the largest reservoirs of biodiversity and that the negative impacts of the contamination of soil undermine productivity and sustainability of ecosystems, biodiversity, agriculture and food security, and clean ground and surface water, potentially hampering the achievement of the Sustainable Development Goals, including Goals 1, 2, 3, 6, 12, 13 and 15.'[166] Resolution 3/2 encourages 'investments in biodiversity as a means of enhancing the functioning of ecosystems and the services they provide.'[167] Interactions between climate change, biodiversity loss and health are recognized in the Resolution 3/4 'Environment and health'.

At UNEA-4, actions with potential to create co-benefits for the climate and biodiversity, both terrestrial as well as marine biodiversity, received explicit attention. The

[164] 'Pollution mitigation by mainstreaming biodiversity into key sectors', UNEA Res. 3/2; 'Environment and health', UNEA Res. 3/4; 'Investing in innovative environmental solutions for accelerating the implementation of the Sustainable Development Goals', UNEA Res. 3/5; 'Managing soil pollution to achieve sustainable development', UNEA Res. 3/6 (2017).

[165] Ministerial declaration of the United Nations Environment Assembly at its third session 'Towards a pollution-free planet', UN Doc. UNEP/EA.3/HLS.1 (2018).

[166] UNEA Res. 3/6, *supra* note 164.

[167] UNEA Res. 3/2, *supra* note 164.

Environment Assembly adopted resolutions addressing, for instance, innovations to halt biodiversity and land degradation, sustainable management of mangroves, coral reefs, rangelands and pastoralism, and conservation of peatlands.[168] In the Ministerial declaration, the Ministers committed to developing 'an ambitious and realistic post-2020 global biodiversity framework' which is expected to be adopted at the 15th CBD COP, to be held in China in 2021.[169] In the Resolution 4/10 'Innovation on biodiversity and land degradation', it is recognized that 'climate change is a major and growing driver of biodiversity loss and ecosystem degradation, and that conservation and sustainable use of biodiversity, and ecosystem functions and services, contribute significantly to climate change adaptation and mitigation, disaster risk reduction, and food security and nutrition'. Resolution 4/12 'Sustainable management for global health of mangroves' mentions 'mangroves as an important but fragile ecosystem of invaluable biological diversity that provides vital ecosystem services which are contributing to the anticipated achievement by 2020 of Sustainable Development Goals 2 and 13 and targets 14.2 and 15.5 '. The Assembly encourages

> Member States to improve research, education and public awareness, build capacity for the sustainable management and restoration of mangroves and related ecosystems… to prepare multipurpose management plans for mangroves, based on scientific information… and invites Member States to take action to prevent mangrove forest conversion, strengthen measures to maintain their integrity and give priority to conserving remaining areas of natural mangrove forests.[170]

The Resolution 4/16 on 'Conservation and sustainable management of peatlands' addresses land use as a direct driver and focuses on governance as an indirect driver. The Assembly, 'recognizing also that actions to advance sustainable peatland conservation and sustainable management can also contribute to addressing climate change… urges Member States and other stakeholders to give greater emphasis to the conservation, sustainable management and restoration of peatlands worldwide.'[171]

Regarding conservation and sustainable use of forests, the EU and its Member States presented at UNEA-4 a resolution titled 'Deforestation and agricultural commodity supply chains' as a global call to halt deforestation while contributing to ensure food security and nutrition. However, the resolution failed to be approved by the Assembly as no consensus was reached during the negotiation phase. The failure of this resolution potentially represents a missed opportunity in addressing the interactions between forest use and agriculture within UNEA.

[168] 'Innovation on biodiversity and land degradation', UNEA Res. 4/10; 'Sustainable management for global health of mangroves', UNEA Res. 4/12; 'Sustainable coral reefs management', UNEA Res. 4/13; 'Conservation and sustainable management of peatlands', UNEA Res. 4/16 (2019).

[169] Innovative solutions for environmental challenges and sustainable consumption and production', Ministerial declaration of the United Nations Environment Assembly at its fourth session, UN Doc. UNEP/EA.4/HLS (2019).

[170] UNEA Res. 4/12, *supra* note 168.

[171] UNEA Res. 4/16, *supra* note 168.

The strong and repeated attention of UNEA on sustainable production and consumption (SCP) targets one of the key indirect drivers of climate change and biodiversity loss. SCP has been a central theme of UNEA since its first session, where the Ministerial declaration called 'on the international community… to accelerate and support efforts to promote sustainable consumption and production patterns… and to accelerate actions… to implement the 10-year framework of programmes on sustainable consumption and production.' At UNEA-2, the Resolution 2/8 'Sustainable consumption and production' echoed SDG 12 but also recognized the role of SCP policies in achieving other sustainability objectives: 'SCP approaches and policies at all levels… can be useful tools for improving sustainability in different areas, including urban planning, natural resource conservation, resources management, land use management and nutrient management, which can be promoted through regional frameworks and forums and other initiatives.'[172]

UNEA-3 followed suit by considering SCP policies, such as promoting sustainable finance and circular economy, as preventive solutions 'to tackle pollution and improve health and the environment synergistically.'[173] In the Resolution 3/5, a wide array of benefits from SCP policies for accelerating the implementation of the SDGs were recognized, including 'enhancing the capacity of ecosystems.'[174]

The fourth session of UNEA fully focused on SCP through its overarching theme 'Innovative solutions for environmental challenges and sustainable consumption and production', its Ministerial declaration and the specific Resolution 4/1 on 'Innovative pathways to achieve sustainable consumption and production'. While recognizing that achieving SCP is an essential requirement for sustainable development, the Resolution focuses on the nexus of production and the efficient use and sustainable management of resources, and identifies several measures to achieve SCP, including regulation, education, awareness-raising, sustainable finance, economic tools, technical standards, product design, and provision of systems, services and information, public procurement and particularly the life-cycle approach.[175] It explicitly recognizes that 'resource management, climate, biodiversity, water and land use are interlinked, and that resources are at the centre of voluntary initiatives, policies and regulatory frameworks.'[176]

Throughout UNEA outcomes, governance aspects are emphasized in relation to addressing the drivers of climate change and biodiversity loss, which is fully consistent with the role of UNEA. This is probably also confirmed by the choice of theme for UNEA-5, expected to take place in February 2021: 'Strengthening Actions for Nature to Achieve the Sustainable Development Goals', which suggests growing

[172] Sustainable consumption and production', UNEA Res. 2/8 (2016).
[173] 'Environment and health', UNEA Res.3/4 (2017).
[174] UNEA Res. 3/5, *supra* note 164.
[175] 'Innovative pathways to achieve sustainable consumption and production', UNEA Res. 4/1 (2017).
[176] *Ibid*. at preamble.

attention to the role of natural ecosystems in achieving the SDGs. The fifth UNEA session could also provide an opportunity to more explicitly account for the SDG interactions, and potentially a renewed chance to address forest issues.

5 Discussion and conclusions

In this paper, we have explored how the interactions between SDG 13 (climate action) and SDG 15 (halting terrestrial biodiversity loss) are addressed in the major international legal instruments related to those goals, the CBD and UNFCCC, as well as the UNEA as a complementary political process. In particular, we have focused on synergies, trade-offs and gaps in addressing the shared drivers of climate change and biodiversity loss.

Both CBD and UNFCCC address the direct drivers as well as some of the indirect drivers causing climate change and biodiversity loss, although with varying emphasis. The two Conventions make reference to each other, and the interactions between climate and biodiversity are acknowledged from multiple perspectives; that climate change can lead to biodiversity loss, but climate action could also affect biodiversity and ecosystems, and that biodiversity protection and enhancements are an important element in regulating the climate. Our findings echo previous analysis which has found that biodiversity is the environmental area with most references in climate-related agreements, while climate is the environmental area with the second most references in biodiversity agreements after the ocean issue area – although integration remains low across MEAs.[177]

For instance, co-benefits of activities that advance the goals of both Conventions, such as EbA, are well recognized in both Conventions and encouragement to take those benefits into account and enhance them is given. Similar measures are proposed, such as conservation and restoration to counter land-use change, national and sectoral mainstreaming, as well as environmental assessments. Both Conventions also highlight the need to eliminate harmful incentives and address them through fiscal incentives. Nature-based solutions recently entered in the language of both Conventions,[178] but the concept has not yet been defined under either Convention, leaving its potential to promote co-benefits and avoid trade-offs a question mark. The recently published IUCN Global Standard for Nature-based Solutions[179] could help resolve this question.

[177] Dona Azizi, Frank Biermann, and Rakhyun E. Kim, 'Policy Integration for Sustainable Development through Multilateral Environmental Agreements: An Empirical Analysis', 25(3) *Global Governance* (2019) 445-475.

[178] CBD Dec. 14/1, *supra* note 97, at para. 2(q).

[179] IUCN Global Standard for Nature-based Solutions (IUCN, 2020), available at <https://portals.iucn.org/library/node/49070> (visited 6 October 2020).

While the CBD applies softer language (i.e. 'encourage'), the UNFCCC tends to be stricter when it comes to safeguards and considerations relative to land-related projects, making these a requirement, for instance, for funded projects. Moreover, the fact that LULUCF became a sector that must be accounted for in the developed countries' pledges and reporting is important and encourages synergies, although it does not apply to developing countries. The CBD mostly relies on voluntary action, whereas the UNFCCC had top-down targets that were legally-binding in the past, and now requires countries to submit plans that must be regularly enhanced in ambition and to report on progress. Binding commitments, or voluntary action combined with stronger monitoring, reporting and verification, has also been called for in the case of the CBD.[180] As a more innovative approach, the UNFCCC market mechanisms have brought the advantage of international cooperation to another level by offering countries the opportunity to support each other in meeting national targets (which were imposed in a top-down manner at the time that the market mechanisms were first introduced) with global implications. While the SDGs are comprehensive in their coverage of issues related to sustainable development, they are 'soft' law by nature.[181] Hence, to ensure their implementation, it is essential that pertinent streams of international negotiations establish accountability mechanisms and provide the needed tools for action, as well as monitoring and evaluation.[182]

The trade-offs resulting from climate change mitigation affecting biodiversity loss have been broadly acknowledged and discussed within the two framework conventions, but important gaps remain. One concerns biofuels. IPCC scenarios for a maximum global warming of 2°C typically rely on extensive use of bio-energy with carbon capture and storage by 2100 to stay within the required carbon budget.[183] Yet, the impacts of extensive use of biofuels on biodiversity are not appropriately addressed in either of the Conventions. The CBD has indicated, under its work programme on agricultural biodiversity, that biofuel production and use should be sustainable in relation to biological diversity, but the topic has not played an important role in recent discussions and concrete or unified guidelines are not provided. The UNFCCC makes no mention of the issue in the documents assessed in this paper.

Thinking the other way around, trade-offs from biodiversity considerations for climate change mitigation have received even less attention. For instance, protected areas – a key tool promoted by the CBD – by default limit the designation of areas suitable for biofuel production and renewable energy generation. At the same time, scientific evidence supports territorial overlaps of natural carbon stocks (including

[180] UN Doc. A/73/419, *supra* note 9.

[181] Åsa Persson, Nina Weitz, and Måns Nilsson. 'Follow-up and review of the Sustainable Development Goals: Alignment vs. internalization.' 25(1) *Review of European, Comparative & International Environmental Law* (2016) 59-68.

[182] Kathryn J. Bowen et al, 'Implementing the "Sustainable Development Goals": towards addressing three key governance challenges – collective action, trade-offs, and accountability' 26 *Current opinion in environmental sustainability* (2017) 90-96.

[183] Edenhofer et al, *Climate Change 2014*, *supra* note 51.

soil carbon) and biodiversity hotspots, which could strengthen the argument for co-benefits provided by protected areas.[184] In this context, stronger emphasis on carbon storage or sequestration capacity of specific ecosystems provides an opportunity to strengthen synergies between the UNFCCC and CBD. So far, this perspective has only been substantially applied to forests while other carbon-rich ecosystems, like wetlands or marine and coastal ecosystems, have gained less attention.

Moreover, different timescales associated with measures that promise co-benefits, such as ecosystem restoration or biodiversity offsetting, may be a source for (temporary) trade-offs. It takes time for restored ecosystems to grow and develop their potential carbon-sink function, especially when biodiversity-promoting aspects such as natural regeneration or native species composition are prioritized.[185] If applied, 'no net loss' policies need to respect the mitigation hierarchy (avoid, minimize, restore, offset), with a clear prioritization of the first step[186] – also to minimize potential trade-offs for emission reduction efforts.

An often cited gap in IEL concerns forests – that there is no international agreement on forests.[187] The Rio Conference adopted a set of 'non-legally Binding Authoritative Statement' of forest principles, which emphasizes that the utilization of forests is subject to state sovereignty and therefore it has been argued that the principles do not form an adequate basis for a global regime.[188] Although forests are widely referred to in the CBD and UNFCCC, action in this area is mostly voluntary and nationally determined. While the two Conventions bring the global importance of forests into perspective as their transboundary and global effects are acknowledged, the UNFCCC emphasizes forests as a 'tool' in climate action, and the CBD focuses on the biodiversity values and indicators. A comprehensive approach, combining multiple ecological, social and economic values of forests, with legal implications, is missing. Academic literature on the global governance of forests is similarly fragmented as the regimes themselves, but it points two major trends: 'climatization' – the dominance of climate-related aspects in global policy discourses on forests – as well as a continued rejection of a global forest regime due to domestic influences.[189] The controversy of forests as a global commons versus subject to national sovereignty is also reflected in the failed UNEA-4 resolution on deforestation presented by the EU and its Member States.

[184] Valerie Kapos et al (eds), 'Carbon and Biodiversity. A Demonstration Atlas' (UNEP-WCMC, 2008), available at <https://archive.org/details/carbonbiodiversi08kapo> (visited 3 July 2020).

[185] Pistorius and Kiff, 'From a biodiversity', *supra* note 87, at 16.

[186] Sophus Olav Sven Emil zu Ermgassen et al, 'The Role of "No Net Loss" Policies in Conserving Biodiversity Threatened by the Global Infrastructure Boom', 1(3) *One Earth* (2019) 305-315.

[187] UN Doc. A/73/419, *supra* note 9; Jonas Ebbesson, 'Planetary Boundaries and the Matching of International Treaty Regimes', 59 *Scandinavian Studies in Law* (2014) 259–284.

[188] *Ibid*.

[189] Benjamin Singer and Lukas Giessen, 'Towards a donut regime? Domestic actors, climatization, and the hollowing-out of the international forests regime in the Anthropocene', 79 *Forest Policy and Economics* (2017) 69-79.

In addition, concrete measures towards sustainable agriculture that addresses both GHG emissions and biodiversity protection are mostly missing from the CBD and UNFCCC. Along similar lines, soil degradation (due to agricultural activities, peatland drying and as a result of climate change) could be better addressed, with positive impacts towards the objectives of both Conventions. UNEA has addressed land degradation and peatlands in Res. 4/16 (UNEA-4), making an explicit link to both biodiversity and climate change. However, as already noted, the attempt to address agricultural aspects in a specific resolution at UNEA-4 that targeted deforestation and agricultural commodity supply chains failed due to a lack of consensus.

As scientific advances are made in identifying context-specific trade-offs and co-benefits between climate change mitigation/adaptation through land-based actions and biodiversity-related goals, the challenge remains to account for them in international and national legal frameworks. The FAO has recently produced a strategy on mainstreaming biodiversity across agricultural sectors, with specific goals and activities to assist Member States and enhance capacities in mainstreaming biodiversity, particularly to seize the opportunities for creating synergies and in overcoming trade-offs they may face in pursuing multiple SDGs.[190] While some of the key gap areas may be better addressed under other streams of international negotiations, such as the Convention to Combat Desertification, existing synergies and trade-offs call for integration across all pertinent international agreements. Streamlining of future mainstreaming and reporting obligations, and joint capacity-building across sectors and conventions represents an opportunity in this regard, particularly in the context of the Agenda 2030.

It is also important that increased recognition of co-benefits of biodiversity conservation and climate change mitigation actions does not lead to lower emission reductions in other sectors. Otherwise, conservation and restoration efforts risk becoming mere off-setting instruments, themselves undermined by the major indirect drivers related to the economy, consumption and production, and urbanization. Urbanization, infrastructure development and demographic drivers remain mostly unaddressed in the CBD and UNFCCC. As the world is becoming rapidly urbanized and the footprints of cities are growing, not accounting for the biodiversity and climate change impacts of those trends could undermine achieving both SDG 13 and 15.

Both Conventions lack concrete measures on how to address the underlying economic drivers at the global level, but also nationally, particularly regarding consumption. International trade is only referred to by the UNFCCC in the sense of avoiding adverse effects of climate measures on it, but not as a driver. Concrete measures for SCP could be promoted more both at the national and the international levels.

[190] FAO Strategy on Mainstreaming Biodiversity across Agricultural Sectors (2020), available at <http://www.fao.org/documents/card/en/c/ca7722en> (visited 6 October 2020).

Even though SDG 12, the closest to SCP, presented the highest number of trade-offs with other SDGs in a previous analysis of SDG interactions, SDG 12 was also found to be the most synergistic SDG for SDG 15 and one of the best for SDG 13 (aside from SDG 11 and SDG 1), highlighting the importance of SCP in achieving SDGs 13 and 15.[191] Within the SCP framework, economic diversification towards lower resource intensity, circular economy, and production standards would support both Conventions by reducing footprints of products and of gross domestic product (GDP) per se.

UNEA has made significant advances in these discussions. While explicit references to interactions between climate change and biodiversity loss are sporadic at best in the UNEA resolutions, and they do not yet seem to represent many new openings on better accounting for interactions in international cooperation, the strongest potential for addressing widely synergistic action concerns the UNEA focus on SCP. UNEA has emphasized SCP as an essential tool to achieve sustainable development, with potential for improving sustainability in various domains and supporting the achievement of different SDGs beyond SDG 12. UNEA has also explicitly established the nexus between production and the efficient use and sustainable management of resources, acknowledging that resource management, climate, biodiversity, water and land use are interlinked. In addition to urging governments to accelerate and support efforts in making production and consumption more sustainable, UNEA has emphasized the essential role of other stakeholders in the implementation of SCP policies, including the business and financial sector.

Hence, following up on resolutions that have consolidated attention to SCP in the international context of UNEA could present an opportunity to achieve widely synergistic benefits for sustainable development, including SDGs 13 and 15. Yet, other important gaps in the IEL persist, notably in addressing deforestation, agricultural drivers and specific fragile but carbon and biodiversity-rich ecosystems such as wetlands and coastal ecosystems (as well as marine ecosystems and SDG 14). International fora such as UNEA could play an important role in addressing those gaps and helping to harness synergies by building the necessary discussion and international consensus towards more legally binding instruments, with the ultimate aim of reducing IEL fragmentation. Improved coordination between UNEA and the CBD and UNFCCC would be also beneficial for strengthening policy coherence and enhancing SDG implementation at regional and national levels.

[191] Prajal Pradhan et al, 'A systematic study of Sustainable Development Goal (SDG) interactions' 5(11) *Earth's Future* (2017) 1169-1179.

Annex I

CBD, UNFCCC and UNEA documents included in the analysis

1. United Nations Convention on Biodiversity

Key overarching agreement:

- Convention on Biological Diversity (adopted in 1992; effective from 1993)

Key decisions before 2015:

- UNEP/CBD/COP/DEC/IX/2 Agricultural biodiversity: biofuels and biodiversity (2008)
- UNEP/CBD/COP/DEC/X/2 The Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets (2010)
- UNEP/CBD/COP/DEC/X/10 National reporting: review of experience and proposals for the fifth national report (2010)
- UNEP/CBD/COP/DEC/X/33 Biodiversity and climate change (2010)
- UNEP/CBD/COP/DEC/X/37: Biofuels and biodiversity (2010)
- UNEP/CBD/COP/DEC/XI/19 Biodiversity and climate change related issues: advice on the application of relevant safeguards for biodiversity with regard to policy approaches and positive incentives on issues relating 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 (2012)

Key decisions COP13 (2016):

- UNEP/CBD/COP/DEC/XIII/1 Progress in the implementation of the Convention and the Strategic Plan for Biodiversity 2011-2020 and towards the achievement of the Aichi Biodiversity Targets
- UNEP/CBD/COP/DEC/XIII/2 Progress towards the achievement of Aichi Biodiversity Targets 11 and 12
- UNEP/CBD/COP/DEC/XIII/3 Strategic actions to enhance the implementation of the Strategic Plan for Biodiversity 2011-2020 and the achievement of the Aichi Biodiversity Targets, including with respect to mainstreaming and the integration of biodiversity within and across sectors
- UNEP/CBD/COP/DEC/XIII/4 Biodiversity and climate change
- UNEP/CBD/COP/DEC/XIII/5 Ecosystem restoration: short-term action plan
- UNEP/CBD/COP/DEC/XIII/7 Forest biodiversity: the role of international organizations in supporting the achievement of the Aichi Biodiversity Targets
- UNEP/CBD/COP/DEC/XIII/11 Voluntary specific workplan on biodiversity in cold-water areas within the jurisdictional scope of the Convention

- UNEP/CBD/COP/DEC/XIII/14 Climate-related geoengineering
- UNEP/CBD/COP/DEC/XIII/23 Capacity-building, technical and scientific cooperation, technology transfer and the clearing-house mechanism
- UNEP/CBD/COP/DEC/XIII/24 Cooperation with other conventions and international organizations
- UNEP/CBD/COP/DEC/XIII/31 Key scientific and technical needs related to the implementation of the Strategic Plan for Biodiversity 2011-2020 and related research

Key decisions COP14 (2018):

- CBD/COP/DEC/14/1 Updated assessment of progress towards selected Aichi Biodiversity Targets and options to accelerate progress
- CBD/COP/DEC/14/2 Scenarios for the 2050 Vision for Biodiversity
- CBD/COP/DEC/14/3 Mainstreaming of biodiversity in the energy and mining, infrastructure, manufacturing and processing sectors
- CBD/COP/DEC/14/5 Biodiversity and climate change
- CBD/COP/DEC/14/8 Protected areas and other effective area-based conservation measures
- CBD/COP/DEC/14/22 Resource mobilization
- CBD/COP/DEC/14/24 Capacity-building and technical and scientific cooperation
- CBD/COP/DEC/14/27 Process for aligning national reporting, assessment and review
- CBD/COP/DEC/14/28 Tools to evaluate the effectiveness of policy instruments for the implementation of the Strategic Plan for Biodiversity 2011-2020
- CBD/COP/DEC/14/30 Cooperation with other conventions, international organizations and initiatives
- CBD/COP/DEC/14/36 Second work programme of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services

Other:

