
EMERGING ISSUES IN INTERNATIONAL ENVIRONMENTAL LAW: THE ROLE OF THE UNITED NATIONS ENVIRONMENT ASSEMBLY

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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 adopted³ 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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This paper is based on a lecture given at the 16th annual Course on Multilateral Environmental Agreements organized by the University of Eastern Finland Law School and UNEP in Siena in October 2019. I would like to thank Tuula Honkonen and Seita Romppanen for their helpful comments. A more comprehensive version is published with the title ‘The Role of the United Nations Environment Assembly in Emerging Issues of International Environmental Law’ in 12 *Sustainability* (2020) 5680.

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.

⁵ See for instance, Steve Charnovitz, ‘Toward a World Environment Organization: Reflections upon a Vital Debate’ in Frank Biermann and Stefan 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 Garrett 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 prisoners' 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; Otfried 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. Duzin, '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 influence³⁵ 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 Xavier 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 Massachusetts 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 Programme', 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, Brunnée 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 Council⁷⁸ and the Executive Body for the Convention on Long-range Transboundary Air Pollution⁷⁹ 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), Section 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 Pollutants⁹⁶ 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 Bulletin* (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 Article 14(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 capabilities 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 CBDR¹¹⁴ ‘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 Ferrera, ‘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 CO₂ from the atmosphere or directly at an emission source and its geological storing, the fixation of CO₂ from atmosphere in forests through largescale afforestation, or the fertilization of oceans to enhance algae growth with associate CO₂ 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 CO₂ concentration in the atmosphere but can be used to save time until the CO₂ 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 CO₂ 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 Diversity¹³³ recommended a broad moratorium on geoengineering in 2010.¹³⁴ The Parties to the London Protocol on Prevention of Marine Pollution¹³⁵ 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 Biniiaz 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 Protocol¹³⁷ 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 *Nature 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 SRE, 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 precaution¹⁴⁸ in the preambular section. While the EU and Bolivia would have supported this compromise, the US refused to accept the text and Switzerland withdrew 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.