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The Role of International Law in Addressing the Global Freshwater Ecosystem Crisis

1.1 ORIGIN OF THE BOOK AND KEY QUESTIONS

With the dawning of this new decade came a dramatic warning to humanity of a rapidly escalating global freshwater ecosystem crisis and an urgent call for concerted action to bend the curve of ecosystem degradation.¹ In no other ecosystem is biodiversity being irreversibly damaged to the extent that is occurring in freshwater ecosystems (on a global scale).² This deterioration is having resounding impacts on food security, energy production, health security, economic development and poverty reduction. Freshwater scarcity is one of the most critical issues for humanity right now, with two-thirds of the world population experiencing severe water scarcity annually.³ Our current economic model, which drives unsustainable use of natural resources, is sending us into uncharted territory. Global water withdrawals have tripled in the last fifty years and water demand is predicted to be 40 per cent higher than supply by 2030.⁴ Currently, 3 in 10 people worldwide, or 2.1 billion, lack access to safe, readily available water at home, and 6 in 10 people, or 4.5 billion, lack safely managed sanitation.⁵ Water scarcity is intimately linked to and being exacerbated by the current global climate crisis. Climate change is battering the world more rapidly, more intensely and in more complex ways than many predicted. In 2020 our world is hotter than ever before, the last five years

¹ D Tickner and others, 'Bending the Curve of Global Freshwater Biodiversity Loss: An Emergency Recovery Plan' (2020) 70 *BioScience* 330–342.

² DL Strayer and D Dudgeon, 'Freshwater Biodiversity Conservation: Recent Progress and Future Challenges' (2010) 29 *Journal of the North American Benthological Society* 347.

³ JS Albert and others, 'Scientists' Warning to Humanity on the Freshwater Biodiversity Crisis' (2021) 50 *Ambio* 85–94.

⁴ B Lee and others, *Resources Futures* (Chatham House 2012) 83.

⁵ WHO and UNICEF, *Progress on Drinking Water, Sanitation and Hygiene Update and SDG Baselines* (WHO and UNICEF 2017).

having been the warmest ever recorded.⁶ Climate change is reducing water availability and affecting water quality on an unprecedented scale. A surge in extreme weather events, such as droughts and flooding, are having severe impacts, causing loss of livelihoods and economic devastation. An estimated 147 million people will be hit by flooding annually by 2030, compared with 72 million people just ten years ago and damages are predicted to reach US\$712 billion per year.⁷ The water and climate crises are fused together – our response to the water crisis will also provide solutions to or further exacerbate the climate crisis and vice versa. Addressing the current global water crisis and achieving global water sustainability through a more resilient international legal and institutional architecture presents one of the most pressing challenges within our resource-finite planet and is the overarching goal to which this book seeks to contribute.

A staggering 42 per cent of the total land area of the earth is covered by transboundary river basins, where more than 40 per cent of the global population lives and depends on the ecosystem services of the 310 transboundary river basins and 592 transboundary aquifers stretching across the political boundaries of 153 countries.⁸ There is already evidence of water resources becoming a source of conflict in many regions and constraining a whole myriad of securities.⁹ In an unsettled world ‘where powerful economic, demographic and technological forces are shaping a new balance of power in which states are increasingly viewing opportunities and challenges through unilateral lenses’¹⁰ the importance of international cooperation to protect and equitably share these dwindling freshwater resources is paramount. Despite progress, the international legal architecture to manage transboundary freshwater ecosystems requires reshaping, reform and much higher levels of implementation. These actions are necessary to resolve conflict and strengthen cooperation, environmental protection and sustainable use of transboundary watercourses and freshwater ecosystems. As states respond to the challenges created by today’s ‘epochal power-shift’ and multiple global crises, ‘some view multilateral institutions as obstacles rather than instruments for promoting their

⁶ UN-Water, *The United Nations World Water Development Report 2020: Water and Climate Change* (UNESCO 2020).

⁷ RW Hofste and others, *Aqueduct 3.0: Updated Decision-Relevant Global Water Risk Indicators* (World Resources Institute 2020).

⁸ UNEP-DHI, *Transboundary River Basins: Status and Trends* (UNEP 2016) 1; UN-Water, *Sustainable Development Goal 6: Synthesis Report on Water and Sanitation* (UN 2018) 81.

⁹ B-O Magsig, *International Water Law and the Quest for Common Security* (Routledge 2015) 4–5.

¹⁰ World Economics Forum, *The Global Risks Report 2020* (WEF 2020) 10.

interests – a view which is rooted in concern that globalized systems and mechanisms of cooperation are not working for them'.¹¹ Much of this discontent is understandable given the gross inequities in access to safe water that persist between and within nations. However, there is also overwhelming evidence that international cooperation through multilateral institutions acts as a check on great power conflict. This book explores the value of the UN Economic Commission for Europe (UNECE) environmental regime, as a long-standing international framework and counterweight to unilateral state action through its impact on international cooperation regarding the protection of transboundary freshwater ecosystems. It also explores areas where the UNECE must refocus and adapt its current trajectory, to put rapidly deteriorating ecosystems and the vulnerable people that depends on them, more firmly at the heart of its framework.