- CBD/WG2020/2/3 Zero Draft of the post 2020 Global Biodiversity Framework
- CBD/WG2020/2/L.1 Draft report [of the second meeting of the Open-ended Working Group on the post 2020 Global Biodiversity Framework; Rome, 24-29 February 2020]

2. United Nations Framework Convention on Climate change

Key overarching agreements:

- United Nations Framework Convention on Climate Change, FCCC/INFORMAL/84 (adopted in 1992; effective from 1994)
- Kyoto Protocol (adopted in 1997; effective from 2005)

- Copenhagen Accord (agreed on in 2009), FCCC/CP/2009/11/Add.1, Decision 2/CP.15
- Paris Agreement (adopted in 2015; effective from 2016)
- Katowice Climate Conference Decisions (December 2018):
  - FCCC/CP/2018/10/Add.1&2 Report of the Conference of the Parties on its twenty-fourth session, held in Katowice from 2 to 15 December 2018
  - FCCC/PA/CMA/2018/3/Add.1&2 Report of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement on the third part of its first session, held in Katowice from 2 to 15 December 2018
  - FCCC/KP/CMP/2018/8/Add.1 Report of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol on its fourteenth session, held in Katowice from 2 to 15 December 2018
- Madrid Climate Conference Decisions (December 2019):
  - FCCC/CP/2019/13/Add.1&2 Report of the Conference of the Parties on its twenty-fifth session, held in Madrid from 2 to 15 December 2019
  - FCCC/PA/CMA/2019/6/Add.1 Report of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement on its second session, held in Madrid from 2 to 15 December 2019
  - FCCC/KP/CMP/2019/8/Add.1 Report of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol on its fifteenth session, held in Madrid from 2 to 15 December 2019

Key decisions addressing land-use, land-use change and forestry:

- FCCC/CP/2001/13/Add.1, Decision 11/CP.7 Land use, land-use change and forestry
- FCCC/CP/2003/6/Add.1, Decision 13/CP.9 Good practice guidance for land use, land-use change and forestry in preparation of national greenhouse gas inventories
- FCCC/CP/2005/5/Add.2, Decision 14/CP.11 Tables of the common reporting format for land use, land-use change and forestry
- FCCC/CP/2007/6/Add.1, Decision 2/CP.13 Reducing emissions from deforestation in developing countries: approaches to stimulate action
- FCCC/CP/2009/11/Add.1, Decision 4/CP.15 Methodological guidance 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
- FCCC/CP/2010/7/Add.1, Decision 1/CP.16 The Cancun Agreements: Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention
- FCCC/CP/2011/9/Add.1, Decision 2/CP.17 Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention
- FCCC/CP/2011/9/Add.2, Decision 12/CP.17 Guidance on systems for providing information on how safeguards are addressed and respected and

modalities relating to forest reference emission levels and forest reference levels as referred to in decision 1/CP.16
- FCCC/CP/2012/8/Add.1, Decision 1/CP.18 Agreed outcome pursuant to the Bali Action Plan
- FCCC/CP/2013/10/Add.1, Decision 9/CP.19 Work programme on results-based finance to progress the full implementation of the activities referred to in decision 1/CP.16, paragraph 70
- FCCC/CP/2013/10/Add.1, Decision 10/CP.19 Coordination of support for the implementation of activities in relation to mitigation actions in the forest sector by developing countries, including institutional arrangements
- FCCC/CP/2013/10/Add.1, Decision 11/CP.19 Modalities for national forest monitoring systems
- FCCC/CP/2013/10/Add.1, Decision 12/CP.19 The timing and the frequency of presentations of the summary of information on how all the safeguards referred to in decision 1/CP.16, appendix I, are being addressed and respected
- FCCC/CP/2013/10/Add.1, Decision 13/CP.19 Guidelines and procedures for the technical assessment of submissions from Parties on proposed forest reference emission levels and/or forest reference levels
- FCCC/CP/2013/10/Add.1, Decision 14/CP.19 Modalities for measuring, reporting and verifying
- FCCC/CP/2013/10/Add.1, Decision 15/CP.19 Addressing the drivers of deforestation and forest degradation
- FCCC/CP/2015/10/Add.3, Decision 16/CP.21 Alternative policy approaches, such as joint mitigation and adaptation approaches for the integral and sustainable management of forests
- FCCC/CP/2015/10/Add.3, Decision 17/CP.21 Further guidance on ensuring transparency, consistency, comprehensiveness and effectiveness when informing on how all the safeguards referred to in decision 1/CP.16, appendix I, are being addressed and respected
- FCCC/CP/2015/10/Add.3, Decision 18/CP.21 Methodological issues related to non-carbon benefits resulting from the implementation of the activities referred to in decision 1/CP.16, paragraph 70
- FCCC/CP/2017/11/Add.1, Decision 4/CP.23 Koronivia joint work on agriculture

3. United Nations Environmental Assembly

Ministerial declarations
- Ministerial outcome document of the first session of the United Nations Environment Assembly of the United Nations Environment Programme, UNEA-1, 27 June 2014
- 'Towards a pollution-free planet', Ministerial declaration of the United Nations Environment Assembly at its third session, UNEA-3, 4-6 December 2017

- 'Innovative solutions for environmental challenges and sustainable consumption and production'
- Ministerial declaration of the United Nations Environment Assembly at its fourth session, UNEA-4, 11-15 March 2019

Resolutions

- 'Ecosystem-based adaptation', UNEA Res, 1/8, 23-27 June 2014
- 'Supporting the Paris Agreement', UNEA Res. 2/6, 23-27 May 2016
- 'Sustainable consumption and production', UNEA Res. 2/8, 23-27 May 2016
- 'Sustainable management of natural capital for sustainable development and poverty eradication' UNEA Res. 2/13, 23-27 May 2016
- 'Sustainable coral reef management', UNEA Res. 2/12, 23-27 May 2016
- 'Mainstreaming of biodiversity for well-being', UNEA Res. 2/16, 23-27 May 2016
- 'Enhancing the work of the United Nations Environment Programme in facilitating cooperation, collaboration and synergies among biodiversity-related conventions', UNEA Res. 2/17, 23-27 May 2016
- 'Relationship between the United Nations Environment Programme and the multilateral environmental agreements for which it provides the secretariats', Res. 2/18, 23-27 May 2016
- 'Pollution mitigation by mainstreaming biodiversity into key sectors', UNEA Res. 3/2, 4-6 December 2017
- 'Environment and health', UNEA Res. 3/4, 4-6 December 2017
- 'Investing in innovative environmental solutions for accelerating the implementation of the Sustainable Development Goals', UNEA Res. 3/5, 4-6 December 2017
- 'Managing soil pollution to achieve sustainable development', UNEA Res. 3/6, 4-6 December 2017
- 'Innovative pathways to achieve sustainable consumption and production', UNEA Res. 4/1, 11-15 March 2019
- 'Innovation on biodiversity and land degradation', UNEA Res. 4/10, 11-15 March 2019
- 'Sustainable management for global health of mangroves', UNEA Res. 4/12, 11-15 March 2019
- 'Sustainable coral reefs management', UNEA Res. 4/13, 11-15 March 2019
- 'Conservation and sustainable management of peatlands', UNEA Res. 4/16, 11-15 March 2019

UNEP reports

- 'Relationship between the United Nations Environment Programme and multilateral environmental agreements' UNEP/EA.1/INF/8, 30 May 2014

Annex II

Summary of the CBD, UNFCCC and UNEA documents analysis

		Indirect drivers			Direct drivers			Other keywords			
	Analysed documents	Demographic and socio-cultural	Economic and technological	Governance and institutions	Fossil fuels	Land use change	Climate change	Food security, production and consumption/ Agriculture	Environment/ Biodiversity/ Ecosystems/ Forests	Policy coherence	Sustainable Consumption and Production
CBD	Convention on Biological Diversity										
CBD	Strategic Plan 2011-2020 (& COP decisions)										
CBD	Zero draft of post 2020 GBF										
CBD	Thematic COP decisions (2008-2018, mostly >2015)										
UNFCCC	Framework Convention on Climate Change										
UNFCCC	Kyoto Protocol & Copenhagen Accord										
UNFCCC	Paris Agreement & beyond										
UNFCCC	LULUCF COP decisions (all years)										
UNEA	UNEA-1										
UNEA	UNEA-2										
UNEA	UNEA-3										
UNEA	UNEA-4										

Low relevance - text mentioned in preamble or annex, without strong legal language
Medium relevance - text mentioned in the operational part with general wording
High relevance - text mentioned in the operational part with concrete measures; possibly hard legal language used*
Not addressed

Analysis of CBD documents

	Indirect drivers			Direct drivers			Other keywords			
Analysed documents	**Demographic and socio-cultural**	**Economic and technological**	**Governance and institutions**	**Fossil fuels**	**Land-/ sea-use change**	**Climate change**	**Food security, Production & Consumption/ Agriculture**	**Environment/ Biodiversity/ Ecosystems/ Forests**	**Policy coherence**	**Sustainable Consumption and Production**
Convention on Biological Diversity										
Strategic Plan 2011-2020										
Subsequent COP decisions on the Strategic Plan 2011-2020										
Zero draft of post 2020 GBF										
COP decisions related to climate change										
COP decisions on protected areas and ecosystem restoration										
COP decision on forest bio-diversity										
COP decision on agricultural biodiversity										
COP decision on mainstream-ing in industry										
COP decisions on national reporting										
COP decisions on capacity-building and cooperation										

Low relevance - text mentioned in preamble or annex, without strong legal language
Medium relevance - text mentioned in the operational part with general wording
High relevance - text mentioned in the operational part with concrete measures; possibly hard legal language used*
Not addressed

Notes on legend: * Hard legal language in the analyzed CBD COP decisions is scarce and Parties are only in a very few cases "urged" to take specific action. "Shall" is only used in the text of the convention. High relevance has additionally been indicated when drivers or key words
(a) were dealt with in stand alone decisions on the topic or
(b) were namely included in targets under the Strategic Plan or Zero-Draft of the post-2020 GBF - even though their remains unclarity about the legal status of the post-2020 GBF.

Brief description of results: The table clearly shows the fairly holistic approach of the CBD, but with a clear lack of strong legal implications or concrete measures in key areas such as addressing demographic and socio-cultural as well as economic and technological drivers or agriculture. Even though many cells appear green, hard legal language is used only in very few cases. The mainstreaming approach promoted in numerous COP decisions as important tool for achieving the goals of the convention has most impact potential with regard to economic drivers. Governance aspects are reflected on different levels as well as horizontally and vertically (e.g. by calling for synergies with other multilateral environmental agreements and other relevant conventions/international processes; integration of global goals and tragets in national policies, action plans and strategies across sectors), but less often as drivers but rather as tools for (enhanced) implementation, as in the case of policy coherence - again barely underpinned by hard legal language. The need to respect national circumstances and sovereignity in policy-making clearly limits the level of concreteness and tangibility of governance provisions, especially in terms of measures. With regard to climate change, provisions get most concrete with regard to adaptation. Mitigation contributions have been considered less. SCP is touched upon in multiple decisions, but most of them lack concretization. The keyword analysis has not focused on the exact wording only but included synonyms and content clearly displaying or referring to the relevant concept, underlining the qualitative and analytical character of this research.

Analysis of UNFCCC documents

	Indirect drivers			Direct drivers			Other keywords			
Analysed documents	**Demographic and socio-cultural**	**Economic and technological**	**Governance and institutions**	**Fossil fuels**	**Land-/ sea-use change**	**Climate change**	**Food security, Production & Consumption/ Agriculture**	**Environment/ Biodiversity/ Ecosystems/ Forests**	**Policy coherence**	**Sustainable Consumption and Production**
Framework Convention										
Kyoto Protocol										
Copenhagen Accord										
Paris Agreement										
Katowice COP/CMP/CMA										
Madrid COP/CMP/CMA										
LULUCF COP decisions										

Low relevance - text mentioned in preamble or annex, without strong legal language
Medium relevance - text mentioned in the operational part with general wording
High relevance - text mentioned in the operational part with concrete measures; possibly hard legal language used*
Not addressed

Notes on legend: Drivers and topics (keywords) were considered to be insufficiently addressed (low relevance) if the matter only appeared in the preamble. Stronger relevance was indicated in the case of inclusion of the key drivers or topics in the operational part of the documents. Legal language such as 'note', 'recognize', 'acknowledge', as well as 'invite' or 'encourage' was considered to represent soft law (medium relevance), while wording such as 'shall', 'will' or 'request' was marked as strong legal language (high relevance). The establishment of key international mechanisms relevant to respective topics (e.g. Technology Mechanism) were included under 'high relevance'.

Brief description of results: We found that UNFCCC tends to have a relatively good coverage of the topics assessed and to use strong legal language (i.e. 'shall', 'request') in most of the documents analysed. However, while the above table appears mostly green, the extent to which the drivers/topics are addressed and the depth and breadth of concrete instruments and measures can still be enhanced and strengthened. For instance, demographic and socio-cultural drivers tend to be mostly addressed through education and awareness raising measures, while issues related to lifestyle are briefly and rarely mentioned and nothing is said of population dynamics and urbanization. Similarly, while there is strong support for technological development and transfer through the Technology Mechanism, measures related to economic diversification are only listed as an option that can provide climate co-benefits, but specific action is not directly requested. Fossil fuels are only mentioned in view of the vulnerability of countries dependent on this resource. In the table, we assumed energy-related measures to directly address fossil fuels. In a similar fashion, we included provision that refer to an integral approach in addressing the social, economic and environmental dimensions (horizontal coherence) as well as inclusion and coordination of multiple actors and of policies at local, sub-national, national, regional and international level (vertical coherence) under the section on 'Policy coherence', as this specific terminology became more widely used in international negotiations in recent years. While this cannot necessarily be assumed to have a tangible impact, strong legal language around reporting on measures and emissions with reference to the drivers/topics were also seen as highly relevant. 'Sustainable consumption and production' is the area that appears to be least addressed in the UNFCCC documents. While there is very little mention to this topic, sustainable consumption and production in particular are implied in tackling the various sectors (industry, energy, agriculture, etc.) under UNFCCC reporting. Specific mentions to 'sustainable lifestyles' and diets, as a hint to 'sustainable consumption' is only made in the recent legal documents, such as the Paris Agreement and Katowice decisions.

Analysis of UNEA documents

	Indirect drivers			Direct drivers			Other keywords			
Analysed documents (1)	**Demographic and socio-cultural**	**Economic and techno-logical**	**Governance and institu-tions**	**Fossil fuels**	**Land-/ sea-use change**	**Climate change**	**Food security, Pro-duction & Consump-tion/ Agriculture**	**Environment/ Biodiversity/ Eco-systems/ Forests**	**Policy coher-ence**	**Sustainable Consumption and Production**
UNEA-1 Ministerial Declaration						High		High	Medium	High
Resolution 1/8 - Ecosystem-based adaptation			Medium			Medium		Medium	High	
Resolution 2/6 - Supporting the Paris Agreement			High			High				
Resolution 2/8 - SCP										High
Resolution 2/12 - Sustainable coral reef	High	High	High			High		High		
Resolution 2/13 - Sustainable management		High						High		
Resolution 2/16 -Mainstreaming of biodiversity		Medium					Medium	Medium	High	
Resolution 2/17 - Enhancing the work of UNEP			High					High	High	
UNEA-3 Ministerial outcome document	Medium				Medium	Medium		Medium	High	High
Resolution 3/2 - Pollution mitigation		High			Medium			High		High
Resolution 3/4 - Environment and health	Medium		Medium			Medium		Medium	Medium	Medium
Resolution 3/5 - Investing in innovative solutions		Medium						Medium		High
Resolution 3/6 - Managing soil pollution			High		High		High	Low		
UNEA-4 Ministerial Outcome Document		Low			High		High	High	High	High
Resolution 4/1 - Innovative pathways to SCP		Medium	Medium				Medium		Medium	Medium
Resolution 4/10 - Innovation on biodiversity		Medium	High		High			High	High	
Resolution 4/12 - Sustainable management	Medium		High		High					
Resolution 4/13 - Sustainable coral reefs			High		High					
Resolution 4/16 - Conservation of peatlands			High		High					

Low relevance - text mentioned in preamble or annex, without strong legal language
Medium relevance - text mentioned in the operational part with general wording
High relevance - text mentioned in the operational part with concrete measures; possibly hard legal language used*
Not addressed

Notes on the legend: UNEA documents are not legally binding and therefore “hard legal language” is meant to be in UNEA documents the use of stronger wording in addressing Member States and/or UNEP’s Executive Director such as "urge" and/or "request".

Brief description of results: The table highlights how the direct and indirect drivers for climate change and biodiversity loss have addressed in UNEA documents together with the reference to sustainable consumption and production (SCP). The different colours reflect the different level of relevance that drivers have encountered in UNEA documents analysed. The analysis shows that "land/sea use change" is largely addressed as direct driver, followed by climate change while fossil fuels is not addressed at all in UNEA documents.
Not surprisingly and in consistency with UNEA role, the governance aspects are the most indirect driver addressed in UNEA documents. Biodiversity and ecosystems are key words largely considered together with policy coherence. The SCP policy is addressed in all UNEA sessions gaining more importance since UNEA-3.
Concerning the level of relevance, UNEA has addressed both direct and indirect drivers in a high/medium level being the majority of resolutions "urging and requesting" concrete measures to tackle climate change and biodiversity loss.

An Analysis of Earth System Approach to the Global Pact for the Environment

Devika Kumar[1]

1 Introduction

'Earth system' refers to Earth's physical, chemical and biological processes interacting with one another. The system consists of the land, oceans, atmosphere and poles. It also includes the planet's natural cycles – the carbon, water, nitrogen, phosphorus, sulphur and other cycles.[2] The integrity of Earth systems is eroding at a rapid pace and it has become more apparent than ever. We are faced with unprecedented socio-ecological crisis that gravely threatens all life on Earth. Human activities are increasingly crossing the planetary boundaries, which is pushing the Earth to enter into an Anthropocene era – an era which is altogether a more unpredictable and unstable geological epoch.

The socio-ecological crisis of the Anthropocene era should be viewed as a critical existential crisis, which requires sweeping and radical interventions at all regulatory levels. As the broader socio-ecological implications of the Anthropocene are increasingly illuminated and appreciated by the global scientific community, many states seem to recognize the need for global environmental law/Pact, politics and governance to more fully embrace the Earth system integrity.[3]

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[2] Will Steffen et al,' The Emergence and evolution of Earth System Science' 1 *Nature Reviews Earth & Environment* (2020) 54-63. The Earth System refers to 'the suite of interacting physical, chemical, and biological global scale cycles (often called biogeochemical cycles) and energy fluxes which provide the conditions necessary for life on the planet'. Will Steffen, Paul J. Crutzen and John R. McNeil, 'The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature', 36 *AMBIO* (2007) 614-621.

[3] Louse Kotze, 'A Global Environmental Constitution for the Anthropocene?' 8(1) *Transnational Environmental Law* (2019) 11-33.

The Anthropocene concerns the entire Earth system and yet, there is no legal mechanism to protect the global commons and the Earth system. This research paper opens a detailed inquiry into the need for the Global Pact for the environment[4] to adopt an Earth system approach to protect and preserve the Earth's wholeness.

This paper does not aim to be a detailed enquiry into the successes and failures of global environmental law and governance, but more importantly to introduce Anthropocene into the legal domain. The reason this becomes imperative is because since the disruptions of the Anthropocene have begun, and will continue to increase, human society needs to guide its adaptation by recognizing a new set of legal principles – that need to be rapidly embraced if they are to be effective.[5]

This paper begins by exploring and analyzing the Anthropocene epoch, the challenges that come with it and how the scientific, legal and political communities have responded to the socio-ecological challenges. With this analysis in the backdrop, the paper moves on to explore the Earth system complexities and the role and relevance of sovereignty to govern the global commons in the Anthropocene. Furthermore, the paper scrutinizes specific implications of the Anthropocene and Earth system complexities on international environmental law (IEL) – and specifically analyzes the crucial role of 'ecological integrity' as a core objective of multilateral environmental agreements (MEAs) and of public trusteeship to protect and preserve the Earth's wholeness. Finally, this paper argues for the need to have a Global Pact for the Environment that adopts an Earth systems approach. For the Pact to achieve its goal of providing for Earth governance – the paper asserts and concludes that there is a need to see nation-states as stewards of the Earth, wherein states acting as trustees of the common good can potentially have important legal implications to stay within the scientifically defined planetary boundaries.

2 The age of the Anthropocene

2.1 Introduction

For at least the last 11,000 years, the Earth system has maintained an unusually stable and warm climate, a condition conducive to the rapid spread of homo sapiens over the planet and the subsequent development of human civilizations. With the onset of the Industrial Revolution, however, human societies have emerged as a major geophysical force capable of modifying, inter alia, the chemical composition of the atmosphere, hydrosphere and geo-sphere. As a result, multiple biophysical

[4] See <https://globalpactenvironment.org/en/>.

[5] Nicholas A Robinson, 'Fundamental Principles of Law for the Anthropocene?' 44(1-2) *Environmental Policy and Law* (2014) 13-27.

thresholds have been, or are about to be, transgressed, pushing the Earth system into the Anthropocene, where humanity may be at risk of survival.[6]

Geo-ecologically speaking, the Anthropocene refers to a period in which humans dominate the geo-ecological epoch by acting as a major driving force in modifying the environment.[7] In other words, it refers to the age in which humans have the capability to alter the 'Earth systems' and planetary boundaries. Although there is some disagreement among scholars on the exact inception of this era,[8] the majority consensus lies during the mid-twentieth century, when the Holocene era had to give way to an epoch defined by nuclear tests,[9] plastic pollution (both in the oceans and on land), among others, that caused human footprints to become over-whelming for our planet.

According to Professor Jan Zalasiewicz,'[t]he significance of the Anthropocene is that it sets a different trajectory for the Earth system, of which we of course are part'.[10] Advertent critiques have been quick to point out that the Anthropocene era is very short in geological terms, while Prof Jan's response to that is that 'many of the changes are irreversible'.[11]

A formal definition put forth by Steffen, Crutzen and Mc Neill is of particularly relevant significance to this context:

> The term Anthropocene... suggests that the Earth has now left its natural geological epoch, the present interglacial state called the Holocene. Human activities have become so pervasive and profound that they rival the great forces of Nature

[6] Independent Group of Scientists appointed by the UN Secretary-General, 'The Future is now' Global Sustainable Development Report 2019:The Future is Now – Science for Achieving Sustainable Development (UN, 2019), available at <https://sustainabledevelopment.un.org/content/documents/24797GSDR_report_2019.pdf> (visited 6 September 2020).

[7] Mike Hodson and Simon Marvin, 'Urbanism in the Anthropocene: Ecological Urbanism or Premium Ecological Enclaves?', 14 *City* (2010) 298-313. The extent of human impacts on Earth has been documented extensively in many disciplines and contexts. In the context of the Anthropocene, see among others: Ron Wagler, 'The Anthropocene Mass Extinction: An Emerging Curriculum Theme for Science Educators', 73 *The American Biology Teacher* (2011) 78- 83; Juan J. Armesto et al, 'From the Holocene to the Anthropocene: A Historical Framework for Land Cover Change in Southwestern South America in the Past 15,000 Years', 27 *Land Use Policy* (2010) 148-160; Ignacio Ayestaran, 'The Second Copernican Revolution in the Anthropocene: An Overview', 3 *International Journal Sustainability, Technology and Humanism* (2008) 146-157.

[8] Giacomo Gertini and Riccardo Scalenghe, 'Anthropogenic Soils are the Golden Spikes for die Anthropocene', 21 *The Holocene* (2011) 1269-1274; Ananda Gunatilaka, 'The Anthropocene – A 200 Year Record of Human Driven Geological Impacts: Prelude to Global Climate Changes and Implications for South Asia', 37(1) *Journal of National Science Foundation of Sri Lanka* (2009) 3-11.

[9] Jan Zalasiewicz et al, 'A Stratigraphic Basis for the Anthropocene?', 395 *Geological Society, London (*2014) 1- 21.

[10] Damian Carrington, 'The Anthropocene epoch: scientists declare dawn of human-influenced age', *the Guardian* of 29 August 2016, available at <https://www.theguardian.com/environment/2016/aug/29/declare-anthropocene-epoch-experts-urge-geological-congress-human-impact-earth> (visited 29 July 2020).

[11] *Ibid*.

> and are pushing the Earth into planetary terra incognita. The Earth is rapidly moving into a less biologically diverse, less forested, much warmer, and probably wetter and stormier state.[12]

This definition not only helps us understand the implications of human actions on the planet, but also puts us on a narrative path that is unsettling for humanity. We have a very limited amount of time to correct our actions; otherwise, humanity is potentially on the brink of greater catastrophic events that will wipe out our ecosystems.

2.2 Scientific responses to challenges

The growing scientific realities project a grim future if humanity does not steer away from pushing the planetary boundaries to its 'tipping points'.[13] The urgency of the situation has led to a wide range of literature from different fields, including, for instance, geo-engineering approaches, aimed at mitigation and/or Earth system restoration through latest technological interventions.[14] While technological interventions[15]indeed play a crucial role in responding to the socio-ecological crisis we are faced with, moral and ethical commitments to other humans and for Earth's wholeness is what is essential.

A critical (often taken for granted) response to the Anthropocene challenge involves transforming people and the socio-institutional frameworks through which we can mediate the human-environment interface.[16] A radical shift in the thought-processes that question the urgency of global social policy is vast enough to permit the luxury of ethical deliberation needed to tackle the challenges of the Anthropocene era.[17] The uniqueness of this epoch is that, for the first time, man will be placed on human

[12] Will Stephen et al, 'The Anthropocene: Are', *supra* note 2, at 614. See also, Eva Lovbrand, Johannes Stripple and Bo Wiman, 'Earth System Governmentality: Reflections on Science in the Anthropocene', 19 *Global Environmental Change* (2009) 7-13.

[13] Barry W. Brook, Erle C. Ellis, and Jessie C. Buettel, 'What is the evidence for Planetary tipping points?' in Peter Kareiva, Michelle Marvier and Brian Silliman (eds), *Effective Conservation Science: Date Not Dogma*(Oxford University Press, 2018) 51-57.

[14] See, for instance, David W. Keith, 'Geo-engineering the Climate: History and Prospect', 25 *Annual Review of Energy and the Environment* (2000) 245-284; Bala Govindswamy and Ken Caldeira, 'Geo-engineering Earth's Radiation Balance to Mitigate CO2-induced Climate Change', 27 *Geophysical Research Letters* (2000) 2141-2144; B. Wharf and S. Arias (eds), *The Spatial Turn: Interdisciplinary Perspectives* (New York, Routledge, 2009); Peter Haff, 'Humans and Technology in the Anthropocene: Six Rules', 1(2) *The Anthropocene Review* (2014) 126-136.

[15] See, for instance, David Leary and Balakrishna Pisupati, 'Emerging Technologies: Nanotechnology' at 227-246; Richard L. Ottinger and Victor M. Tafur, 'Legal Frameworks for emerging technologies: Bioenergy' at 247-268; Michele S. Garfinkel and Robert M. Friedman, 'Synthetic biology and synthetic genomics' at 53-70. All in David Leary and Balakrishna Pisupati.(eds), *The Future of International Environmental Law* (United Nations University Press, 2010), available at <https://collections.unu.edu/eserv/UNU:2518/ebrary9789280811926.pdf> (visited 28 April 2020).

[16] Sarah Krakoff, 'Parenting the planet' in Denis G. Arnold (ed), The Ethics of Global Climate Change (Canbridge University Press, 2011) 145-169.

[17] See Upendra Baxi, 'Towards a Climate Change Justice Theory?', 7 *Journal of Human Rights and the Environment* (2016) 7-31.

and human-induced global ecological change and acts like a 'mirror', where humanity is only going to see the (destructive) reflections of previous actions.

2.3 Legal responses to challenges

Compared to the advancement of scientific and technological resilience mechanisms developed as a response to the Anthropocene, the legal domain is considerably lagging in developing a comprehensive analytical framework to tackle socio-ecological challenges.

This is perhaps because law presents us with a paradoxical outlook. More specifically, environmental law has indeed played a role in making us push our planetary boundaries to tipping points. Law is also needed to carry out central reforms that could potentially help cope with the challenges we are now faced with in the Anthropocene era. As Robinson points out in his work,[18] looking at law through the lens of the Anthropocene could potentially reveal the historic and continuing contribution of law towards enabling a multitude of Anthropogenic' causes and realities. These include (but are not limited to) the enclosure of the commons; the dispossession of indigenous people under colonialism; the continuing corporate neo-colonialism and the resulting ecological ravaging and asymmetrically distributed patterns of advantages and disadvantages that prevail in the society.[19]

Barring a few exceptions,[20] there is nothing, as of yet, new in law that responds to Earth's wholeness and complexity. Scholars have pointed out a 'vacuum' in the current institutional arrangements to effectively deal with multiple inter-locking complex processes resulting in future human and non-human well-being.[21] Although the latest Global Pact for the Environment[22] could potentially provide some respite, it still has a long way to go in the international community, and it will be a few years before we see a legally-binding Pact that appreciates and encompasses the Earth's wholeness. (Global Pact for the Environment will be discussed in more detail in section four of this paper).

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[18] Nicholas A. Robinson, 'Fundamental Principles of Law for the Anthropocene?', 44 *Environmental Policy & Law* (2014) 13-27.

[19] See further, Anna Grear 'Deconstructing Anthropos: A critical Legal Reflection on "Anthropocentric" Law and Anthropocene 'Humanity', 26 *Law Critique* (2015) 225-246.

[20] See Tim Stephens, 'Re-Imagining International Water Law?', 71 *Maryland Law Review Endnotes* (2011) 20-40; Nicholas A. Robinson 'Beyond Sustainability: Environmental Management for the Anthropocene Epoch', 12 *Journal of Public Affairs* (2012) 181-194; Rosemary Rayfuse, 'The Anthropocene, Autopoiesis and the Disingenuousness of the Genuine Link: Addressing Enforcement Gaps in the Legal Regime for Areas Beyond National Jurisdiction' in Erik J. Molenaar and Alex G. Oude Elferink (eds), *The International Legal Regime of Areas beyond National Jurisdiction. Current and Future Developments* (Brill, 2009) 163-190.

[21] Victor Galaz, *Can We Bridge the 'Anthropocene gap'? Global Environmental Governance, Technology and Politics: The Anthropocene Gap* (Edward Elgar, 2014).

[22] Le club des jurists, 'Global Pact for the Environment' (International Union for Conservation of Nature (IUCN), available at <https://www.iucn.org/sites/dev/files/content/documents/draft-project-of-the-global-pact-for-the-environment.pdf> (visited 21 July 2020).

2.4 Political dimensions and disconnect with reality

There is a pattern of disconnect between the scientific realities of Earth systems, on the one hand, and international cooperation responses to deal with urgencies, on the other hand. We have witnessed this reality, time and again; for instance, with the call for climate change urgency, the attempts of the international community to take strong measures through treaties and conventions have repeatedly failed. This lack of urgency by the international community to undertake strong cooperative measures stems, arguably, from 'fear.' It is the fear of losing sovereignty, fear of complicating existing MEA regimes, fear of opening up established principles and their varied/ contested application, and, most worrisome of all, fear of committing to steps that they lack the capacity to implement.[23]

Take, for instance, the incident that just as the world's nation states were to meet at the United Nations Conference on Sustainable Development (known as Rio+ 20) in June 2012, the US-based think tank Breakthrough Institute released a highly critical and widely spread review of a 'planetary boundaries' framework- a science based analysis of the risk of human activities.[24] The report questioned the underlying scientific evidence, the main results as well as the claim that the transgression of the suggested boundaries would have detrimental implications for human well-being.[25] Rio+20 agenda was made a re-draft called 'zero draft' declaration, that included an explicit reference to the need to stay within scientifically defined 'planetary boundaries'.[26] This reference was removed from the document, due to scepticism within the US, Chinese and G77 delegations.

Another recent example is the third substantive session of the Ad Hoc Open-Ended Working Group of the Global Pact for the Environment which decided to adopt recommendations that were a clear retreat from the original proposals of a legally binding pact that could serve as a messiah to tackle the global environmental challenges of the Anthropocene era. Instead, they chose a 'simple Political Declaration in 2022', the content of which remains vague, and not a much needed international, legally binding treaty that would enshrine general principles of environmental law.[27]

[23] International Institute for Sustainable Development (IISD), 'Summary of the Third Substantive Session of the Ad Hoc Open-ended Working Group towards a Global Pact for the Environment 20-22 May 2019', press release of 25 May 2019, available at <https://enb.iisd.org/download/pdf/enb3503e.pdf> (visited 21 July 2020) at 11.

[24] Linus Blomquist et al, 'Does the Shoe Fit? Real versus Imagined Ecological Footprints', 11 *PLoS Biology* (2012) 1-7.

[25] Think-tank produced reports of this sort are overly common, but a successful spin in international media is not. The *Scientific American* (Biello 2012), *The Economist* (2012), and *The Wall Street Journal* (2012) all described the contents of the Report. The timing was excellent from a lobbying point of view.

[26] See Stakeholder Forum for a Sustainable Future, 'Review of implementation of Agenda 21 and Rio Principles – Detailed review of implementation of the Rio Principles' (UN Department of Economic and Social Affairs, 2011), available at <https://sustainabledevelopment.un.org/content/dsd/dsd_sd21st/21_pdf/SD21_Rio_principles_study_complete.pdf> (visited 4 May 2020) at 13

[27] IISD, 'Summary of the Third', *supra* note 22, at 8.

The international policy framework on environmental law-making has constantly entered political gridlock, but the current age we are entering towards (some believe we are already in) requires an unprecedented international cooperation between nation states, civil societies and environmental citizens. Due to the nature of the Anthropocene era, where catastrophic events will occur beyond sovereign territories (that we have created for 'political convenience'), it is obvious that the response should also be global in nature beyond national jurisdictions.

With this in the backdrop, the aim of the next section is to explore the facets of the Earth system complexity that justifies the need for re-defining the current legislative framework and policy-making. The paper argues in favour of a strong international legally binding instrument that protects the environment and the ecological integrity of the planet.

2.5 (IR)Relevance of state sovereignty in the Anthropocene era

Above, I discussed the growing Earth system complexities that are increasingly putting pressure on humanity to develop environmental legal regimes with international cooperation, due to the complexities of the anthropogenic era. This makes us question how the relevance of state sovereignty manifests in the Anthropocene era.

If there is relevance, how do we deal with consensus issue – where few major big states override and dominate most of the smaller states in favour of environmental decisions? If there is no longer relevance, how do we empower international environmental politics to take stringent measures to tackle catastrophic consequences of socio-ecological complexities?

After the world-wars concluded, the need of individual sovereign nations to strive to become the dominant force on the face of Earth led to large-scale exploitation of natural resources.[28] All efforts made within an intention to protect the environment were limited by territorial border efforts. Scholars[29] have advocated for the need to 'redefine national security' to encompass a broad array of threats, ranging from earthquakes to environmental degradation. Furthermore, US Senator Albert Gore spoke extensively in favour of thinking of the environment as a national security issue.[30] During the renewed cold war tensions of the late 1970s and early 1980s, such

[28] Micheal S. Dukakis, 'Environmental Politics in post-world war II America', 18 *Resources, Conservation and Recycling* (1996) 5-9; Samuel P. Hays, 'The Environmental Movement', 25 *Journal of Forest History* (1981) 219-221; Nico Schrijver, *Sovereignty over natural resources* (Cambridge University Press, 1997) 368-395.

[29] See Lester R. Brown, 'Redefining National Security', Worldwatch paper, No.14 (1977), available at <https://files.eric.ed.gov/fulltext/ED147229.pdf> (visited 4 May 2020); Jessica Tuchman Mathews, 'Redefining Security', 68(2) *Foreign Affairs* (1989) 162-77; Michael Renner, *National Security: The Economic and Environmental Dimensions* (Worldwatch Institute, 1989); and Norman Myers, 'Environmental Security', 74 *Foreign Policy* (1989) 23-41.

[30] Nicholas John Spykman, *America's Strategy in World Politics: The United States and the Balance of Power* (Harcourt, Brace and Co., 1942).

concepts were advanced to prevent excessive military threats and, as the cold war winds went down, such links became increasingly popular among national security experts and organizations looking for new missions.[31]

Meanwhile, during that period, the principles of international law emerged with a motive to protect and preserve state sovereignty from the interference of foreign states.[32] The highest principle of international law is the recognition of state sovereignty. The sovereignty of nations sets certain limits in international law. States are the only acting participants, and not people, ethnic groups or interest groups. So, it can be deduced that between the need to protect the environment (for preserving sovereign self-interest) and the need to protect individual sovereign states from foreign interference (again, for preserving sovereign self-interest), led to the emergence of international environmental law.

Today's lack of power in international environmental politics is mirrored in the powerlessness of international environmental law. It shares limitations of general international law from which it emerged. International law regulates the legal relationships between nations and only between them; the affected people are not involved directly and can only bring influence in international legal developments to bear through their respective state. This exclusive role of the states leads to serious consequences, which obstruct the course of international ecological politics.[33]

IEL, in a historical and systematic sense, is not suited to the problem of preserving the natural requirements of our existence because international law has not been 'designed' for the protection of collective or ecological interests.[34] Therefore, this raises an important question on the relevance of sovereignty in the modern day context of global environmental politics and law.

2.5.1 Problems of sovereignty over global commons

'Global Commons' is defined as those parts of the planet that fall outside national jurisdictions and to which all nations have access. International law identifies four global commons, namely the high seas, the atmosphere, the Antarctica and the outer space.[35] Unfortunately, global commons do not, as the name suggests, logically imply shared resources. Moreover, areas labelled as global commons are not any more

[31] Daniel Deudney, 'The Case Against Linking Environmental Degradation and National Security', 19(3) *Millennium: Journal of International Studies* (1990) 461-476.

[32] Michael Reisman, 'International Law after the Cold War', 84(4) *American Journal of International Law* (1990) 859-866.

[33] Klaus Bossellman, *When Two Worlds Collide: Society and Ecology* (*RSVP Publishing Company Limited,* 1995) 4-383.

[34] *Ibid*. at 75.

[35] See UN System Task Team on the Post-2015 UN Development Agenda, 'Global Governance and governance of the global commons in the global partnership for development beyond 2015' (OHCHR, OHRLLS, UNDESA, UNEP, UNFPA, 2013), available at <https://www.un.org/en/development/desa/policy/untaskteam_undf/thinkpieces/24_thinkpiece_global_governance.pdf> (visited 4 May 2020) 3.

protected than areas subject to sovereign utilization.[36] Global commons consist of resources that are generally guided by the principle of common heritage of humankind.[37] Resources of interest or value to the welfare of the community of nations – such as tropical rain forests and biodiversity – have lately been included among the traditional set of global commons as well, while some define the global commons even more broadly, including science, education, information and peace.[38] This raises the question of how sovereignty actually impedes the protection of global commons since states are driven by national interests and have been resisting to accepting responsibility for areas beyond natural jurisdiction.[39]

2.5.2 Moving beyond the traditional notion of sovereignty towards Earth governance

As I have discussed above, the complexity of governing global commons with the Westphalian notion of sovereignty where each state's domestic affairs is exclusive to its territory is not going to protect against the socio-ecological crisis our planet is headed toward in the anthropogenic era. The complexities require a paradigm shift when contemplating the role and status quo of the all-powerful, sovereign Westphalian state and the global institutions through which it acts. This includes the status, role and legitimacy of global non-states actors and global state-sanctioned governance agents i.e. agents who hold authority to oversee and protect global commons; the role of soft laws and the global application and enforcement of state-based legal rules.

Notably, the complex socio-legal, political, economic and ecological realities of the Anthropocene fundamentally militates against orthodox conceptions of international environmental law and governance. This is because the state, which has originally been the sole actor and creator of international environmental law, no longer acts as viable solution. The Anthropocene era requires us to move beyond state-centric environmental law-making towards universal legal principles.[40] Environmental de-

[36] See, further, Klaus Bosselmann, 'Large-Scale Acquisitions of the Commons: The need for Earth Governance' in Laura Westra, Klaus Bosselmann and Virginia Zambrano (eds), *Ecological Integrity and Land Uses: Sovereignty, Governance, Displacements and Land Grabs* (Nova Science Publishers, 2019); Klaus Bosselmann, 'Reclaiming the Global Commons: Towards Earth Trusteeship' in Betsan Martin, Linda Te Aho and Maria Humphries-Kil (eds), *Responsibility. Law and Governance for Living Well with the Earth Law* (Routledge, 2018) 35-46; Klaus Bosselmann, 'Democracy, Sovereignty and the Challenge of the Global Commons' in Laura Westra, Janice Gray and Franz-Theo Gottwald (eds), *The Role of Integrity in the Governance of the Commons* (Springer,2017) 51-65; Erin A. Clancy, 'Tragedy of the Global Commons', 5 *Indiana Journal of Global Legal Studies* (1998) 601- 619.

[37] Riidiger Wolfrum, 'The Principle of the Common Heritage of Mankind' 43 *Zeitschrift für ausländisches öffentliches Recht und Völkerrecht* (1983) 312-337.

[38] UN System Task Team on the Post-2015 UN Development Agenda, 'Global Governance and', *supra* note 38, at 6.

[39] See further, Elinor Ostrom, *Governing the Commons. The Evolution of Institutions for Collective Action* (Cambridge University Press, 1990).

[40] Louis J. Kotze 'Rethinking Global Environmental Law and Governance in the Anthropocene', 32(2) *Journal of Energy & Natural Resources Law* (2014) 121-156 at 156.

structions that are a consequence of the Anthropocene will not be limited to one jurisdictional boundary – hence, keeping in view that solutions for such problems also should stem beyond politically drawn boundaries.

In view of this, the Earth governance approach offers a solution to govern the commons where consensus-building ultimately resides with citizens, not with governments. It is appropriate, therefore, to perceive governments as trustees, acting for, and on behalf of, citizens as beneficiaries.[41] This vision of trusteeship does not downgrade state governments, to the contrary: it assigns them immensely important responsible tasks. At the same time, it recognizes, in principle, that state governments may have certain obligations toward the rest of humanity. The public trust doctrine can serve as a useful starting point to the Earth trusteeship concept[42] (see later this paper).

3 Earth system complexities and implications on international environmental law

The Earth is a complex system formed by a large variety of sub-systems (biosphere, atmosphere, lithosphere as well as social and economic systems etc.) which interact by the exchange of matter, energy and information. Because of these inter-relations, the Earth is a complex and evolving network. We may choose to consider each subsystem separately, but the growing understanding of the whole system Earth suggests that one should consider the interactions between these subsystems.[43]

Over the past few decades, evidence has been mounting that planetary-scale changes are occurring rapidly in response to the forcing and feedbacks that characterize the internal dynamics of the Earth system.[44] Scientific revelations have informed us on four aspects of the Earth system that illustrate how human enterprises are pushing towards 'planetary terra incognita'.[45] This phenomenon of global change represents a profound shift in the relationship between humans and the rest of nature. The four aspects mentioned are non-linearity, catastrophic shifts, tipping points and scale. To begin with, complex social-ecological systems which underpin human and non-human well-being – such as coral reef ecosystems, agro-ecological landscapes, forests

41 Klaus Bosselmann, 'Governing the Global Commons: The planetary boundaries approach', 13(1) *Policy Quarterly* (2017) 37-42.

42 Peter H. Sand, 'The Rise of Public Trusteeship in International Environmental Law', Global Trust Working Paper Series 03/2013 (2013), available at <http://globaltrust.tau.ac.il/wp-content/uploads/2013/08/Peter-Sand-WPS-3-13-ISSN.pdf> (visited 5 May 2020).

43 Reik Donner et al, 'Understanding the Earth as a complex system – recent advances in data analysis and modelling in Earth Sciences', 174 *European Physical Journal Special Topics* (2009) 1-9.

44 Will Steffen et al, *Global Change and the Earth System. A Planet under Pressure* (Springer, 2004) 4.

45 Will Steffen, et al, 'The Anthropocene: Are', *supra* note 2, at 614, See further, Victor Galaz, *Global Environmental Governance, Technology and Politics – The Anthropocene Gap* (Edward Elgar, 2014) 1-15.

and freshwaters – can shift with irreversible damage.[46] The next aspect is the scale. The non-linear properties of vital social-ecological systems are not limited to regional or local scale examples. The potential of irreversible shift in the Earth systems, abrupt climate change,[47] tipping elements in the Earth system,[48] 'planetary boundaries,[49] and a proposed possible state-shift in the Earth's biosphere[50] are all examples of attempts to explore the possibility of rapid, aggregated and destructive change on global scale.

These aspects reveal to us that we are no longer able to predict how the deterioration of the ecosystem can affect the processes and functionality at the planetary scale and how ecosystems themselves may react to disturbance. What we do know, however, is we must bring to scale human interference beyond the planetary boundaries and ensure we do not cross the safe operating space for humans. One important conclusion is that the 'boundaries' presently perceived as 'safe' could move over time as the Earth system, or our understanding of it, evolves. This dynamic interplay between systems behaviours, values and politics, should be considered in the environmental decision-making processes.