Until recently there was no global convention for managing international watercourses. This changed with the coming into force in 2014 of the UN Convention on the Law of the Non-navigational Uses of International Watercourses (UN Watercourses Convention).¹² In contrast, at the river basin level a multitude of treaties – around 690 – have been established. However, many of these agreements completely miss or provide unclear provisions on key principles and rules of contemporary international water law, and do not provide for public participation, environmental impact assessment or an ecosystem approach. These treaties must be interpreted or amended in line with relevant contemporary international law to fill such gaps. Even the best regulated international river basins are failing to preserve and protect freshwater ecosystems.¹³ Many agreements fail to provide for important elements of the hydrological cycle, or inadequately address critical contemporary issues such as the dramatically escalating impacts from climate change. Furthermore, many agreements do not include all riparian states and are instead mostly bilateral,¹⁴ leaving the outsiders to assert their rights to use and develop the shared watercourses in an ad hoc fashion. Despite the

¹¹ Ibid 10.

¹² As of May 2020, there are thirty-six contracting parties to the Convention.

¹³ EU nations have made poor progress in achieving good potential ecological status in water bodies under Article 4 of the EUWFD – for example, the Netherlands will only achieve good potential ecological status in less than 5 per cent of its water bodies. W Köck and others, *Comparative Law Analysis on Instruments for Sustainable Land Management* (Leibniz-Zentrum für Agrarlandschaftsforschung 2015) 31.

¹⁴ MA Giordano and AT Wolf, 'The World's Freshwater Agreements: Historical Developments and Future Opportunities' in United Nations Environment Programme (ed), *Atlas of International Freshwater Agreements* (UNEP 2002) 7.

proliferation of transboundary water treaties, approximately 60 per cent of international river basins still do not have any formal legal agreement governing how riparian states should manage these watercourses.¹⁵ Customary international law forms an essential component of this international legal architecture, providing the default rules in the absence of agreements and facilitating the reinterpretation of older agreements in accordance with the Vienna Convention on the Law of Treaties (VCLT).¹⁶ With its own set of strengths and weaknesses, the role and contribution of custom to international water law is explored throughout this book.

At the pan-regional level, the UNECE, one of five UN regional commissions,¹⁷ was established to support international cooperation on a broad spectrum of issues within the divergent political and economic contexts of Eastern and Western Europe, and has addressed cooperation regarding environmental protection of transboundary waters since its inception in 1947.¹⁸ Until very recently, the UNECE was the only UN regional commission to develop instruments on environmental law. Countries in the UNECE region depend on transboundary cooperation in the more than 150 transboundary rivers, 50 large lakes and over 170 transboundary aquifers that criss-cross the diverse geographic, political and economic landscapes of this region. Nearly one-third of Europe's 730 million people live in countries already suffering from high levels of water stress, and in the UNECE region 120 million people do not have access to safe drinking water.¹⁹ Despite these enduring problems, the 1992 UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (UNECE Water Convention),²⁰ together with its entourage of binding and non-binding instruments, affords the best developed model of regional cooperation in the field of transboundary water resource use and environmental protection.

This regional regime has significant global aspirations and has recently taken numerous steps to progress its global agenda. This book explores the UNECE's path towards global membership, aware of the legitimacy issues

¹⁵ See UN Watercourses Convention Global Initiative www.unwatercoursesconvention.org/the-convention/introduction/the-unwc-global-initiative.

¹⁶ Article 31 (3) VCLT.

¹⁷ The UNECE was the first UN regional commission followed by the UNECA, UNESCWA, UNESCAP and ECLAC.

¹⁸ The UNECE has fifty-six member states. See <https://unece.org/member-states-and-member-states-representatives>.

¹⁹ United Nations World Water Assessment Programme, *The United Nations World Water Development Report 4: Managing Water under Uncertainty and Risk*, vol 1 (UNESCO 2012) 190.

²⁰ As of March 2021, the Convention's parties include forty-four states, including the EU.