3.1 Implications on international environmental law

The ideal central over-arching purpose of international environmental law is to achieve socio-ecological integrity and ensure that humans do not step outside the planetary boundaries.[51] MEAs have been developed to perform the primary function of steering the world towards a path of achieving 'sustainable development'[52] (especially since the Stockholm Declaration).[53] However, commentators have pointed out that since its inception, owing to the relatively stable Holocene era's conditions,

[46] See Sandra Diaz et al, 'Summary for Policy Makers of the Global Assessment Report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services', (PBES secretariat, 2019), available at <https://ipbes.net/sites/default/files/2020-02/ipbes_global_assessment_report_summary_for_policymakers_en.pdf> (visited 4 May 2020) at 11.

[47] Richard B. Alley et al, 'A report of Working Group I of the Intergovernmental Panel on Climate Change. Summary for Policymakers' in Susan Solomon et al, *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (IPCC, 2007), available at <https://www.ipcc.ch/site/assets/uploads/2018/02/ar4-wg1-spm-1.pdf> (visited 22 July 2020).

[48] Timothy M. Lenton et al, 'Tipping elements in the Earth's climate system', 105(6) *Proceedings of the National Academy of Sciences* (2008) 1786-1793.

[49] Johan Rockstrom et al, 'Planetary Boundaries: Exploring the Safe Operating Space for Humanity', 461 *Nature* (2009) 472-475.

[50] Anthony D. Barnosky et al, 'Approaching a state shift in Earth's Biosphere', 486 *Nature* (2012) 52-58.

[51] Rakhyun E. Kim and Klaus Bosselmann, 'International Environmental Law in the Anthropocene: Towards a Purposive System of Multilateral Environmental Agreements', 2(2) *Transnational Environmental Law* (2013) 285-305; Geoffrey Palmer, 'New Ways to Make International Environmental Law', 86 *American Journal of International Law* (1992) 259-265.

[52] A goal which in itself has been subject to criticism because of its anthropocentric ontology. See Sam Adelman, 'The Sustainable Development Goals, Anthropocentrism and Neo liberalism' in Duncan French and Louis Kotze (eds), *Sustainable Development Goals: Law, Theory and Implementation* (Edward Elgar, 2018) 15-40.

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

IEL has performed its duties in lax.[54] It is now in the interest of not just humanity but for Earth's wholeness[55] that we need a radical approach and to re-think the law–governance –environment relationship.

MEAs have been particularly dynamic to respond to the community or *erga omnes* interest in environmental obligations. However, at the same time, MEAs have been heavily criticized for being the main reason for IEL's failure because their excessive proliferation has led to treaty regimes over-step planetary boundaries and breaching the safe operating space.[56] The rapid proliferation of IEL's instruments[57] has led to a fragmented and piece-meal approach to solving the global socio-ecological crisis. This fragmented approach[58] brings about the need to codify and make legally-binding consolidated established principles of IEL into a Pact. This will not only enable countries to formulate their domestic laws in-tune with the Pact, but also justify the legal basis for operating within the safe operating space for the humanity. This will enable humans to create an integrated and holistic approach in the law – governance – environment interface.

The lack of knowledge and understanding of the unfathomable scale of ecological disaster effects means that we need to become more equipped than ever by stricter policy-making structures and governance. The current approach of environmental decision-making processes at both regional and global levels relies on the prediction of the effects of commercial activities on the environment.[59] It is difficult to justify the prevention of harm to species or habitat in the monetary and hard-evidence demanding terms on which these debates are often conducted. Proponents of a stronger approach to sustainability argue that formal limits on economic growth, perhaps related to the preservation of substantive elements of the environment, must be identified and established in law to overcome this handicap for both environmental

[54] Davor Vidas et al, 'International Law for the Anthropocene? Shifting Perspectives in Regulation of the Oceans, Environment and Genetic Resources', 9 *Anthropocene* (2015) 1-13.

[55] See further, Klaus Bosselmann 'A Normative Approach to Environmental Governance: Sustainability at the apex of environmental law' in Douglas Fisher (ed.), *Research Handbook on Fundamental Concepts of Environmental Law* (Edward Elgar, 2016) 30-70.

[56] Tim Stephens, 'Re-imagining International Environmental Law in the Anthropocene' in Louis Kotze (ed), *Environmental Law and Governance for the Anthropocene* (Hart, 2017) 31-54.

[57] Rapid proliferation refers to the rate at which MEAs were being formulated to create a quick fix for the growing deterioration of ecological resources.

[58] For further readings, see: John Carter Morgan III, 'Fragmentation of International Environmental Law and the Synergy: A Problem and a 21 century model solution', 18(134) *Vermont Journal of Environment Law* (2016) 135-161; Christoph Humrich, 'Fragmentated International Governance of Arctic Offshore Oil: Governance challenges and Institutional Improvement', 13(3) *Global Environmental Politics* (2013) 79-99; Steven R. Ratner, 'Regulatory Takings in Institutional Context: Beyond the Fear of Fragmentated International Law' 102(3) *American Journal of International Law* (2008) 475-528.

[59] Richard K. Morgan, 'Environmental Impact Assessment: The State of the Art', 30 *Impact Assessment and Project Appraisal* (2012) 5-14; Jane Holder and Maria Lee, *Environmental Protection, Law and Policy* (2nd ed., Cambridge University Press, 2007) 548-51.

protection in current decision-making practices and for making development sustainable.[60]

Despite the 'uncertainty factor', that decision-makers are faced with, I argue that it is not a novice territory for human civilization. Societies have historically managed probabilities and scenarios when building new infrastructure, managing energy supplies and when investing in new technologies. Currently, in certain pockets of the world, sovereign nations are trying to tackle the challenges of the Anthropocene era.[61] These efforts may create an illusion that they are contributing to the bigger picture, but they are nothing more than solipsistic efforts operating within the politically created boundaries.

3.1.1 Ecological integrity as a core objective of MEAs

Ecological integrity helps clarify broader concepts like sustainability or a mutually enhancing human – Earth relationship. Many international agreements or soft law instruments refer to ecological integrity as an overarching, or at least a significant objective.[62]

The notion of ecological integrity first appeared in the international arena in 1978 with the Great Lakes Water Quality Agreement,[63] signed bilaterally between Canada and the United States. The purpose of the Agreement is 'to restore and maintain the chemical, physical and biological integrity of the Waters of the Great Lakes'.[64]

The notion of ecological integrity has since been used as a key concept in a wide range of MEAs. The first MEA to include the notion was the Convention on the Conservation of Antarctic Marine Living Resources.[65] Adopted in 1980, the Convention recognized in its preamble 'the importance of safeguarding the environment and protecting the integrity of the ecosystem of the seas surrounding Antarctica'.

Today, more than a dozen MEAs contain some reference to the integrity of ecosystems in their preamble or the operative part. In other major MEAs where the term did not appear in their texts, we may still observe that the underlying ideas are very

[60] *Ibid*. See also, Andrea Ross, 'Modern Interpretations of Sustainable Development', 36 *Journal of Law and Society* (2009) 32-54.

[61] See, for instance, Carolina Zambrano-Barragán et al, 'Quito's Climate Change Strategy: A Response to Climate Change in the Metropolitan District of Quito, Ecuador' in Konrad Otto-Zimmermann (ed.), *Resilient Cities: Cities and Adaptation to Climate Change. Proceedings of the Global Forum 2010* (Springer, 2011) 515-529.

[62] Kim and Bosselmann, 'International Environmental law', *supra* note 45, at 305.

[63] Agreement between Canada and the United States of America on Great Lakes Water Quality, Ottawa, 22 November 1978, as amended on October 16, 1983 and on November 18, 1987, preceded by the Agreement between Canada and the United States of America on Great Lakes Water Quality, Ottawa, 15 April 1972.

[64] Article 2 of the Agreement.

[65] Convention on Conservation of Antarctic Marine Living Resources, Canberra, 20 May 1980, in force 7 April 1982, 19 *International Legal Materials* (1980) 841, <http://www.ccamlr.org>.

similar. For instance, the ultimate objective of the UN Framework Convention on Climate Change (UNFCCC),[66] which is to prevent dangerous anthropogenic interface with the climate system, can be interpreted to mean safeguarding the integrity of the climate system.

The Vienna Convention for the Protection of Ozone Layer[67] aims to protect human health and the environment against 'adverse effects', which it defines as 'changes in the physical environment or biota, including changes in climate, which have significant deleterious effects on human health or on the composition, resilience and productivity of natural and managed ecosystems, or on materials useful to mankind'.[68] Here the objective is also to safeguard the integrity of the ozone layer.

The UN Convention on the Law of the Sea,[69] aims to protect against the 'pollution of the marine environment' which its Parties are obliged to prevent, reduce and control.[70] Again, the objective is to protect the integrity of the marine environment. The Ramsar Convention on Wetlands[71] defines the wise use of wetlands as 'the maintenance of their ecological character, achieved through the implementation of ecosystem approaches, within the context of sustainable development',[72] thereby incorporating elements of ecological integrity.

Perhaps more significantly, most of the key international environmental soft law instruments, including the World Charter for Nature,[73] the Rio Declaration on Environment and Development,[74] Agenda 21,[75] the Earth Charter,[76] the Plan of Implementation of the World Summit on Sustainable Development,[77] the Rio +20

[66] 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>.

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

[68] Convention on the Protection of the Ozone Layer, Vienna, 22 March 1985, in force 22 September 1988, 26 *International Legal Materials* (1985) 1529. See further, Sharon A. Robinson and Stephen R. Wilson, 'Environmental Effects of Ozone Depletion and its Interactions with Climate Change: 2010 Assessment', available at <https://ro.uow.edu.au/cgi/viewcontent.cgi?article=1495&context=scipapers> (visited 5 May 2020).

[69] United Nations Convention on the Law of the Sea, Montego Bay, 10 December 1982, in force 16 November 1994, 21 *International Legal Materials* (1982) 1261.

[70] Preamble.

[71] Convention on Wetlands of International Importance, Ramsar, 2 February 1971, in force 21 December 1975, 11 *InternationalLegal Materials* (1972), 963, <http://www.ramsar.org>.

[72] Preamble.

[73] 'World Charter for Nature', UNGA Res. 37/7 of 28 October 1982.

[74] 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.

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

[76] See the Earth Charter Initiative (2000) <http://earthcharter.org>.

[77] Plan of Implementation of the World Summit on Sustainable Development, UN Doc. A/CONF.199/20 (2002).

Outcome Document 'The Future We Want'[78] and the Paris Climate Agreement[79] contain the notion of ecological integrity in their cores.

This observation implies that many MEAs refer to ecological integrity as a significant objective[80] and in order to navigate the Anthropocene, Furthermore, a unifying objective of the Global Pact for the Environment needs to treat 'ecological integrity' as a fundamental core objective. (Ecological integrity will be further discussed with a specific reference to the Global Pact for the Environment in section 4 of this paper).

3.1.2 How far has the idea of public trusteeship for environmental resources progressed in the field of IEL?

Public trust doctrine refers to a legal concept with ancient roots that is based on the idea that certain natural resources cannot be fairly and effectively managed by private owners.[81] Proposals to make use of the public trust doctrine in an international context date back to the 1893 Bering Sea Fur Seal Arbitration.[82] They re-surfaced during preparations for the 1972 UN Stockholm Declaration and for the United Nations Economic, Social Cultural Organisation (UNESCO) World Heritage Convention,[83] and have since been taken up by several international scholars, especially in the legal debate on inter-generational equity.

Various forms of 'trusteeship', 'guardianship', 'custodianship' or 'stewardship' status have been suggested for the marine coastal environment in coastal waters and exclusive economic zones,[84] for continental shelf areas 60 to 120 miles beyond the

[78] 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 15 February 2019).

[79] Paris Agreement to the United Nations Framework Convention on Climate Change, Paris, 12 December 2015, in force 4 November 2016; 55 *International Legal Materials* (2016) 740.

[80] Kim and Bosselmann, 'International Environmental law', *supra* note 45, at 295.

[81] Mary Turnipseed and Raphael D Sagarin 'The Public Trust Doctrine: Where Ecology Meets Natural Resources Management', 37(1) *Annual Review of Environment and Resources* (2012) 473-496.

[82] The arbitral tribunal established to solve the dispute in 1882 found that the United States had no property rights regarding the seals and no right to unilaterally prohibit sealing beyond the three-mile territorial sea limit. The tribunal thus upheld the doctrine of freedom of high seas. See Award of the Tribunal of Arbitration Constituted under the Treaty Concluded at Washington, 29 February 1892, between US and UK, 15 August 1893; Reproduced in 1 *IELR* (1999) 67; and 6 *AJIL* (1912) 233.

[83] Convention Concerning the Protection of the World Cultural and Natural Heritage, Paris, 16 November 1972, in force 17 December 1975, 11 *International Legal Materials* (1972) 1358, <http://whc.unesco.org>. Article 4 establishes a duty for each State to ensure the identification, protection, conservation, presentation and transmission to future generations of the cultural and natural heritage in its territory.

[84] Casey Jarman, 'The Public Trust Doctrine in the Exclusive Economic Zone', 65*Oregon Law Review* (1986) 1-33; Jack H. Archer and Jarman M. Casey, 'Sovereign Rights and Responsibilities: Applying Public Trust Principles to the Management of EEZ Space and Resources', 17 *Ocean and Coastal Management* (1992) 253-271; Richard Hildreth, 'The Public Trust Doctrine and Coastal and Ocean Resources Management', 8 *Journal of Environmental Law and Litigation* (1992) 221-236.

Exclusive Economic Zone (EEZ);[85] for marine resources in specific regional seas such as Mediterranean and the South Pacific;[86] for living ocean resources in general;[87] the much-quoted separate opinion on the 1997 *Gabčíkovo-Nagymaros* case, Judge Christopher G. Weeramantry of the International Court of Justice referred to a 'Principle of Trusteeship for Earth Resources'.[88]

In July 1997, UN Secretary-General Kofi Annan proposed in his report on governance reform[89] reconstitution of the UN Trusteeship Council. The Council was one of the six principal organs of the UN established to enable member states exercise collective trusteeship for the integrity of the global environment and common areas including oceans, atmosphere and outer space.

Pursuant to this proposal, on the concept of trusteeship, the question was entrusted to the proverbial UN Committee – 'Task Force on Environment and Human Settlements' chaired by the Executive Director of UNEP. The task-force report to the General Assembly in October 1998 refrained from making any recommendation on trusteeship issue.[90]

The buck was then passed to the 'Open-ended Inter-Governmental Group of Ministers on International Environmental Governance', launched by the UNEP Governing Council in February 2001, which predictably referred the matter to expert consultations, held in 2001. The experts concluded that 'it would be very difficult to undertake measures that would affect the main organs established by the UN

[85] The United States Draft of U.N Convention on International Seabed Area (1970), 9(5) *International Legal Materials* 1046-1080, Arts 26-28; See also Markus Schmidt, *Common Heritage or Common Burden? The United States Position on the Development of a Regime for Deep Sea-bed Mining in the Law of the Sea Convention* (Clarendon, 1989) 212-216.

[86] Evangelos Raftopoulous, 'The Barcelona Convention System for the Protection of the Mediterranean Sea against Pollution: An International Trust at Work', 7 *International Journal of Estuarine and Coastal Law* (1992) 27-41. See also Gracie Fong, 'Governance and Stewardship of the Living Resources: The Work of the South Pacific Forum Fisheries Agency' in Jon M. Van Dyke, Durwood Zaelke and Grant Hewison, (eds), *Freedom for the Seas in the 21st Century: Ocean Governance and Environmental Harmony* (Island Press, 1993) 131-141.

[87] Jon M. Van Dyke, 'International Governance and Stewardship of the High Seas and its resources' in Van Dyke et al, *Freedom for the*, *supra* note 71, at 13-22.

[88] Gabčíkovo-Nagymaros Project (Hungary/Slovakia), ICJ Judgment of 25 September 1997, *ICJ Reports* 1997 at 213; See also Separate Opinion of Vice-President Weeramantry, available at <https://www.icj-cij.org/files/case-related/92/092-19970925-JUD-01-03-EN.pdf> (visited 5 May 2020) at 151.

[89] 'Sustainable development and international economic cooperation International migration and development, including the convening of a United Nations conference on international migration and development. Report of the Secretary-General', UN Doc. A/52/314 (1997).

[90] 'Report of the Secretary-General on United Nations Reform Measures and Proposals: A New Concept of Trusteeship', UN Doc A/52/849 (1998); See Anil Agarwal, Sunita Narain and Anju Sharma (eds), *Green Politics: Global Environmental Negotiations (*Centre for Science and Environment*,* 1999) 1-410.

Charter, like the ECOSOC and the Trusteeship Council'.[91] As a result, the topic never even reached the agenda of the 2002 Johannesburg Summit.

In summary, the aim of this section has been to bring to attention the growing complexities of the Earth system and the inability of the current international environmental legal regime to tackle the complexities therein. More importantly, this has led me to conclude and justify the need for a structural, unified and consolidated Global Pact to govern the commons. Opening the discussion of such a Pact brings along the need to revive several core structural foundations of IEL, including the concepts of ecological integrity and public trust doctrine to help us navigate the socio-ecological complexities of the era.

4 The Global Pact for the Environment

4.1 The Pact's UN evolutionary process

The idea of a constitutional framework to tackle the environmental crisis is not new.[92] However, it is indeed the first time that we are proceeding towards this idea with actual scientific evidence that suggests that if human societies do not steer away from critical tipping points in the Earth system, it may potentially lead to rapid and irreversible damage.[93] Due to which, the recent past has witnessed a plethora of UN developments including the Rio Summit on Sustainable Development (June 2012),[94] the adoption of the Paris Agreement (December 2015), the Addis Ababa Action Agenda on Financing for Development (July 2015),[95] and the 2030 Agenda for Sustainable Development (October 2015)[96] along with its Sustainable Development Goals (SDGs) (September 2015) to remedy the damages of the Anthropocene

[91] See Peter H. Sand, 'Environmental Summitry and International Law', 13 *Yearbook of International Environmental Law* (2002) 3-15 at 35; and B. H. Desai, *Institutionalizing International Environmental Law* (Transnational Publishers, 2004), ch. 6. On 16 September 2005, the UN General Assembly by Resolution 60/1 ('2005 World Summit Outcome'), para. 176) recommended to wind up the Trusteeship Council, by amending chapters XII and XIII of the Charter; such an amendment will, however, require ratification by two-thirds of the members, including all permanent members of the Security Council.

[92] See Amedeo Postiglione, 'A More Efficient International Law on the Environment and Setting Up an International Court for the Environment within the United Nations', 20 *Journal of Environmental Policy and Law* (1990) 321-328.

[93] See, for instance, Monique Grooten and Rosamunde Almond (eds), *Living Planet Report - 2018: Aiming Higher* (WWF, 2018), available at <https://www.wwf.org.uk/sites/default/files/2018-10/LPR2018_Full%20Report.pdf>; Masson-Delmotte et al (eds), *Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty, Summary for Policymakers* (IPCC, 2018), available at <https://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf> (both visited 5 May 2020).

[94] The outcome of the major international conference was the 'The Future We Want' document, *supra* note 75.

[95] '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), Annex.

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

era. However, the common denominator of all the above international environmental goals is that they were non-legally binding (soft-law).

Owing to the urgency of the situation and faced with lackadaisical attitude of states to collectively tackle global socio-ecological challenges, the Commission Environment of *Club des Jurists*[97] released a report on 'strengthening the effectiveness' of international environmental law in 2015. The report included 21 recommendations, one of which advocated for the need to have a 'legally binding' international Environmental Pact.[98] With the overwhelming support received for the adoption of the Paris Agreement, Laurent Fabius (President of the 21st Conference of the Parties (COP) to the UNFCCC) decided to support the idea and take it to the international level. Between June 2017 and early November 2018, several major steps were taken to support the idea of a Global Pact for the Environment (hereinafter GPE), including many expert gatherings,[99] a high-level event on the side-lines of the UNGA meeting on 19 September 2017 titled 'Summit on a Global Pact for Environment',[100] a Sino-French Summit between France and China in January 2018,[101] and, finally, the meeting of the UN General Assembly in which the Enabling Resolution (see below) was adopted.

The principle motivation behind drafting the Pact is to offer a binding international treaty establishing the fundamental principles of environmental law. It is a strong

[97] A legal think tank based in Paris, see <http://www.leclubdesjuristes.com/>. See also Le Club des Juristes, Increasing the Effectiveness of International Environmental Law. Duties of States, Rights of Individuals (2015), available at <http://www.fondation-droitcontinental.org/fr/wp-content/uploads/2015/11/CDJ_Rapports_Increasing-the-effectiveness_ Nov.2015_UK_web-VDEF.pdf> (visited 5 May 2020).

[98] See Yann Aguila, 'La Adopción de un Pacto Internacional para la Protección del Medio Ambiente', 34 *Revista Aranzadi de Derecho Ambiental* (2016).

[99] See, for instance, 'Global Perspectives on a Global Pact for the Environment', Sabin Center for Climate Change Law blog (20 September 2018), available at <http://blogs.law.columbia.edu/climatechange/2018/09/20/global-perspectives-on-a-global-pact-for-the-environment/> (visited 22 July 2020). In addition, many meetings have been held around the world, including in Paris (Conference 'Towards a Global Pact for the Environment', La Sorbonne, 24 June 2017), New York (Conference on the Global Pact for the Environment, Columbia University, 20 September 2017), Bogotá (Symposium on the Global Pact for the Environment organized by the Attorney General of the Nation, 1 March 2018), Brasilia (Round Table on the Global Pact for the Environment, World Water Forum, 19 March 2018), Dakar (Conference 'L'Afriques'engage pour la Planète', 14 May 2018), Geneva (Conference on the Global Pact for the Environment at the UN International Law Commission, 10 July 2018), Santiago de Chile (Coloquio 'Pactomundial del medioambiente, derechoshumanos, y constitución', 28 August 2018), Québec (Conférence 'Uneopportunité pour un Canada plus vert? Le projet de Pacte mondial pour l'environnement', 21 September 2018), Ottawa (Le projet onusien de Pacte mondial pour l'environnement : quelles implications pour le Canada?, 24 September 2018), Beijing (Conférences on the legal aspects of a healthy environment, 12 October 2018), Naples (Une patto globale per l'ambiente, 19 October 2018).

[100] See the speech delivered by President Emmanuel Macron during the international launch summit of the 'Global Pact for the Environment', which took place during the 72nd UNGA, available at <https://www.diplomatie.gouv.fr/en/french-foreign-policy/united-nations/events/united-nations-general-assemblysessions/unga-s-72nd-session/article/speech-by-m-emmanuel-macron-president-of-the-republic-summit-on-theglobal-pact> (visited 29 April 2019).

[101] 'Joint Declaration between the People's Republic of China and the French Republic' (10 January 2018), para. 8 ('China and France intend to continue their constructive dialogue on the formulation of the Global Pact for the Environment', translation available at <http://www.xinhuanet.com/english/2018-01/11/c_136886038.htm> (visited 5 May 2020).

response to the expectation of the legal community to see the foundations of environmental regulation systemized in a single instrument at an international level.[102] The Pact is presumably expected to fulfill the typical role of constitutions – namely to act as an overarching framework setting forth general binding provisions, while the sector-based details are provided in other instruments such as MEAs.

In May 2018, the process which may ultimately lead to the negotiation of a legally binding Global Pact for the Environment formally commenced under the auspices of UNGA (143 votes in favour, 6 against and 6 abstentions).[103] Furthermore, the adopted Resolution[104] established an Ad HocOpen-Ended Working Group (OEWG) to consider the matters and be guided by technical and evidence-based report from the UN Secretary-General (UNSG) on the possible gaps in International Environment Law and environment-related instruments.[105]

4.2 Are there gaps or an inherent design problem in IEL?

The UNSG report created quite the stir in the international community, witnessed through the OEWG substantive sessions.[106] It would be unfair to say that, after 40 years of the evolutionary process of IEL, we have failed to learn anything from it.[107] Indeed we have, but is it enough? On one hand, scholars have questioned whether identifying the 'gaps' is the right way to proceed.[108] On the other hand, others have pointed out the futility of this exercise and argued that IEL is not incoherent or fragmented; accordingly, it is to be considered a strength and not a deficiency of the

[102] Le Club de Juristes, 'White Paper: Toward a Global Pact for the Environment' (2017), available at <https://wedocs.unep.org/bitstream/handle/20.500.11822/22458/Club%20des%20Juristes%20-%20White-paper-Global-Pact-for-the-environment%20EN.pdf?sequence=9&isAllowed=y> (visited 5 May 2020).

[103] The States voting against were Iran, Philippines, Russia Federation, Syria, Turkey and the USA, whilst States abstaining were Belarus, Malaysia, Nicaragua, Nigeria, Saudi Arabia and Tajikistan.

[104] 'Towards a Global Pact for the Environment', UNGA Res. 72/277 of 10 May 2018.

[105] 'Gaps in international environmental law and environment-related instruments: towards a global pact for the environment. Report of the Secretary-General', UN Doc. A/73/419 (2018), para.1.

[106] The third and final substantive session of the Ad Hoc Open-ended Working Group (OEWG) established by the UNGA Res. 72/277 (see *supra* note 94) completed its mandate and adopted its recommendations to the UNGA, following its considerations of UNSG report (see *supra* note 104). Despite the goodwill of the majority of delegates, the recommendations adopted by states are a clear retreat from the original proposals of the co-chairs; the states opted for a simple Political Declaration in 2022, in the context of the fiftieth anniversary of the Stockholm Conference. The recommendations constitute: A setback on the date: 2022 (and not 2020-21) and above all, a setback in terms of the ambition: a simple Declaration, the content of which remains vague and not an international, legally binding treaty that enshrines the general principles of environmental law. See further, IISD, 'Summary of the', *supra* note 19.

[107] See, for instance, Duncan French and Karen Scott, 'International Environmental Treaty Law' in Micheal Bowman and Dino Krtsiotis (eds), *Conceptual and Contextual Perspectives on the Modern Law of Treaties* (Cambridge University Press, 2018) 677-709.

[108] Duncan French and Louis Kotze, 'Towards a Global Pact for the Environment': International Environmental Law's factual, technical and (unmentionable) normative gaps', 28 *Review of European, Comparative and International Environmental Law* (2019) 25-32.

field that so many different tools and approaches have been employed to address particular problems.[109]

The mixed responses to the UNSG report are not surprising; but the role of principles in strengthening environmental protection certainly cannot be ignored.[110] Another crucial aspect is that if we design the GPE without incorporating the more recent developments of science,[111] and, at the same time, open the possibility of future updates and developments of knowledge, it will produce something that is outdated and redundant before it even enters into force.[112] In order for the GPE to not fall under the same outdated (and unsuccessful) ways of functioning – we need a new radical starting point to develop IEL and to rectify the inherent design problem – the manner of how we view the 'environment'.

GPE's new innovative approach should focus on supporting a legal regime that incorporates scientific aspects of the Earth system. The objects of all the current legal sectorial approaches are deeply inter-connected across the scales of the natural world. The goal of giving coherence and effectiveness to all of these MEAs can be achieved through a strong scientific foundation – thus promoting a harmonized integrated Earth system approach.

The GPE will be the first step of moving forward since it represents conceptual evolution that opens new possibilities of global cooperation and creates the basis for connecting already existing legal documents as well as for building new instruments. In spite of the fact that third substantive session of the OEWG did not turn out as anticipated, there is still room for conversation in the landmark 50th anniversary of the UN Conference on the Human Environment in 2022.

4.3 The Pact's structural foundation 1: ecological integrity as a Grundnorm

4.3.1 Introduction to ecological integrity

The Pact's strong substantive structural foundations will set the tone to achieve a high-order normative instrument status that binds states with defined obligations to address the socio-ecological crisis of the Anthropocene.
As I have discussed (in section 2 of this paper), the concept of 'ecological integrity' is at the very heart of several MEAs. The notion refers to its roots within the notion

[109] Susan Biniaz, 'The UNGA Resolution on a "Global Pact for the Environment". A Chance to Put the Horse before the Cart', 28 *Review of European, Comparative and International Environmental Law* (2019) 33-39.
[110] Christina Voigt, 'How a "Global Pact for the Environment" Could Add Value to International Environmental Law', 28 *Review of European, Comparative and International Environmental Law* (2019) 13-20.
[111] See *supra* section 2.2. These scientific challenges talk about the need for technological interventions to be incorporated – and how they pose as a challenge for law and science.
[112] Louise Kotze and Duncan French 'A Critique of the Global Pact for the Environment: a stillborn initiative or the foundation for Lex Anthropocenae?', 18 *International Environmental Agreements: Politics, Law and Economics* (2018) 811- 833.

of 'Earth's wholeness' which, in the context of conservation and restoration, for example, suggests that the goal ought to be the creation of the whole, intact systems.[113]

James Kay, a systems theorist at the University of Waterloo, proposes that integrity is an all-encompassing term for the various features – resilience, elasticity, stress response, and so on – that allow an ecosystem to adjust to environmental change: 'Integrity should be seen as an umbrella concept that integrates these many different characteristics of an ecosystem, which, when taken together, describe an ecosystem's ability to maintain its organization'.[114]

The Global Pact requires a clear, workable and valid understanding of ecological integrity that encompasses multiple scales of the Earth system. The most important task for the Pact is to define 'ecological integrity' and observe it as a fundamental non-negotiable condition upon which states shall operate. To begin with, the GPE needs to redefine 'ecological integrity' that is intended to fit the Anthropocene era.

Legal scholars have proposed a reworked definition of ecological integrity: ecological integrity of an area of land (including freshwaters) or sea is the combination of the biodiversity and ecosystem processes (functions) that characterize the area at a given point in time.[115] This definition offers the Pact an opportunity to treat the Earth system functions as a single integrated whole.

4.3.2 Earth Charter as a signpost for the Pact

The Global Pact is intended to inculcate a holistic form of governance model that is global and all-inclusive in nature. This model of a truly globalized governance structure is best found in the Earth Charter. The Earth Charter is a document with sixteen principles that power a global movement towards a more just, sustainable and peaceful world.[116] The draft GPE embeds ecological integrity in Articles 2 and 18. On one hand, Article 2 provides for states, institutions and individuals to take care of the environment in a way that everyone would contribute 'to the conservation, protection and restoration of the integrity of Earth's ecosystems. Article 18, on the other hand, requests actors to cooperate in order to conserve, protect and restore the integrity of Earth's ecosystems and community of life. The community of life is the other key concept of the Earth Charter. It appears in the Preamble and is at the

[113] Geoffrey Garver, 'Ecological Integrity in the Anthropocene: Lessons for Law from Ecological Restoration and Beyond' in Westra et al (eds), *The Role of Integrity, supra* note 41, 191-197.

[114] James J. Kay, 'A Non-Equilibrium Thermodynamic Framework for Discussing Ecosystem Integrity', 15(4) *Environment Management* (1991) 483- 495.

[115] See Peter Bridgewater, Rakhyun E. Kim and Klaus Bosselmann, 'Ecological Integrity: A Relevant Concept for International Environmental Law in the Anthropocene?', 25(1) *Yearbook of International Environmental Law* (2015) 61-72.

[116] See further Earth Charter, <https://earthcharter.org/>.

core of the ethical proposals of the Charter, in its Pillar I – Respect and Care for the Community of Life.[117]

Hence, the Earth Charter offers a significant approach as a step forward for the Global Pact because the document proposes a set of principles on ecological integrity before other principles, which reflects the necessity to develop within the natural limits and understand the conditions of the environment. Furthermore, the Earth Charter not only defines pillars, but also organizes them in a particular way. A very important feature it has is that it emphasizes the inter-dependence of environmental, social and economic challenges. This should be a guiding beacon for the GPE.[118] The Pact shall also derive morality of a new governance structure as spelled out in the Earth Charter's preamble. It is imperative that 'we, the people of Earth, declare our responsibility to one another, to the greater community of life, and to future generations'.[119] It states the need for taking responsibility to one another as 'imperative'. The Preamble's notion of universal responsibility is reflective of the principle of sustainability[120] and cannot be confused with shallow versions of sustainable development.

4.3.3 Accommodate temporal unevenness and inclusion of 'uncertainty'

The Global Pact is intended to be a legally binding document that codifies international environmental legal principles; in other words, hard law. However, the Pact needs to accommodate temporal unevenness and uncertainty. The gap between law and science needs to be bridged by the Pact. The relationship between law and science has often been described as an 'uneasy' one. The purpose of science is to seek the truth, while the purpose of law is to seek justice or at least reasonable and fair resolution to disputes. Law's primary purpose is to resolve human disputes rather than to continually add to a body of testable knowledge.[121] This brings us to one of the biggest challenges of the legal system – to be able to address the uncertainty inherent in science, which may result in a lack of data, inconsistent data, or conflicts in the interpretation of data.[122] Many gaps and uncertainties exist in the scientific information relied upon to make environmental policy decisions.[123]

[117] Maksim Lavrik, Alicia Jimenez and Mirian Vilela, 'The Global Pact for the Environment: As a Next Step on the Way Forward for the Earth Charter' (Earth Charter International Secretariat, 2018), available at <https://earthcharter.org/wp-content/uploads/2020/02/Global-Pact-and-Earth-Charter-2018-2-3.pdf> (visited 25 June 2019).

[118] Klaus Bosselmann, 'Outlook: The Earth Charter – a Model Constitution for the World?' in Klaus Bosselmann and J. Ronald Engel (eds), *The Earth Charter: A Framework for Global Governance* (Kit, 2010) 239-255.

[119] The Earth Charter at 1.

[120] Klaus Bosselmann, *The Principle of Sustainability: Transforming Law and Governance* (Ashgate, 2008).

[121] Mary Jane Angelo, 'Harnessing the Power of Science in Environmental Law: Why we should, Why we don't and How we can', 86 *Texas Law Review* (2008) 1527-1530.

[122] *Ibid*. at 1531.

[123] Wendy E. Wagner, 'Commons Ignorance: The Failure of Environmental Law to Produce Needed Information on Health and the Environment', 53 *Duke Law Journal* (2004) 1619-1633 (describing the lack of scientific research and data on environmental problems).

Therefore, the main contentions of this section are to place ecological integrity into our way of thinking about the environment. If the Global Pact is devoted to the 'global environment' with the aim of addressing gaps and to provide coherence and effectiveness through a structurally coherent scientific theoretical framework, the only consistent approach is through the best available scientific knowledge of the Earth system functioning – the planetary boundaries. These science-based limits of key processes determine the Earth system functioning. The Global Pact's best bet for success is through treating the Earth system functions as a single integrated system at the planetary level.[124] Therefore, approaching the Earth system in an integrated way will be the best step moving forward, since it represents a conceptual evolution that opens new possibilities for global cooperation and creates a basis for connecting already existing legal documents as well as for building new instruments.

4.3.4 Ecological sustainability

When we are discussing the need to 'stay within the planetary boundaries', it becomes imperative for the Global Pact to define 'ecological sustainability' in the light of focusing on natural biological processes and the continued productivity and functioning of ecosystems. In the broadest sense of global sustainability, it should include all components of biosphere. The planetary boundaries framework is one of the most significant recent attempts to recognize ecological constraints on what we can do with Earth's resources. It offers a systematic approach to defining 'safe operating space for humanity', a zone of wellbeing and resilience in relation to a set of ecological conditions. The key idea is that by keeping human activities from breaching the planetary boundaries, we can maintain the Earth more or less in the conditions that have enabled humanity to evolve over the millennia since the Ice Age.[125]

The Earth Charter's mission is to shine light on international cooperation towards 'sustainability'. The success of the Global Pact depends on its closeness to the reflection of the Earth Charter. The Global Pact should interlink with the principles and values of the Earth Charter. The Earth Charter calls to 'join together to bring forth a sustainable global society'[126] and the Global Pact stresses 'the need to adopt a common position and principles that will inspire and guide the efforts of all to protect and preserve the environment'.[127]

[124] See further, Klaus Bosselmann, 'Shifting the Legal Paradigm: Earth-centred law and governance' in Paolo Magalhaes et al (eds), The Safe Operating Space Treaty. A New Approach to Managing Our Use of the Earth System (Cambridge Scholars Publishing, 2016) 64-82.

[125] Ian Christie, Jacquetta Lee and Richard J. Murphy, 'Operationalizing "absolute sustainability" in relation to natural capital' (Centre for Environmental Strategy (CES), University of Surrey, 2016), available at <https://naturalcapitalcoalition.org/wp-content/uploads/2016/07/University-of-Surrey-Nat-Capital-paper_final_logo.pdf> (visited 7 May 2020), 1-4; See further, Will Steffen et al, 'Planetary boundaries: Guiding human development on a changing planet', 347(6223) *Science* (2015) 736-744.

[126] Preamble.

[127] Lavrik et al, 'The Global Pact', *supra* note 104, at 4.

4.3.5 Rethinking and operationalizing 'sustainable development' under the Global Pact

The idea of sustainability articulated by the Brundtland report (the World Commission on Environment and Development, WCED)[128] and others highlight the need for development, sustainability and equity – a formulation broad enough to make it attractive to groups with many different perspectives. Sustainable Development, as defined by the WCED, is paradoxical as 'it aims at reconciling the right of development of every world citizen with global environmental burdens associated with the current development model'.[129] The contradiction in terms of reconciling sustainability and development would be impractical.[130] It should be remembered that, in the concept of sustainable development, 'sustainability' is what conditions 'development', not vice versa.[131]

This implies the need to delve deeper into the authentic meaning of sustainability. The idea of sustainability has deep roots in all cultures of the world.[132] The term itself, however, was shaped in the seventeenth- century European discourse on timber shortage. Initiated by the Royal Society and its founding member John Evelyn, paved the way to a new approach to the management of forests.

In Germany, for instance, it led to the coining of the new term *Nachhaltigkeit* (sustainability). Its first legislative use dates back to 1713 and was enacted by Hans Carl von Carlowitz, the head of the Royal Mining Office in the Kingdom of Saxony, in the context of meeting the challenge of a predicted shortage of timber.[133] The principle of sustainability was fundamental in forest legislation of the nineteenth century; for instance, Article 2 of the Bavarian Forest Law of 1852 reads: 'The management of state owned forests has to follow sustainability as its highest principle'.[134]

The historical sources shed new light on the essence of the modern composite term 'sustainable development', which is often diluted and distorted. The fact that sustainability was early on a legal term with a defined content and was used in legislation is important for the interpretation of sustainable development. It would be wrong to assume that this construct only emerged following the Brundtland report

[128] Gro Harlem Brundtland: *Our Common Future (*Oxford University Press, 1987).
[129] Bart Muys, 'Sustainable Development within Planetary Boundaries: A Functional Revision of the Definition Based on the Thermodynamics of Complex Social-Ecological Systems', 1 *Challenges in Sustainability* (2013) 41-52.
[130] Jacobus A. Du Pisani, 'Sustainable Development – Historical Roots of the Concept', 3 *Environmental Sciences* (2006) 83-96.
[131] Bosselmann, *The Principle of*, *supra* note 107, at 53.
[132] Desta Mebratu, 'Sustainability and Sustainable Development: Historical and Conceptual Review', 18 *Environmental Impact Assessment* Review (1998) 493- 520; Christopher G. Weeramantry, *Universalising International Law* (Martinus Nijhoff Publishers, 2004); Ulrich Grober, *Deep Roots – A Conceptual History of 'Sustainable Development' (Nachhaltigkeit)* (Social Science Research Center Berlin, 2007).
[133] Bosselmann, *The Principle of*, *supra* note 107, at 17–22.
[134] *Ibid*. at 21.

and could only be interpreted accordingly. We need to revise the concept of sustainable development in light of historical usage and refocus on its core meaning as 'not risking the substance'.[135]

With this in backdrop, centring the discussion back to the Global Pact, 'sustainability' should be the end goal and a broad term, when understood as an integration opportunity. The Global Pact should serve as a binding legal instrument that not only defines the planetary boundaries parameters, but also enables integration efforts in the context of a systematic approach to operationalizing a vision, shared understanding, baseline assessment and an action-oriented approach to prioritizing next steps.[136] Moving forward, the Global Pact will need to utilize a 'baseline set of questions and provisional indicators' concerning planetary boundaries that will enable future MEAs to align efforts with targets for achieving optimal sustainable levels that are based on best available ecological science.[137]

4.4 The Pact's structural foundation 2: an Earth system approach to the Global Pact

'Earth system' refers to the 'global environment as an integrated whole'.[138] The Earth system is a single whole, integrated system indivisible and cannot be segmented conceptually, materially or through any other legal abstraction into discrete part.[139] Therefore, it must be considered our ultimate common goal because it unites us all. Keeping in line with the Global Pact's overall principal aim of acting as an overarching framework that unites under one legal umbrella, it is only logical for the Pact to adopt an Earth system's approach.

A favourable Earth system state is identifiable through the planetary boundaries framework, which defines nine critical Earth system processes (for instance, climate change, ozone depletion, biosphere, integrity and others) whose effective management is the key to the maintenance of a resilient and accommodating state of the planet. The whole collection of these nine processes and their interactions, as well as the maintenance within scientifically defined boundaries, is what is defined as the 'Safe Operating Space for Humanity'.[140]

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[135] See Klaus Bosselmann, 'Losing the Forest for the Trees: Environmental Reductionism in the Law' 2 *Sustainability* (2010) 2424 -2436.

[136] Robert Sroufe, 'Operationalising Sustainability', 1(1) *Journal of Sustainability Studies* (2016) 1-12.

[137] Christie et al, 'Operationalizing "absolute sustainability", *supra* note 112, at 4.

[138] Clive Hamilton,' 'Define the Anthropocene in terms of the whole Earth', 536(7616) *Nature* (2016) 251; Will Steffan et al, 'The Emergence and Evolution of Earth System Science', 1 *Nature Reviews Earth & Environment* (2020) 54-63.

[139] Paulo Magalhães et al, 'Why do we need an Earth System Approach to guide the Global Pact for Environment' (Common Home of Humanity, 2019) available at <https://wedocs.unep.org/bitstream/handle/20.500.11822/27702/earth_pact.pdf?sequence=1&isAllowed=y> (visited 10 May 2020) at 3-15.

[140] Georgina M. Mace et al, 'Approaches to defining a planetary boundary for biodiversity', 28 *Global Environmental Change*(2014) 289-297; Johan Rockstrom et al, 'Planetary Boundaries: Exploring the Safe Operating Space for Humanity', 14(2) *Ecology and Society* (2009) 1-33; Steven J. Lade, 'Human impacts on planetary boundaries amplified Earth System interactions', 3 *Nature Sustainability* (2020) 119-128.

4.4.1 Defining 'environment' by relinquishing duality

The draft Pact needs to clearly define 'the environment'. As I have emphasized earlier, when we consider the wholeness of the Earth, the idea of environment through the lens of the GPE needs to relinquish the 'illusion' of control over nature. The inherent design problem in IEL and all MEAs lies in the way they have viewed the environment. The Global Pact requires a radical outlook that shuns dualisms of sorts by changing the perspective from 'us *versus* nature' towards 'we *are* nature'.[141]

In the Hindu philosophy, this is referred to as '*Advaita*', literally meaning 'no-two's'. An emphasis on opposing categories such as the material world versus the spiritual, good versus evil, the arts versus the sciences, the economy versus the environment, and individuality versus the community and humans versus nature are examples of duality.[142]

Environmental law has developed on a very specific set of Western cultural ideas about human/nature relationship. Any new international environmental instrument, such as the Global Pact, should be required to operate upon a definition of 'environment' that shuns all forms of dualisms and takes a revolutionary approach that focuses on the ecological context of human activities.[143]

4.4.2 Defining 'safe operating space for humanity' for future legal instruments

Owing to the growing understanding of the Earth system and the recent possibility of measuring its state through the definition of planetary boundaries, we now have a scientific basis upon which to define the 'safe operating space' of the Earth system.[144]

With the ability to quantify and define a desirable state of the Earth system, we have made a giant step to solve the legal vacuum created by indeterminate and vague concepts. The Global Pact needs to utilize this opportunity to define a safe operating space within which humanity can operate and to ensure that all future international environmental legal instruments are operating in the realm of the safe space.

[141] See Andreas Philippopoulos-Mihalapoulos, '….the Sound of a Breaking String: Critical Environmental Law and Ontological Vulnerability', 2(1) *Journal of Human Rights and the Environment* (2011) 5-22; Anna Grear, 'Foregrounding vulnerability: materiality's porous affectability as a methodological platform' in Andreas Philippopoulos-Mihalapoulos and Victoria Brooks (eds), *Research Methods in Environmental Law. A Handbook* (Edward Elgar, 2017) 3-28; See further, Klaus Bosselmann, 'A Vulnerable Environment. Contextualising Law with Sustainability', 2(1) *Journal of Human Rights and the Environment* (2011) 45-63.

[142] Bosselmann, 'Losing the Forest', *supra* note 121, at 2425.

[143] Klaus Bosselmann, 'The Way Forward: Governance for Ecological Integrity' in Laura Westra, Klaus Bosselmann, and Richard Westra (eds), *Reconciling Human Existence and Ecological Integrity (*Earthscan, 2018) 319-323.

[144] Rockstrom et al, 'Planetary Boundaries: Exploring', *supra* note 30.

Planetary boundaries define a 'safe operating space' for humanity based on evolving understandings of the functioning and resilience of the planet.[145] This will be a giant step for IEL that coordinates the law – science interface that will control human activities and hold us back from pushing planetary boundaries.

The Global Pact should strive to be a legal model for the Anthropocene. A model that requires regulation for ensuring the protection and promotion of common interests through the construction of a new governance structure that represents the interests of all humankind, both in present and the future.

4.4.3 Earth system law to govern the Global Pact?

With the focus of Earth system governance on human-social aspects of planetary changes, law has played a peripheral part in its governance. To this end, while there is a clear link between Earth system governance and the law, it is unclear how law could respond from a regulatory perspective to some of the key problem characteristics of Earth system governance. These include, among others, the level of persistent uncertainty that characterizes anthropogenic Earth system transformation; the functional inter-generational dependencies created by the Earth system transformation; the functional inter-dependence of Earth system elements such as climatic and aquatic systems; new and multiple forms and degrees of global spatial human and non-human interactions and inter-dependencies.

So, it can be argued that an Earth system law can and should develop simultaneously. First, the analytical dimension of Earth system law that understands the science of law i.e. the structure, content, processes and institutions of legal systems, is necessary. Second, Earth system law should explore and address normative considerations of Earth system governance. Third, the analytical and normative dimensions lead to prescriptive questions about how to achieve a desirable future. Rethinking and reforming law and its role in Earth system governance will be instrumental in contributing to the regulatory response urgently required to enable humanity to mitigate the Anthropocene's impacts, to adapt to a drastically changed socio-ecological reality, and to increase resilience.[146]

At this stage, it is not an unimaginable stretch to justify the need for a global Earth system law that could potentially govern the Pact and its governance structures. The idea of such a law is still new, but its requirement is now more than ever as we are

[145] See further, Klaus Bosselmann and Kristen Jones, 'The Planetary Integrity Project: Creating a Safe Operating Space through Law and Governance' (New Zealand Centre for Environmental Law, 2016), available at <http://planetaryboundariesinitiative.org/wp-content/uploads/2016/10/PIP-Report-Sept-2016.pdf> (visited 10 May 2020), 4-25.

[146] Louis J. Kotze and Rakhyun E. Kim, 'Earth System Law: Juridical Dimensions of Earth System Governance', 1 *Earth System Governance Journal* (2019) 1-12. See also Task Force on Earth System Law, available at <http://www.earthsystemgovernance.org/research/taskforce-on-earth-system-law/>.

anticipating heading towards the Anthropocene era and it will reverse the traditional rule –that international law ends where national borders begin.[147]

4.5 Structural foundation 3: Earth trusteeship for Global Pact's regulatory response

The sovereign rights of nation states to govern the common pool of natural resources are not proprietary, but fiduciary. The idea of environmental trusteeship is not new.[148] If we define it in simple terms, it means that certain natural resources – e.g. watercourses, wildlife, or wilderness areas – regardless of their allocation to public or private uses, are part of an 'inalienable public trust'. Certain authorities – for instance, federal agencies, state governments, or indigenous tribal institutions – are designated as 'public trustees' for the protection of those resources and every citizen, as a 'beneficiary' of the trust, may invoke its terms to hold the trustees accountable and to obtain judicial protection against encroachments or deterioration of the public trust.

Now, the last question that needs particular attention is whether there is a need for a new institution as a steward for global ecological integrity? The Earth trusteeship principles[149]constitute an innovative foundation for multi-stakeholder collaboration towards governance of natural resources 'for the common good'. The Earth trusteeship principles at play are to be guided by dynamic exchanges between science and indigenous world views, as well as modern social innovation management.

This is to result in cross-cultural joint efforts to achieve eco-system restoration, biodiversity recovery and related transformation of lifestyles. Primarily by means of regenerative agriculture and landscaping and sustainable food system governance based on inspired citizen's participation.[150]

4.5.1 Conceptual origins of Earth trusteeship

The conceptual origins of Earth Trusteeship can be located in the lifetime mission of Judge C.G Weeramantry (1926-2017), former Vice President of the International

[147] Klaus Bosselmann, 'Large-Scale Acquisitions of the Commons: The Need for Earth Governance' in Bosselmann et al (eds), *Ecological Integrity and, supra* note 40, at 1-13.

[148] Peter H. Sand, 'Sovereignty Bounded: Public Trusteeship for Common Pool Resources?', 4(1) *Global Environmental Politics* (2004) 47-71.

[149] Appeal 'Hague Principles for a Universal Declaration on Responsibilities for Human Rights and Earth Trusteeship' in the design process of the 'Ad Hoc Open Ended Working Group towards a Global Pact for the Environment (OEWG)' and its follow-up, School for Wellbeing, Studies and Research <https://wedocs.unep.org/bitstream/handle/20.500.11822/27976/ETI_proposal.pdf?sequence=1&isAllowed=y#:~:text=Principle%201%20Responsibilities%20for%20Earth&text=Each%20state%20individually%2C%20and%20the,integrity%20of%20Earth's%20ecological%20systems> (visited 23 July 2020).

[150] Appeal to include dialogue on The Hague Principles for a Universal Declaration on Responsibilities for Human Rights and Earth Trusteeship in the design of the 'Ad Hoc Open-Ended Working Group towards global Pact for the Environment (OEWG)', available at <https://wedocs.unep.org/bitstream/handle/20.500.11822/27976/ETI_proposal.pdf?sequence=1&isAllowed=y> (visited 23 July 2020).

Court of Justice. He stated: 'Humanity is in a position of trusteeship of the environment and not in the position of dominance'.[151] In the observation of Judge Weeramantry, the concept of trusteeship is, as a living example, rooted in traditional irrigation systems and practices of farmers in Sri Lanka, his home country. Trusteeship resonates with the world views of indigenous peoples and the teachings of world religions as well as with nature-based secular philosophies.

The ethics of Earth stewardship are an integral part of the world's religions and indeed humanity's cultural heritage, but these ethics have never been more topical than today. Earth trusteeship is the essence of what Earth jurisprudence is advocating, but, more importantly, it has also been called for in key MEAs. Earth trusteeship is the institutionalization of the fundamental duty to protect the integrity of Earth's ecological systems. For instance, this duty resonates in more than 25 international agreements – from the 1982 World Charter for Nature through to the 2015 Paris Climate Agreement.[152]

The legitimacy of the state as a legal institution rests on its ability to care for its citizens. To this end, state has fiduciary obligations and fundamental acts, in fact, as a trustee for its citizens and their cultural and natural commons.[153] Although the concepts of 'sovereignty as responsibility' and 'responsibility to protect' have been

[151] Chris G. Weeramantry, *Tread Lightly on the Earth. Religion, The Environment and the Human Future* (World Future Council, 2014), available at <https://trove.nla.gov.au/work/36404571?q&versionId=46875824> (visited 23 July 2020).

[152] Rakhyun E. Kim and Klaus Bosselmann, 'Operationalizing Sustainable Development: Ecological Integrity as a Grundnorm in International Law', 24(2) *Review of European, Comparative and International Environmental Law* (2015) 194-208; Klaus Bosselmann, 'The Next Step: Earth Trusteeship', Seventh Interactive Dialogue of the United Nations General Assembly on Harmony with Nature, New York, 21 April 2017, available at <http://files.harmonywithnatureun.org/uploads/upload96.pdf> (visited 11 May 2020).

[153] Recent legal analysis on the concept of Earth trusteeship include Klaus Bosselmann, *Earth Governance: Trusteeship of the Global Commons* (Edward Elgar, 2015); Peter Burdon, *Earth Jurisprudence: Private Property and the Environment* (Routledge, 2015); Polly Higgins, *Eradicating Ecocide: Laws and Governance to Prevent the Destruction of our Earth* (2nd ed., Shepheard-Walwyn, 2015); Burns Weston and David Bollier, *Green Governance: Ecological Survival, Human Rights and the Law of the Commons* (Cambridge University Press, 2014); Mary C. Wood, *Nature's Trust: Environmental Law for a New Ecological Age* (Carolina University Press, 2013).

recognized by states,[154] most states strongly resist the expansion of such responsibilities even to cases of natural disasters.[155]

Re-centring the discussion towards the Global Pact, an international instrument that carries within it the power and legitimacy to act as an umbrella framework that will put checks and balances on human activities from pushing the planetary boundaries. The strain of thoughts, reflections on law, spiritual insights, traditional farmer's practices and indigenous world views lead to the simple maxim: 'All global citizens are equal trustees for the benefit of future generations'.[156]

4.5.2 Operationalizing Earth trusteeship under the Global Pact

The Earth trusteeship inspired research should focus on gathering evidence-based assessment, analysis and reflection on governance challenges, as well as actual solutions, enabled by the Earth trusteeship approach.[157]

The Earth trusteeship principles[158] can constitute enabling legal and governance conditions for multi-stakeholder environmental recovery at local and regional levels, thereby offering the Global Pact with a new foundation and methodologies for related capacity-building.[159]

It is crucial to note that adopting Earth trusteeship principles into the contemporary international law will not be 'new design' but rather should be viewed as a much needed timely synthesis of existing legislation and timeless, globally shared, intrinsic values. This synthesis crafting process in the Global Pact could ultimately result in the articulation of Earth trusteeship as an essential dimension of the overarching principles constituting the evolving structure of the Pact.

[154] On the responsibility to protect, see 'The Responsibility to Protect', the report of the International Commission on Intervention and State Sovereignty (2001), available at <http://responsibilitytoprotect.org>. ('The concept of sovereignty as responsibility' now must extend to the responsibility of the state to protect its citizens.); 'In Larger Freedom: Toward Development, Security and Human Rights for All: Report of the Secretary-General', UN Doc. A/59/2005 (2005) para. 135 and Annex ('[T]he responsibility to protect… lies, first and foremost, with each individual State, whose primary raison d'e^tre and duty is to protect its population. But if national authorities are unable or unwilling to protect their citizens, then the responsibility shifts to the international community...'). Various grounds have been invoked for this principle, including jus cogens and erga omnes obligations. See Jutta Brunnée and Stephen J. Toope, 'The Responsibility to Protect and the Use of Force: Building Legality?' 2(3) *Global Responsibility to Protect* (2010) 191-212 at 206–07; Hannah Yiu, '"Jus Cogens," the Veto and the Responsibility to Protect: A New Perspective', 7 *New Zealand Yearbook of International Law* (2009) 207-254 at 232.

[155] See Eyal Benvenisti, 'Sovereigns as Trustees of Humanity: On the Accountability of States to Foreign Stakeholders', 107 *American Journal of International Law* (2013) 295-333.

[156] 'The Hague Principles for a Universal Declaration on Responsibilities for Human Rights and Earth Trusteeship', available at <http://www.earthtrusteeship.world/>.

[157] *Ibid*. at 4.

[158] *Ibid*. at 13.

[159] *Ibid*. at 12.

In this paper, the Earth Trusteeship is proposed to be taken into consideration as an overarching principle (among others) of IEL. It resonates with almost 12 dimensions of the Global Pact for the Environment such as the integration of rights and duties within a normative approach (benefitting others, 'the common good'); Articles 9-11 the draft Pact contain the three pillars of environmental democracy – access to information, public participation and access to justice in environmental matters; and it addresses the reduction of inequality, and strengthens global citizenship and the intentional evolution of environmental awareness. Further, articulation of Earth trusteeship in the framework of a critical but supportive, civil society-driven dialogue will benefit the Global Pact for Environment process. It will enable the integration of civil society sectors and cultural values that are not currently included into the stricter secular foundation of the Pact.

Finally, Earth trusteeship intends to give voice to indigenous people's wisdom, world religions on the obligation to care, engaged spirituality, traditional and organic farmer values, the interests of future generations and nature. Since Earth trusteeship is rooted in a great diversity of consensus-building world views, its integration and synthesis into the structural foundation of the Global Pact will enable the Pact to gain a holistic, integrated, umbrella framework status to protect the Earth and all its residents.

5 Conclusion

The relationship of humans with the environment has changed throughout the evolution of Homo sapiens and the development of societies. For virtually all human existence on Earth, interaction with the environment has taken place at the local, regional, and global change. The emerging discourse of the Anthropocene requires us to treat the Earth system as a complex adaptive system and to steer away from interacting planetary tipping points. Such an analytical approach has wide implications for managing the challenges that characterize the Anthropocene.

The much-needed Global Pact for the Environment will be required to act as a framework that has the ability to keep human activities within the planetary boundaries and have significant impact on the resilience of populations of all species, not just humans, on Earth. Detailed research needs to be conducted into the issue of governance of socio-ecological systems with a special emphasis on resilience. The work being done emphasises the need to be aware of the environmental limits that determine the physical and biological boundaries of Earth systems, which will affect the activities that people are able to undertake. An emerging idea is to incorporate an awareness of the planetary boundaries into policy and decision-making processes at all levels of government.

The Global Pact needs to be used as a mechanism by which activities can be measured against the likely impact they have on the planetary boundaries. The very core of this research is to provoke the thought for the need to adopt an Earth system approach for the Global Pact wherein the entire Earth's wholeness is taken into consideration. The Pact needs to be a legal framework protecting the Earth's wholeness. At this point it becomes imperative to clarify that the Global Pact is not in 'competition' with MEAs; its original intention is to give structure and coherence to IEL and this is possible when 'ecological integrity' lies at the heart of the Pact's structural framework.

I do believe the Pact has the capability to unify humanity to protect the Earth's wholeness only if we see ourselves as stewards of the Earth, wherein states act as trustees of the common good, thereby taking a crucial step towards Earth governance.

Part II

Interactive Negotiation Skills in the Area of Emerging Issues in International Environmental Law

The Siena Negotiations – A Multilateral Simulation Exercise: An international Legally Binding Instrument on the Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction[1]

Tuula Honkonen,[2] Kati Kulovesi,[3] Elisa Morgera,[4] Maria Eugenia Recio[5] and Harro van Asselt[6]

1 Overview

1.1 Introduction

This paper describes the elements, structure, course and outcomes of a negotiation simulation exercise for the University of Eastern Finland – UN Environment

[1] This paper is partly drawn from the description of negotiation exercises on the previous UEF – UN Environment MEA Courses, conducted by Cam Carruthers.

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Course on Multilateral Environmental Agreements (MEAs), held in Siena on 22-23 October 2019.

The scenario for the negotiation simulation focused on marine biodiversity of areas beyond national jurisdiction. These areas comprise of the high seas and the international seabed area, which are jointly referred to as areas beyond national jurisdiction (ABNJ). These areas cover more than 50 per cent of the oceans. Marine biodiversity underpins a variety of ecosystem services of crucial importance to humans, but faces growing threats due to, inter alia, accelerating exploitation of these resources, growing shipping and fishing activities, developed seabed mining and bioprospecting, climate change and ocean acidification.[7]

It is generally recognized that the current governance system for the protection and management of global oceans has weaknesses.[8] The current governance framework, based on the United Nations Convention on the Law of the Sea (UNCLOS),[9] negotiated in the 1970s, regulates ocean activities in multiple jurisdiction areas that have been defined based on their distance from the coast. Furthermore, new types of resources, such as marine genetic resources, are not included in the current governance framework. UNCLOS also does not provide guidelines on how states should cooperate to realize the protection of marine biodiversity or the transfer of marine technology.[10] The negotiations for an 'international legally binding instrument for the conservation and sustainable use of marine biodiversity in areas beyond the limits of national jurisdiction' aim to address gaps in the current governance framework, to be nested in and building on existing obligations under UNCLOS. The new agreement would complement existing international agreements on issues such as high seas fisheries, deep sea mining, marine pollution, intellectual property rights and biodiversity protection.[11]

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7 See, for instance, IUCN, 'Governing areas beyond national jurisdiction', IUCN issues brief of March 2019, <https://www.iucn.org/sites/dev/files/issues_brief_governing_areas_beyond_national_jurisdiction.pdf> (visited 27 February 2020).

8 See, for instance, Jeff A. Ardron et al, 'The sustainable use and conservation of biodiversity in ABNJ: What can be achieved using existing international agreements?', 49 *Marine Policy* (2014) 98-108; Glen Wright et al, 'The long and winding road: negotiating a treaty for the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction', Institut du développement durable et des relations internationals (IDDRI) study no. 08/18 (2018), available at <https://www.iddri.org/sites/default/files/PDF/Publications/Catalogue%20Iddri/Etude/20180830-The%20long%20and%20winding%20road.pdf> (visited 27 February 2020) at 31-40.

9 United Nations Convention on the Law of the Sea, Montego Bay, 10 December 1982, in force 16 November 1994, 21 *International Legal Materials* (1982) 1261.

10 See, for instance, Aguiar Branco, 'INSIDER: What to Look for in the Latest Round of BBNJ Negotiations' (World Resources Institute, 2019), available at <https://www.wri.org/blog/2019/08/insider-what-look-latest-round-bbnj-negotiations> (visited 29 February 2020).

11 See, for instance, Rachel Tiller et al, 'The once and future treaty: Towards a new regime for biodiversity in areas beyond national jurisdiction', 99 *Marine Policy* (2019) 239-242; Wright et al, 'The long and', *supra* note 8; and Dire Tladi, 'An institutional framework for addressing marine genetic resources under the proposed treaty for marine biodiversity in areas beyond national jurisdiction', 19 *International Environmental Agreements* (2019) 485-495.

The participants' key task was to negotiate a number of provisions in a draft agreement under the UNCLOS on the conservation and sustainable use of marine biological diversity in areas beyond national jurisdiction. The negotiations were set at the 4th session of the Intergovernmental Conference (IGC-4) on the issue.

As participants convened in the plenary, the IGC Co-Presidents advised delegations that, after hearing plenary discussion on the three topics under negotiation, three previously established drafting groups resumed their work, with the aim of producing agreed texts to be adopted by the final plenary of IGC-4. In concrete terms, the IGC Co-Presidents proposed that the established drafting groups start negotiations, aiming to produce agreed text on the following issues:

1) benefit-sharing;
2) environmental impact assessment; and
3) the scientific and technical body or network and the clearing-house mechanism.

In addition, the drafting groups and the plenary were to negotiate procedural issues, including the election of officers and agreement on how to proceed with the draft agreement.

The overall objective of the exercise was to strengthen participants' understanding of the challenges and opportunities related to negotiating more specific infrastructure in a new MEA. The theme also provided an opportunity for participants to gain understanding about evolving legal architectures in international environmental governance.

1.2 Simulation objectives

This simulation focused on negotiations on issues related to regulating marine biodiversity in areas beyond national jurisdiction. The scenario was set at the fourth meeting of an Intergovernmental Conference negotiating on an international legally binding instrument (ILBI) on the issue. The general objectives were to promote among participants, through simulation experience:

- understanding of the challenges and opportunities related to negotiating more specific infrastructure in a new MEA;
- understanding of the principles and practices of multilateral environmental negotiations, and appreciation of the value and role of the rules of procedure; and
- familiarity with specific substantive and drafting issues.

Within the exercise, the specific objective was to conduct negotiations on the following issues: (1) election of officers; (2) benefit-sharing; (3) environmental impact assessment; (4) the scientific and technical body or network and the clearing-house

mechanism; and (5) arrangements for the next steps with the draft agreement with a focus on how to take the IGC-4 outcomes forward and how to proceed with issues that potentially remain outstanding after IGC-4.

1.3 The IGC's mandate and previous negotiations[12]

The negotiation simulation scenario and the issues set out within it were hypothetical but based on actual and recent discussions which had not yet concluded.

The scenario was set as the fourth meeting of the Intergovernmental Conference on an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction. The IGC was established by the United Nations General Assembly Resolution[13] in 2017 to consider the recommendations of an earlier Preparatory Committee[14] on the elements and to elaborate the text of an ILBI under UNCLOS on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, with a view to developing the instrument as soon as possible. According to the IGC's mandate, the negotiations on the ILBI were to address the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, in particular marine genetic resources, including questions on the sharing of benefits, measures such as area-based management tools, including marine protected areas, environmental impact assessments and capacity-building and the transfer of marine technology. It was further stated that the work and results of the IGC should be fully consistent with the provisions of UNCLOS and that this process and its result should not undermine existing relevant legal instruments and frameworks and relevant global, regional and sectoral bodies.

The IGC held its first session (IGC-1) in September 2018. In the session, the IGC agreed that its work would be guided by two Co-Presidents, one from a developed and one from a developing country. Delegates exchanged views on their expectations for the IGC, including their preferred procedural way forward towards a zero draft, and on the content of the legally binding instrument on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction. A 'Co-Presidents' aid to negotiations' document[15] was a useful basis for the discussions.

[12] This is a slightly modified account of the real-life negotiations of the IGC.

[13] 'International legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction', UNGA Res. 72/249 of 24 December 2017.

[14] Established by 'UNGA Res. 69/292 of 19 June 2015 ('Development of an international legally binding instrument under UNCLOS on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction').

[15] See Intergovernmental Conference on an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, Second session, 'President's aid to negotiations', UN Doc. A/CONF.232/2019/1* (2018).

The document had the aim of facilitating focused discussions and text-based negotiations, and it included treaty language and options concerning the identified key issues and some cross-cutting issues of the legally binding instrument under negotiation. Several delegates urged the 'Co-Presidents' Aid to Negotiations' to be developed into a zero draft text of a legally binding instrument. Others preferred the preparation of an 'informal, comprehensive but not exhaustive, preliminary draft as a basis for negotiations' which would not be written in a treaty form. Delegates agreed that the negotiation text should reflect the diversity of views involved in the negotiations.

IGC-2 was held in March – April 2019. In the session, delegates continued discussion on potential elements for the legally binding instrument on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, based on another 'Aid to Negotiations' document prepared by the Co-Presidents. During the session, delegates continued to elaborate their positions on issues previously identified as areas of divergence, achieving convergence on a few areas but unable to agree on a number of major issues. Many delegates urged for the creation of a 'no options' document containing treaty text as the basis of the continued negotiations.

The third session of the IGC (IGC-3) took place in August 2019. The basis for the negotiations was the draft text for the ILBI on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, prepared by the Co-Presidents. The draft text was structured in a form akin to a treaty. This was the first time that the IGC negotiated on a concrete text. The delegates negotiated in a good spirit but were not able to reach agreement on several major issues. It was agreed that the Co-Presidents produce a revised draft of the treaty text, including textual proposals presented in IGC-3.

IGC-4 constituted the penultimate scheduled negotiating session of the Conference tasked with producing a legally binding instrument on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction. The IGC aimed to complete its work in its fifth session, forthcoming in 2020.

The ICG-4 has two Co-Presidents previously elected who continued in office, so no elections were required. In practice, two Course participants were pre-selected to act as IGC Co-Presidents. At the Conference, the main focus was assumed to be on three drafting groups working on benefit-sharing, environmental impact assessment, and on the Scientific and Technical Body or Network and the clearing-house mechanism, respectively. Each of the three drafting groups had one Facilitator and one Rapporteur, selected by the delegates at the opening plenary. Facilitators and Rapporteurs for the drafting groups were identified in advance through consultations, noting that in real life chairs are identified in advance of meetings to facilitate preparation. It is often an established practice to seek to balance developed country and developing country representation in these elected positions by having co-facilitators, but in the current negotiating environment, due to lack of numbers, a single

facilitator was selected for each group. An attempt had to be made to have a balance of regions, interests and gender in these positions.

The Co-Presidents, Facilitators and Rapporteurs were provided with separate supplementary instructions before the exercise. Facilitators managed the negotiation process in the drafting groups. The tasks of drafting group Rapporteurs included keeping a speaker's list and typing the text on the screen as negotiations proceeded. The Rapporteur was also to report on the discussions held and progress achieved within his/her drafting group to the Co-Presidents and the plenary.

One of the purposes of the simulation exercise was to familiarize participants in some of the key procedural issues related to multilateral negotiations. The IGC's rules of procedure were included in the general instructions of the exercise. Accordingly, the IGC operated on the basis of a consensus rule. This is a common approach in MEA negotiations. In light of this, it was recommended for the IGC Co-Presidents and other delegates to consult informally, trying to reach agreement on the appointment of the drafting group Facilitators already before the IGC-4 opening plenary on the morning of Day 1 of the exercise.

1.4 Simulation scenario

The exercise began with the opening plenary meeting of IGC-4 where delegates were expected to adopt the agenda and agree to the organization of work. At the opening plenary, delegates had to also choose three drafting group Facilitators and three Rapporteurs by consensus.

After the opening plenary, participants proceeded to the drafting groups in accordance with their individual instructions. For the purposes of the exercise, the drafting groups had already been established at previous sessions of the IGC and their existence and mandate were not among the issues under negotiation.

The drafting groups' respective mandates focused on the following issues:

1) benefit-sharing;
2) environmental impact assessment; and
3) the scientific and technical body or network and the clearing-house mechanism.

Each drafting group was to work based on relevant parts of a negotiating text forwarded by IGC-3. Each drafting group was chaired by the Facilitator appointed by the IGC at the opening plenary. The drafting groups were to work on the remaining three draft texts that were still heavily bracketed, showing lack of consensus among the parties.

After the opening of the IGC-4 plenary on Day 1, the exercise was to continue in the drafting groups. The groups were to negotiate until the end of the first day of the exercise, report to the plenary at 10am on Day 2 and continue negotiations through the second day, before returning to the plenary at 4pm for discussions and possible agreement that the draft decisions were ready to be forwarded for adoption.

At its next session in 2020, the IGC was expected to adopt a new legally binding instrument on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction. In light of this, the ideal outcome from IGC-4 was for the drafting groups to complete their work and for the IGC to forward agreed text to its final scheduled session. However, as it often happens, it was possible that not all drafting groups could reach agreement. In such a case, the closing plenary of IGC-4 – scheduled to take place on Day 2 of the exercise – was to agree on how to take the work forward to IGC-5. For instance, the IGC could agree to continue working through the three drafting groups at an extra session, based on the texts developed at IGC-4; or it might wish to give the IGC Co-Presidents a mandate to prepare a compromise text to be considered in a future negotiating setting that is different from the three drafting groups.

1.5 Participants' roles[16]

Each participant played a specific role of a country representative. Participants were expected to represent their national interests based on their individual instructions. Participants were to play their part in the overall scenario for the simulation following general and individual instructions. Where possible, it was a good idea to make alliances and develop coordinated strategies to intervene in support of others, or to take the lead in other cases. Some roles, namely the Co-Presidents and 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.

Participants were to work hard to achieve their objectives. Participants were strongly urged to carefully 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 were further strongly encouraged to seek support from other participants for, and identify opposition to, their positions. To this end, participants had to consider developing joint drafting proposals and making interventions on behalf of more than one party, and they might wish to consider using regional and country negotiation groups as

[16] This section of the instructions was based on: Cam Carruthers, 'The Grenada Ad Hoc Joint Working Group. A Multilateral Simulation Exercise of an Ad Hoc Joint Working Group Meeting on Climate-related Geoengineering', in Ed Couzens, Tuula Honkonen and Melissa Lewis (eds), *International Environmental Law-making and Diplomacy Review 2012* (University of Eastern Finland, 2012) 173-226.

a point of departure. Participants were to note that even though the exercise used fictional country names, most delegates were assigned to represent specific real-life country groups that have joint interests and positions. Participants were strongly encouraged to liaise with their country groups during the negotiations.

Participants were to follow their interests and positions with respect to the issue assigned to their drafting group. The groups were to narrow their focus as quickly as possible to identify the main issues to be addressed, and to dispose of issues (and agree on text) expeditiously where possible. Participants had to work hard to achieve their objective of providing the final IGC-4 plenary with a clean text.

The simulation was designed to be difficult, with failure to reach agreement 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. Decision-making on the final text in plenary may be pro-forma, but there can be surprises. Decisions in the plenary are critical and can sometimes move very quickly, at times moving back and forth on an agenda, so that being prepared with an effective intervention at any moment is essential.

The two Co-Presidents and the drafting group Facilitators played an important role, setting up and managing the process – and managing time – to produce agreement. They were encouraged to consult broadly, including with each other and Party representatives (note that the simulation organizers could possibly provide advice acting as senior 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 functioned and were linked.

Finally, participants were asked to think about issues for discussion in the feedback session following the exercise, including issues of both process and substance within the exercise, as well as issues relating to the structure and management of the exercise itself.

2 Instructions

2.1 Individual instructions[17]

The core of the simulation was set out in confidential individual instructions. They provided very brief positions and fall-back positions on each of the issues being negotiated and showed the positions of the Party with regard to the issues being negotiated in the drafting group to which a participant had been assigned. It was to be noted that the confidential individual instructions provided some guidance on the rationale for positions outlined (the rest was to be developed by each participant), but unanticipated issues could arise and negotiators needed to react in a manner that was consistent with their overall instructions. In some cases, the instructions could seem contradictory (this happens in real life, and is interesting to watch!). 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. For further guidance in dealing with procedural and strategic issues, the participants were advised to see the *MEA Negotiators' Handbook.*[18]

2.2 General instructions

The general instructions were conveyed as follows:

1) At a minimum, please review the general and individual instructions and the key simulation documents as well as the rules of procedure for the IGC. The remaining material is for reference / use as needed, but should not be overlooked.[19]
2) Each participant will be assigned a role as a representative of a country delegate. They have been sent with full credentials from their governments to participate in the meeting of the IGC, using their confidential individual instructions as a guide. Delegates *should do their best to achieve the objectives laid out in their instructions.* They should develop a strategy – but not too rigid – and an integrated rationale to support their positions.
3) Do not share your confidential individual instructions with other participants. Do not concede to a fall-back position without a serious effort to achieve your primary objective (and certainly not on the first day!). 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 out-numbered. You should try to identify participants with opposing views, and influence them both in formal*

[17] This section of the instructions was based on *ibid*.

[18] *MEA Negotiators' Handbook,* available in English and French at <https://www.uef.fi/documents/241889/0/Negotiator%27s+handbook/6f8b7a8b-b39c-4192-af54-15d4eccad355> and <https://www.uef.fi/documents/241889/0/French+handbook/32acc474-7708-4a0d-8bad-d2e802870455> (both visited 29 February 2020).

[19] See also the *MEA Negotiators' Handbook*, in particular, sections 3.1, 3.2, 3.3, 3.6, 2.4, 4.3 and 5.

negotiations, as well as in informal settings. Also note that during the exercise, you may receive supplementary instructions. Participants should, of course, always be respectful of each other's views and background.

4) The Simulation Coordinators will remain as far as possible outside of the simulation and should not be consulted unless necessary. Questions on procedure, etc. should *a priori* be addressed to the Co-Presidents, drafting group Facilitators or Rapporteurs. The Simulation Coordinators may, as needed, play the role of a Senior Secretariat official and/or one of the designated senior government officials in a state's capital authorized to provide supplementary instructions to their delegations.
5) In the IGC plenary, the Co-Presidents sit at the head of the room, with the Secretariat officials beside them. Each participant will be provided a country nameplate (fold it twice, so the name is in the mid panel). To speak, please raise your 'flag' and signal the Secretariat official keeping the speakers' list.
6) The IGC will begin work in plenary. As explained above, the IGC has previously agreed to continue working in drafting groups established at IGC-3 based on text forwarded from the previous session.
7) In addition to adopting the agenda and agreeing to the organization of work, the IGC plenary will need to elect Facilitators and Rapporteurs for the three drafting groups.
8) When IGC-4 breaks into the drafting groups, please join the group identified in your individual instructions. The groups will operate much like an informal drafting group (see the *MEA Negotiator's Handbook*).
9) The drafting groups must reach agreement on what to report back to the plenary. The group Rapporteur will do the reporting (see the *MEA Negotiator's Handbook* on drafting, especially use of brackets).
10) Co-Presidents, Facilitators and Rapporteurs must play their roles throughout the negotiation simulation exercise, and generally refrain from openly taking positions, and only do so when explicitly indicating that they are 'taking their Chair's hat off'. Please note that for the purpose of the simulation, the Co-Presidents play delegate roles in the drafting groups.
11) 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!).
12) The exercise will take place over a two-day period. Participants are encouraged to consult informally before the exercise for nominations to the drafting group Facilitator and Rapporteur positions and in the evening of the first day to form alliances and broker solutions (as often happens 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 the exercise. In addition, there was a specific wrap-up and evaluation session immediately after the conclusion of the exercise.

3 Background materials

3.1 Marine genetic resources and their utilization in deep seabeds[20]

The vast majority (approximately 98 per cent) of known marine species lives on the ocean floor, which includes extreme-temperature and -pressure environments at great depths such as seamounts, hydrothermal vents and cold-water coral reefs. International concerns have been growing about the increasing pressure posed by existing and emerging human activities that may destroy these unique forms of life before we even begin to know and understand them.

Marine genetic resources (the genetic material of, for instance, deep-sea marine sponges, krill, corals, seaweeds, bacteria) in these remote and mysterious areas of the oceans are attracting increasing scientific and commercial attention as they are likely to possess unique characteristics that may lead to ground-breaking innovations in the pharmaceutical and food industries, among others.

The potential of marine genetic resources for development is substantial and of growing importance, but information is scattered and difficult to access for the non-specialized public. Public-private partnerships are usually involved in efforts to explore and develop these resources ('bioprospecting'): private companies fund academic and public-sector researchers to collect marine genetic samples from the depths of the oceans, or to obtain access to samples already held by research institutions. There are also prominent cases of global expeditions that are at present collecting marine genetic resources in the deep sea with the purpose of promoting universal access to samples and data for the benefit of scientific progress.

There is also an increasing trend of 'privatizing' innovations derived from marine genetic resources by protecting them through intellectual property rights (IPRs). According to a 2011 *Science* article, only 10 countries account for 90 per cent of patents related to marine genetic resources (the US, Japan, certain EU countries, Switzerland and Norway). Developing countries, therefore, are clearly not part of current bioprospecting efforts, due to technological barriers in accessing marine genetic resources in the deep seas. For the past ten years or more, developing countries have thus demanded that an international regime be put in place to ensure that all countries benefit from the economic returns deriving from living organisms that do not belong only to technologically advanced states on the basis of the general principle of equity.

[20] This section is based on Elisa Morgera, 'Benefit-sharing in marine areas beyond national jurisdiction: where are we at? (Part I)', BeneLex blog (23 May 2014), available at <https://benelexblog.wordpress.com/2014/05/23/benefit-sharing-in-marine-areas-beyond-national-jurisdiction-where-are-we-at-part-i/> (visited 29 February 2020).

3.2 Environmental impact assessment (EIA) in areas beyond national jurisdiction

Environmental impact assessment (EIA) is a process of evaluating the likely environmental impacts of a proposed project or development, taking into account inter-related socio-economic, cultural and human-health impacts, both beneficial and adverse. The effective participation of relevant stakeholders, including indigenous and local communities, is a precondition for a successful EIA.[21]

The relevant EIA types for the ILBI under negotiation have been defined as follows:[22]

Environmental Impact Assessment (EIA) is a process of evaluating the likely environmental impacts of, and proposing appropriate mitigation measures for, a proposed development, taking into account interrelated socio-economic, cultural and human health impacts, both beneficial and adverse.

Cultural heritage impact assessment is a process of evaluating the likely impacts, both beneficial and adverse, of a proposed development on the physical manifestations of a community's cultural heritage including sites, structures and remains of archaeological, architectural, historical, religious, spiritual, cultural, ecological or aesthetic value or significance.

Social impact assessment is a process of evaluating the likely impacts, both beneficial and adverse, of a proposed development that may affect the rights (which have an economic, social, cultural, civic and political dimension), as well as the wellbeing, vitality and viability, of an affected community — that is, the quality of life of a community as measured in terms of various socio-economic indicators, such as income distribution, physical and social integrity and protection of individuals and communities, employment levels and opportunities, health and welfare, education, and availability and standards of housing and accommodation, infrastructure and services.

Strategic environmental assessment (SEA) is one type of EIA. SEA is a process of evaluating the likely environmental impacts of proposed policies, plans or programmes to ensure that they are fully included and addressed at an early stage of decision-making, together with economic, social and cultural considerations.

[21] 'Voluntary guidelines on biodiversity-inclusive environmental impact assessment', CBD Decision VIII/28 (2006), Annex.

[22] Daniela Diz, 'Maximising ecosystem benefits through EIAs in areas beyond national jurisdiction', IIED Briefing (April 2019), available at <https://pubs.iied.org/pdfs/17700IIED.pdf> (visited 29 February 2020).

4 Key simulation documents

4.1 Agenda for IGC-4

4.1.1 Provisional Agenda

Intergovernmental Conference on an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction
Fourth Session
22-23 October 2019, Siena, Italy

Provisional Agenda UNEP/IGC.4/1, 1 October 2019

1. Opening of the session
2. Election of Officers
3. Organizational Matters
   (a) Adoption of the agenda
   (b) Organization of work
4. Preparation of a Legally Binding Instrument on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction
5. Other matters
6. Adoption of the report
7. Closure of the session

4.1.2 Annotated Agenda

Intergovernmental Conference on an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction
Fourth Session
22-23 October 2019, Siena, Italy

Annotations to the Provisional Agenda UNEP/IGC.4/1/Add.1, 1 October 2019

Item 1 Opening of the session

1. The fourth session of the Intergovernmental Conference to prepare an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, to be held from 22 to 23 October 2019, will be opened at 10 am on Tuesday, 22 October 2019.

Item 2 Election of Officers

2. It is expected that the Intergovernmental Conference will elect Facilitators to the drafting groups at the beginning of its fourth session.

Item 3 Organizational Matters

3. The Conference may wish to adopt the agenda for its fourth session based on the provisional agenda set forth in document UNEP/IGC.4/1.
4. The Conference may wish to decide that it shall meet on Day 1 from 10 a.m. to 5 p.m and on Day 2 from 10 p.m. to 5:30 p.m., subject to adjustments as necessary.
5. The Conference may wish to proceed on the basis of the agreement reached at the previous meeting (UNEP/IGC.3/Add.1) that the three drafting groups established at the Conference's third session continue their work at the fourth session. During the session, the Conference may wish to establish such other in-session working groups as it deems necessary and specify their mandates.

Item 4 Preparation of an international legally binding Instrument on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction

6. The Conference may wish, as agreed at its third session, to begin discussions on this agenda item in drafting groups.

Item 5. Other matters

7. The committee may wish to consider other matters raised during the session.

Item 6. Adoption of the report

8. At its closing meeting, the Conference will be invited to consider and adopt the report on the work of its fourth session prepared by the rapporteur.

Item 7. Closure of the session

9. It is expected that the Conference will conclude its work by 5:00 p.m. on Wednesday, 23 October 2019.

4.2 Negotiation texts

4.2.1 Negotiation text for drafting group 1

Article 11 [Fair and equitable] sharing of benefits

1. States Parties, including their nationals, that have accessed marine genetic resources of areas beyond national jurisdiction [shall] [may] share benefits

arising therefrom [in a fair and equitable manner] with other States Parties, with consideration for the special requirements of developing States Parties, in particular least developed countries, landlocked developing countries, geographically disadvantaged States, small island developing States, coastal African States and developing middle-income countries.

2. Benefits [shall] [may] include [monetary and] non-monetary benefits.
3. Benefits arising from the access to marine genetic resources of areas beyond national jurisdiction shall be shared at different stages, in accordance with the following provisions:

[(a) Monetary benefits [shall] [may] be shared upon the commercialization of products that are based on marine genetic resources of areas beyond national jurisdiction. [Payments shall be made to the special fund];]

(b) Non-monetary benefits, such as access to samples and sample collections, sharing of information, transfer of technology and capacity-building, [shall] [may] be shared upon access to, research on and utilization of marine genetic resources of areas beyond national jurisdiction.

4. Benefits shared in accordance with this Part shall be used in the manner determined by the Conference of the Parties, which may include using the benefits for the following purposes:

(a) To contribute to the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction;

(b) To promote scientific research on [and facilitate access to] marine genetic resources of areas beyond national jurisdiction;

(c) To build capacity to access and utilize marine genetic resources of areas beyond national jurisdiction [, including through common funding or pool funding for research cruises and collaboration in sample collection and data access where adjacent coastal States may be invited to participate, taking into account the varying economic circumstances of States that wish to participate];

(d) To create and strengthen the capacity of States Parties to conserve and use sustainably marine biological diversity of areas beyond national jurisdiction, [with a focus on small island developing States];

(e) To support the transfer of marine technology.

5. States Parties shall take the necessary legislative, administrative or policy measures, as appropriate, with the aim of ensuring that benefits arising from access to and the utilization of marine genetic resources of areas beyond national jurisdiction by natural or judicial persons under their jurisdiction are shared in accordance with this Agreement.

[6. States Parties shall take the necessary legislative, administrative or policy measures, as appropriate, in order to ensure that the benefits arising from the utilization of traditional knowledge referred to in article 10, paragraph 6, are shared in a fair and equitable way with indigenous peoples and local communities holding such knowledge.]

Article 52 Funding: Special Fund

[Alt. 1. A special fund [may] [shall] be established by the Conference of the Parties with [voluntary][mandatory] contributions from States [and royalties and milestone payments resulting from the utilization of marine genetic resources] to:

(a) Fund capacity-building projects, including effective projects on the conservation and sustainable use of marine biological diversity;
(b) Fund activities and programmes, including training, related to the transfer of technology;
(c) Assist developing States Parties to implement this Agreement;
(d) Finance the rehabilitation and ecological restoration of marine biological diversity of areas beyond national jurisdiction;
[(e) Support conservation and sustainable use programmes by holders of traditional knowledge in local communities;]
(f) Support public consultations at the national and regional levels;
(g) Undertake any other functions as agreed by the States Parties.]

[Alt.2 States Parties shall cooperate to establish appropriate funding mechanisms to assist developing States Parties with achieving the objectives of capacity-building and the transfer of marine technology under this Agreement.]

Background information (not for negotiation!): Draft Art. 10(6):

[6. States Parties shall take the necessary legislative, administrative or policy measures, as appropriate, with the aim of ensuring that traditional knowledge [associated with marine genetic resources of areas beyond national jurisdiction that is held by indigenous peoples and local communities] [of indigenous peoples and local communities that is useful for unlocking the value of marine genetic resources of areas beyond national jurisdiction] is accessed with the prior informed consent or approval and involvement of those indigenous peoples and local communities, and that mutually agreed terms have been established.]

4.2.2 Negotiation text for drafting group 2

Article 23 Relationship between this Agreement and environmental impact assessment processes under other [existing] relevant legal instruments and frameworks and relevant global, regional and sectoral bodies

1. The conduct of environmental impact assessments pursuant to this Agreement shall be consistent with the obligations under the Convention.
2. The environmental impact assessment process set out in this Agreement shall not undermine existing relevant legal instruments and frameworks and relevant global, regional and sectoral bodies.

[3. Alt. 1. The Scientific and Technical [Body] [Network] shall consult and/or coordinate with relevant legal instruments and frameworks and relevant global, regional and sectoral bodies with a mandate to regulate activities [with impacts] in areas beyond national jurisdiction or to protect the marine environment.]

[3. Alt. 2. States shall cooperate in promoting the use of environmental impact assessments in relevant legal instruments and frameworks and relevant global, regional and sectoral bodies for planned activities that meet or exceed the threshold contained in this Agreement.]

[4. Alt. 1. Global minimum standards and guidelines for the conduct of environmental impact assessments under relevant legal instruments and frameworks and relevant global, regional and sectoral bodies shall be developed by the Scientific and Technical [Body] [Network] [through consultation or collaboration with relevant legal instruments and frameworks and relevant global, regional and sectoral bodies.]

[4. Alt. 2. The provisions of this Part constitute global minimum standards for environmental impact assessments for areas beyond national jurisdiction.]

[5. Alt. 1. Relevant global, regional and sectoral bodies with a mandate in relation to marine biological diversity of areas beyond national jurisdiction shall conform to the strict environmental impact assessment standards set forth in this Part.]

[5. Alt. 2. No environmental impact assessment is required under this Agreement for any activity conducted in accordance with the rules and guidelines appropriately established under relevant global, regional and sectoral bodies, regardless of whether or not an environmental impact assessment is required under those rules or guidelines.]

[5. Alt. 3. No environmental impact assessment is required under this Agreement where relevant global, regional or sectoral bodies with mandates for environmental impact assessments for planned activities [with impacts] in areas beyond national jurisdiction already exist, regardless of whether or not an impact assessment is required for the planned activity.]

[5. Alt. 4. Where a planned activity [with impacts] in areas beyond national jurisdiction is already covered by existing environmental impact assessment obligations and agreements, it is not necessary to conduct another environmental impact assessment of that activity under this Agreement [, provided that the [State with jurisdiction or control over the planned activity] [the Scientific and Technical [Body] [Network]] [, following consultation with relevant legal instruments and frameworks and relevant global, regional and sectoral bodies,] determines that:

(a) The outcome of environmental impact assessment under those obligations or agreements is effectively implemented;

(b) The environmental impact assessment already undertaken is comparably comprehensive, including with regard to such elements as the assessment of cumulative impacts;

(c) The threshold for the conduct of environmental impact assessments meets or exceeds the threshold set out in this Part.]

Article 24 Thresholds and criteria for environmental impact assessments

[Alt.1
When States have reasonable grounds for believing that planned activities under their jurisdiction or control [may cause substantial pollution of or significant and harmful changes to] [are likely to have more than a minor or transitory effect on] the marine environment [in areas beyond national jurisdiction], they shall, [individually or collectively,] as far as practicable, [assess the potential effects of such activities on the marine environment] [ensure that the potential effects of such activities on the marine environment are assessed].]

[Alt.2
1. When States Parties have reasonable grounds for believing that planned activities under their jurisdiction or control are likely to have more than a minor or transitory effect on the marine environment, they shall conduct a[n] [initial] [simplified] environmental impact assessment on the potential effects of such activities on the marine environment in the manner provided in this Part.
2. When States Parties have reasonable grounds for believing that planned activities under their jurisdiction or control may cause substantial pollution of or significant and harmful changes to the marine environment, they shall [conduct] [ensure that] a [full] [comprehensive] environmental impact assessment [is conducted] on the potential effects of such activities on the marine environment [and ecosystems] and shall [communicate] [submit] the results of such assessments [for technical review] in the manner provided in this Part.]

[Alt.3
Environmental impact assessments shall be conducted in accordance with the threshold and criteria [set out in this Part and as further elaborated upon pursuant to the procedure set out in paragraph […] [, which shall be developed by the [Scientific and Technical [Body] [Network]]].

4.2.3 Negotiation text for drafting group 3

Article 49 Scientific and Technical [Body] [Network]

1. A Scientific and Technical [Body] [Network] is hereby established to provide scientific and technical advice to the Conference of the Parties.
2. The [Body] [Network] shall be composed of experts, taking into account the need for multidisciplinary expertise [, including traditional knowledge expertise], gender balance and equitable geographical representation.

3. The [Body] [Network] may also draw on appropriate advice from existing arrangements, such as the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection, as well as other scientists and experts, as may be required.

[4. Alt. 1. Under the authority and guidance of the Conference of the Parties, the [Body] [Network] shall:

(a) have advisory competence with regard to marine genetic resources[, including questions on the sharing of benefits;]

[(b) elaborate a benefit-sharing mechanism;]

[(c) monitor the utilization of marine genetic resources of areas beyond national jurisdiction;]

(d) make recommendations to the Conference of the Parties with respect to environmental impact assessments;

(e) Review environmental impact assessment standards to ensure consistency with the requirements under this Agreement;

(f) Advise on ways and means to promote the development and transfer of marine technology;

(g) Elaborate programmes for capacity-building and the transfer of marine technology.]

[4. Alt. 2. The functions of the [Body] [Network] shall be elaborated by the Conference of the Parties.]

Article 51 Clearing-house mechanism

1. A clearing-house mechanism is hereby established as: an open-access web-based Platform, and a network of experts and practitioners in relevant fields.

[2. Alt. 1. The clearing-house mechanism shall serve as a centralized platform to enable States Parties to have access to and disseminate information with respect to:

(a) Activities related to marine genetic resources of areas beyond national jurisdiction, including notices of forthcoming *in situ* collection of marine genetic resources, research teams, ecosystems where the marine genetic resources are collected;

(b) Data and scientific information on, as well as [, in line with the principle of prior informed consent,] traditional knowledge associated with, marine genetic resources of areas beyond national jurisdiction, including through lists of databases, repositories or gene banks where marine genetic resources of areas beyond national jurisdiction are currently held, a registry of such resources, and a track-and-trace mechanism for marine genetic resources of areas beyond national jurisdiction and their utilization;

[(c) The sharing of benefits, including through reports on the status of monetary benefits shared and on their use through the publication of the proceedings of the meetings of the Conference of the Parties;]
[(d) Environmental impact assessments, including: assessment reports; statements of reasons; guidelines and technical methods on environmental impact assessments; best practices; and indications of areas in which proposed planned activities will take place;]
(e) Opportunities and requests for capacity-building and the transfer of marine technology;
(f) Research collaboration and training opportunities, including study grants, equipment and opportunities for research and training, and offers of cruise studies at the global, regional and subregional levels;
(g) Information on sources and availability of technological information and data for the transfer of marine technology and opportunities for facilitated access to marine technology.]

[2. Alt. 2. The types of information submitted to the clearing-house mechanism shall be elaborated by the Conference of the Parties.]

[3. Alt. 1. The clearing-house mechanism [shall] [should]:
[(a) Match capacity-building needs with the support available and with providers for the transfer of marine technology, including governmental, non-governmental or private entities interested in participating as donors in the transfer of marine technology, and [provide] [facilitate] access to related know-how and expertise;]
[(b) Promote linkages to existing relevant global, regional, subregional, national and sectoral clearing-house mechanisms and other databases, repositories and gene banks [, including experts in traditional knowledge];]
[(c) Link to private and non-governmental platforms for the exchange of information;]
[(d) Build on existing regional and subregional clearing-house institutions, if applicable, when establishing regional and subregional mechanisms under the global mechanism;]
(e) Facilitate enhanced transparency, including by providing baseline data and information;
(f) Facilitate international cooperation and collaboration, including scientific and technical cooperation and collaboration.]

[3. Alt. 2. The functions of the clearing-house mechanism shall be elaborated by the Conference of the Parties.]

4.3 Rules of procedure

A. Rules of procedure for the Intergovernmental Conference on an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction

I. Purposes

These rules of procedure shall govern the negotiation of a legally binding instrument on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction.

II. Definitions

Rule 1

1. "Party" means a State, or a regional economic integration organization that is a member of a specialized agency of the United Nations, participating in the work of the Intergovernmental Conference on an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (hereinafter referred to as the IGC). "Regional economic integration organization" means an organization constituted by sovereign States of a given region to which its member States have transferred competence in respect of matters covered by the committee's work. Participation of such a regional economic integration organization shall in no case entail an increase in the representation to which the member States of that organization would otherwise be entitled.
2. "Co-President" means the Co-President elected in accordance with rule 8, paragraph 1, of these rules of procedure.
3. "Secretariat" means the secretariat provided by the Executive Director required to service the negotiations.
4. "Executive Director" means the Executive Director of the United Nations Environment Programme.
5. "Session" means any series of meetings convened in accordance with the present rules of procedure.
6. "Representatives present and voting" means representatives of Parties present and casting an affirmative or negative vote. Representatives who abstain from voting are considered as not voting.

III. Place and dates of sessions

Rule 2
The venue and dates of the sessions shall be decided by the committee in consultation with the secretariat.

IV. Agenda

Drawing up of the provisional agenda for a session
Rule 3
The Executive Director shall, after approval by the Bureau referred to in paragraph 1 of rule 8 below, submit to the committee at each session the provisional agenda for the following session. The provisional agenda shall include all items proposed by the committee.

Adoption of the agenda
Rule 4
At the beginning of each session, the committee shall adopt its agenda for the session based on the provisional agenda.

Revision of the agenda
Rule 5
During a session, the IGC may revise the agenda for the session by adding, deleting or amending items. Only items that the IGC considers to be urgent and important may be added to its agenda during the session.

V. Representation

Composition of delegations
Rule 6
The delegation of each Party participating in any session shall consist of a head of delegation and such alternate representatives and advisers as may be required.

Alternates and advisers
Rule 7
The head of delegation may designate an alternate representative or an adviser to act as a representative.

VI. Officers

Elections
Rule 8

1. The committee shall elect from among the representatives of the Parties a Bureau comprising two Co-Presidents.
2. In electing the officers referred to in the previous paragraph, the committee shall have due regard to the principle of equitable geographical representation.

Replacement of the Co-President
Rule 9

If one of the Co-Presidents is unable to continue to perform his or her functions, a new Co-President shall be elected for the unexpired term, with due regard to rule 8, paragraph 2.

VIII. Conduct of business

Quorum
Rule 10

1. A Co-President may declare a session open and permit the debate to proceed when at least one third of the Parties participating in the session are present. The presence of a majority of Parties so participating shall be required for any decision to be taken.

Powers of the Co-Presidents
Rule 11

In addition to exercising the powers conferred upon him or her elsewhere by the present rules, a Co-President shall declare the opening and closing of each session; direct the discussion; ensure observance of the present rules; accord the right to speak; put questions to the vote; and announce decisions. The Co-President shall rule on points of order and, subject to the present rules, shall have control over the proceedings of the sessions and over the maintenance of order at sessions. A Co-President may propose to the session the limitation of the time to be allowed to speakers, the limitation of the number of times each Party may speak on any subject, the closure of the list of speakers or the closure of the debate. A Co-President may also propose the suspension or the adjournment of the session or of the debate on the question under discussion.

Rule 12

The Co-Presidents, in the exercise of their functions, remains under the IGC's authority.

Speeches
Rule 13
No one may address a session without having previously obtained the Co-President's permission. Subject to these rules, the Co-President shall call upon speakers in the order in which they signify their desire to speak. The Co-President shall call a speaker to order if his or her remarks are irrelevant to the subject under discussion.

Points of order
Rule 14
1. During the discussion of any matter, a representative of a Party may at any time raise a point of order and the point of order shall be immediately decided upon by the Co-President in accordance with these rules. A representative of a Party may appeal against a Co-President's ruling. The appeal shall be put to the vote immediately and the Co-President's ruling shall stand unless overruled by a majority vote of the representatives present and voting.
2. A representative of a Party raising a point of order may not speak on the substance of the matter under discussion.

Time limit on speeches
Rule 15
The IGC may limit the time allowed to each speaker and the number of times that each person may speak on any question, except on procedural questions, in respect of which the Co-President shall limit each intervention to a maximum of five minutes. When debate is limited and a speaker has spoken for his or her allotted time, the Co-President shall call him or her to order without delay.

Closing of list of speakers
Rule 16
During the course of a debate, the Co-President may announce the list of speakers and, with the committee's consent, declare the list closed. The Co-President may, however, accord the right of reply to any Party if, in his or her opinion, a speech delivered after he or she has declared the list closed renders this justified. When the debate on an item is concluded because there are no other speakers, the Co-President shall, with the IGC's consent, declare the debate closed.

Adjournment of debate
Rule 17
During the discussion of any matter, a representative of a Party may move the adjournment of the debate on the subject under discussion. In addition to the proponent of the motion, one representative of a Party may speak in favour of the motion and one against it, after which the motion shall be immediately put to the vote.

Closure of debate
Rule 18
A representative of a Party may at any time move the closure of the debate on the subject under discussion, whether or not any other representative of a Party has signified his or her wish to speak. Permission to speak on the closure of the debate shall be accorded only to two representatives of Parties opposing the closure, after which the motion shall be immediately put to the vote. If the committee is in favour of the closure, the Co-President shall declare the closure of the debate.

Suspension or adjournment of a session
Rule 19
During the discussion of any matter, a representative of a Party may move the suspension or the adjournment of any session. Such motion shall not be debated, but shall immediately be put to the vote.

Order of procedural motions
Rule 20
Subject to rule 22, and regardless of the order in which they are submitted, the following motions shall have precedence, in the following order, over all other proposals or motions before the session:

(a) To suspend the session;
(b) To adjourn the session;
(c) To suspend the debate on the subject under discussion;
(d) To adjourn the debate on the subject under discussion.

Decisions on competence
Rule 21
Any motion calling for a decision on the IGC's competence to adopt any proposal or any amendment submitted to it shall be put to the vote before a vote is taken on the proposal or amendment in question.

Withdrawal of motions
Rule 22
A motion may be withdrawn by its proponent at any time before voting on it has commenced, provided that the proposal or the motion has not been amended. A motion that has thus been withdrawn may be reintroduced by another representative of a Party.

Adoption of decisions
Rule 23
1. The IGC shall make every effort to reach agreement on all matters of substance by consensus.
2. Decisions of the IGC on procedural matters shall be taken by a majority of the representatives present and voting.

3. Where there is disagreement as to whether a matter to be voted on is a substantive or procedural matter, that issue shall be decided by a two-thirds majority of the representatives present and voting.

Method of voting
Rule 24
The IGC shall normally vote by show of hands, but any representative of a Party may request a roll-call, which shall then be taken in the English alphabetical order of the names of the Parties, beginning with the Party whose name is drawn by lot by the Co-President. If, however, at any time a Party requests a secret ballot, that shall be the method of voting on the issue in question.

Recording of roll-call
Rule 25
The vote of each Party participating in a roll-call shall be recorded in the relevant documents of the session.

Conduct during voting
Rule 26
After the Co-President has announced the beginning of voting, no representative of a Party shall interrupt the voting except on a point of order in connection with the actual conduct of the voting. The Co-President may permit representatives of Parties to explain their votes, either before or after the voting, except when the vote is taken by secret ballot. The Co-President may limit the time to be allowed for such explanation. The Co-President shall not permit the proponent of a proposal or of an amendment to explain his or her vote on his or her own proposal or amendment.

IX. Languages and records

Languages of the sessions
Rule 27
English shall be the languages of the sessions.

5 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 30 official participants in all, not including the facilitators and the other resource people who supported or played various roles in respect of the simulation. 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 among the participants.

The simulation commenced with the first-day plenary of IGC-4. The session followed the agenda distributed in advance to the participants. The Co-Presidents first established the quorum, and then opened each agenda item for a brief airing of views by item. Opening statements were given by four country groups. The statements were carefully prepared and reflected a good balance between substance and diplomacy.

The Co-Presidents proposed that the IGC would proceed on the basis of the agreement reached at the previous meeting that the three drafting groups continue their work and negotiate on the issues that remained open. The Co-Presidents then invited the Parties to select a Facilitator and Rapporteur for each drafting group.

The Co-Presidents reminded the Parties of the importance of the negotiation session and of the need to work effectively for the following two days of intense negotiations. Before ending the plenary, the Co-Presidents reminded the Parties that each drafting group's mandate was to provide agreed texts before the closing plenary session for adoption, if possible. The Parties were also advised that the text has previously been negotiated, the outstanding issues are those in square brackets and clean text was not to be re-opened unless by doing so an issue in square brackets could be resolved. After that, the delegates broke immediately into the drafting groups.

The drafting group on benefit-sharing (Group 1) immediately proceeded with paragraph-by-paragraph consideration of their draft text. Another option would have been to first exchange general views on how parties feel about the text in general, and to have a relatively quick first reading of the text so as to get an overview of the positions and what issues were linked. In the course of the negotiations, the parties held extensive discussions on binding/non-binding language and secured some compromise language based on the expectation by some parties that their relevant concerns would be addressed in other parts of the text. Some of the most contentious issues were parked during the first day for the parties to agree on other sections of the text first. There was an apparent need for the participants to be clearer about where the resolution of one set of brackets was dependent on certain proposals in other paragraphs of the negotiation text. Interestingly, no participant raised the issue of linkage with other provisions in other drafting groups (notably institutional provisions).

The drafting group on environmental impact assessment (Group 2) started its work with a paragraph-by-paragraph consideration of the draft text. This had the downside of taking a long time to get to the end of the text and, consequently, some country positions were not known until late in the afternoon of the first day of negotiation. The group also faced the challenge that issues related to the Scientific and Technical Body were being negotiated in two different groups. As Group 3 was negotiating the establishment of the Body, many aspects of the text of Group 2 were made dependent on the outcome in that group. Following a constructive

proposal from the floor to park the discussions that involved the possible Body and to consider other aspects of the text pending agreement in Group 3 (though it was challenging in practice since there were so many references to the Body in the text), the delegates managed to find a way to work around the issue. At a later stage of the first day, the IGC-4 Co-President talked to Group 3 on the issue that was holding discussions in Group 2 'hostage'.

Overall, the participants of the drafting group on EIA recognized the value of having bilateral discussions on identified controversial questions. Once Group 3 had reached agreement on the creation of a Panel, the negotiations in group 2 could be broadened to address the previously parked issues. The group utilized a variety of options in attempts to break negotiation deadlocks from a proposal to add a reservation footnote to merging paragraphs and setting up votes between alternative text formulations.

The drafting group on the scientific body/network and the clearing-house mechanism began its work by opening statements of the delegates. The statements reflected the different views of the parties on the key issues under negotiation. Several delegates were concerned about the cost implications of a new scientific body and questioned the added value of establishing such a body. Others stresses the need to define the functions of the new body/network.
The group decided to negotiate the functions of the body/network first since that appeared the key area of disagreement among the parties. The delegates debated whether already existing bodies cover the functions proposed for the new body/network. Some participants were asking about the reasoning behind others' positions, which is important for finding compromise. The group finally agreed to a creative legal drafting solution: to put the functions on which there is disagreement to be reviewed at the next COP. Agreement was also reached on a scientific 'panel' to be established.

There was also a need to consult group 2 as it was discussing some of the same issues. Parties were also requesting the Facilitator to give a clarification of certain sub-paragraphs of the text, with which parties should actually be very careful because such clarification is very closely related to party positions.

On the morning of day two, the Co-Presidents received progress reports from the drafting group Rapporteurs. According to the reports, all the groups had made progress on their texts, but there were still numerous open issues left to resolve. After the short stocktaking plenary, participants again broke into their respective drafting groups and resumed their negotiations. Interestingly, the Co-President put pressure on delegates to achieve compromise by giving the Facilitators and Rapporteurs the power to eliminate or restrict the coffee breaks of the programme to ensure enough time for convergence on the texts to be formed. The Co-President ended with a statement: 'compromises leave us unhappy. What is important is to be equally unhappy'.

Following the conclusion of the work of the drafting groups, all participants reconvened in the final IGC-4 plenary. In an ideal situation, they all would have had clean texts to present to the plenary. The drafting group Facilitators were asked to present their draft texts and to describe major areas of concern in case a group had not been able to reach a fully agreed text.

The group on benefit-sharing had made significant progress given the tight timeframe. The group had managed to unbracket text on the first paragraph, with good progress on the words may or shall concerning what the benefits shall or might be. There was some progress with regard to capacity-building. However, little progress had been achieved on indigenous knowledge and transfer of knowledge as well as on the possibility of creating a fund and its conditions.

The group on environmental impact assessment had showed a positive spirit of compromise and had managed to narrow down alternatives in its negotiation text. However, outstanding issues remained concerning the role of the panel in environmental impact assessment. Moreover, discussions continued on whether the activities with impacts on areas beyond national jurisdiction should be covered by the agreement.

The group on the scientific body/network and the clearing-house mechanism had made good progress even though deciding on a body or network had proved to be very challenging. Finally, agreement was reached on a scientific and technical "panel". The group also agreed that the functions of the panel would be included in the final agreement, and not just be defined by the Conference of the Parties. The group had discussed whether any function concerning environmental impact assessment would be included, ending with the outcome that the panel will make recommendations with regards to this aspect. Some other outstanding issues to be discussed remained. The group had started work on the clearing-house mechanism but did not manage to agree on the issue.

Overall, reporting by the three drafting groups was well articulated. Most of them provided context and clear explanations on the progress achieved and the remaining outstanding issues.

Regarding the way forward to the next negotiation session, it was agreed that clean text from groups 1 and 2 will be forwarded to the next session. The Co-Presidents requested a mandate to put forward a compromise text during the intersessional period, on which parties agreed (however, normally this would be a more sensitive issue and would be subject to consultation).

6 Evaluation of the exercise

The resource people for the exercise were generally very satisfied with how the simulation turned out and with the performance of the participants. The exercise reached its objectives and was run without major difficulties. The participants were well-prepared with their positions and tactics, were meticulous, proposed creative solutions and generally participated very intensively in the negotiations. A few observations and notes of guidance from the resource people:

- It is important to clarify or ask for clarity on positions.
- Co-Facilitators should try to be clear when issues are closed and the negotiations should move on.
- Convoluted text can lead to consensus, but it can also lead to problems later on. Ambiguous text should be last resort.
- Postponing issues can help get consensus, but also has risks: the functioning of the treaty in the longer run may remain unclear.
- In the work of the drafting groups, the key focus was often on the brackets, whereas the text outside of brackets received lss attention.
- The drafting groups did not always consider the domino effects of their decisions on other groups or issues.

Based on written evaluations, participants were generally very satisfied with the exercise. They thought that the simulation was a good training opportunity for their negotiation skills, both in terms of substance and on procedural issues. The participants felt that there was a very constructive spirit during the exercise. It was also highlighted that the topic of the exercise was well-chosen since it allows participants to compare their negotiated outcomes with real-life negotiations. Some differences in comparison to real negotiations were highlighted (such as the use of voting, having three parallel drafting groups, individual instructions with similar level of detail). The participants also thanked the organizers of the exercise for having selected negotiation topics that are of recurring nature (benefit-sharing, setting up funds, institutional arrangements) and so useful in other contexts as well.

In their feedback, many participants highlighted the usefulness and relevance of the negotiation exercise for their work. Many participants stated that the Course had significantly improved their skills and understanding of negotiations. It was also pointed out how the exercise made the participants see 'how certain similar words can have enormous repercussions.'

Participants also had suggestions for improvement. An oft-cited suggestion, familiar from previous simulations, was that the exercise would benefit from some more time to be allocated to it. Unfortunately, this is difficult to realize in practice given the tight schedules of the Courses. More generally, the Course feedback indicated a need to dedicate more time for group work and drafting. A participant pointed out that

'[o]nly certain roles during the negotiation exercise were able to practise drafting'. Another participant stated that it '[w]ould have been better to represent a country more similar to my own in negotiation exercise'. This is an understandable opinion, but the participants were purposefully assigned roles that were different from their home countries to ensure learning about different possible viewpoints and positions, and to practice negotiating in favour of a position that one may not hold oneself.

The role of the resource people was also subject to feedback by the participants of the exercise. Some hoped for more feedback during the negotiations, though recognizing the caveat that this would make the exercise itself longer. A participant also wished that the resource persons had proactively intervened with the facilitators instead of waiting for them to ask questions in problematic situations.

In conclusion, the negotiation exercise was a success, in no small part due to the efforts of participants to prepare for the negotiations and take them seriously, working hard to achieve agreed text by the end of the second day. All in all, it was clear that the exercise continues to be an important and popular part of the two-week MEA course.

The articles in the present Review emanate from the 16th University of Eastern Finland – UN Environment Course on Multilateral Environmental Agreements, which was held from 14 to 24 October 2019 in Siena, Italy. The special theme of the course was "Emerging issues in international environmental law". 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 government officials engaged in international environmental negotiations. In addition, other stakeholders such as representatives of non-governmental organizations and the private sector may apply and be selected to attend the Course. Researchers and academics in the field are also eligible.

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