that this raises, as this pan-European framework seeks to make its mark on the rest of the world. In 2012, state parties to the UNECE Water Convention accepted a 2003 amendment that allows for accession by non-UNECE states; it became operational in March 2016.²¹ Three non-UNECE countries have now joined the Convention with the accession of Chad and Senegal in 2018 and Ghana in 2020.²² The most recent meeting of the parties to the Convention was attended by ninety countries, a whopping half of which came from outside the UNECE region. During this meeting, fifteen further non-UNECE countries expressed an interest in acceding to the Convention.²³ These countries represent a diverse geographical and political spectrum from across Africa, Asia, Middle East and Latin America. This book explores what makes the UNECE regime attractive to countries beyond the region. Many of the water-related UNECE environmental instruments have also opened up to global membership. In addition, the UNECE is supporting the development of regionally tailored environmental instruments outside the UNECE region, strongly based on its own instruments. One example is the UNECE's role in supporting the Latin American and Caribbean regional commission in the development of a new pan-regional environmental instrument on public participation.²⁴ Another example is the UNECE's role in supporting the Economic Community of Central African States (ECCAS) with the development of a new regional water treaty in Central Africa.²⁵ With the recent global opening of many of the water-related UNECE environmental instruments and the coming into force of the 1997 UN Watercourses Convention, there is currently a significant shift underway. This sees a transition from the previous scenario of no globally endorsed legally binding instrument for transboundary water management to a scenario of two water-specific instruments and several water-relevant instruments with a potential global mandate. With its

²¹ UNECE (13 September 2003) ECE/MP.WAT/2003/4; UNECE (19 September 2013) ECE/MP.WAT/37/Add.2.

²² Chad acceded to the Water Convention on 22 February 2018, Senegal acceded on 31 August 2018, and Ghana acceded on 22 June 2020. All three parties' accession to the Water Convention entered into force ninety days after their accession dates in accordance with the following decision: UNECE (19 September 2013) ECE/MP.WAT/37/Add.2.

²³ UNECE, *Report of the Meeting of the Parties on Its Eighth Session*, 30 January 2019, ECE/MP.WAT/54 8–9.

²⁴ 2018 Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean (adopted 4 March 2018, not yet in force).

²⁵ EECAS *Projet de Convention pour la prévention et la résolution pacifique des conflits liés à la gestion des ressources en eau partagées de l'Afrique Centrale* (adopted 22 December 2017, not yet in force) (on file with author).

increasingly global membership, its vastly more detailed normative content and most sophisticated institutional framework on transboundary freshwater cooperation of anywhere in the world, it is worthwhile and timely to explore the distinctive role of the UNECE environmental and water instruments for their added value to international law on transboundary freshwater ecosystems.

At the global level there is a multitude of non-water-specific multilateral environmental agreements (MEAs) that are relevant to environmental protection and use of transboundary watercourses and freshwater ecosystems. Key agreements of interest to this analysis include the 1971 Ramsar Convention on Wetlands (Ramsar) and the 1992 Convention on Biological Diversity (CBD). Legal regimes for the protection of international water basins cannot be interpreted and applied in isolation from other norms of international environmental and general international law. This book explores the role of general principles of international law including inter-generational equity, sustainable development and sustainable use, polluter pays and the precautionary principle in relation to interpretation and application of international water law. General principles influence interpretation of either custom or treaty law and their potential application to interpretation of outdated water treaties is important. As Voigt argues, general principles ‘allow international law to grow and respond to contemporary challenges’,²⁶ and can ‘assist law-makers and shape the content of new treaty law and can thereby evolve into conventional rules’.²⁷

The first overarching objective of this book is to understand the contribution of regional approaches to international law on transboundary watercourses and freshwater ecosystems. More specifically this research explores the contribution of the UNECE Water Convention and other relevant UNECE environmental instruments as a structurally distinctive ‘UNECE water and environmental regime’. This regime includes the 1998 UNECE Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus Convention), the 1991 Convention on Environmental Impact Assessment in a Transboundary Context (EIA Convention), the 1992 Convention on the Transboundary Effects of Industrial Accidents (Industrial Accidents Convention), as well as their protocols and non-binding instruments. This book demonstrates how these instruments and their institutions can be interpreted and understood to

²⁶ C Voigt, ‘The Role of General Principles in International Law and Their Relationship to Treaty Law’ (2008) 31 *Retfærd – Nordic Journal of Law and Justice* 3.

²⁷ *Ibid* 12.

form a common framework of rules, principles and approaches that collectively contribute to the coherent clarification and development of international law on transboundary watercourses and freshwater ecosystems. This also includes exploring institutional interaction and coordination between and across the UNECE pan-regional agreements and the role of state and non-state actors in the UNECE regime.

The contribution of the UNECE water and environmental regime to the ‘clarification’ and ‘development’ of international water law refers to the examination of how the UNECE has in some instances helped clarify the normative content of existing rules and principles of international water law, including for example the due diligence rule on transboundary harm. In other cases, the UNECE regime has contributed to the ‘development’ of rules, principles or approaches that are largely absent or very weakly defined in international water law, such as the UNECE’s contribution to public participation and an ecosystem approach.

The second overarching objective of this book is to contribute to a more coherent understanding of the relationship between the UNECE water and environmental regime, international water law, international environmental law and general international law. This inquiry begins by addressing the achievements and shortcomings of international water law (including custom, treaty and case law) regarding environmental protection and equitable use of international watercourses. This analysis continues by clarifying how the rules, principles and concepts of the UNECE environmental instruments and their institutions, which form the common normative framework of the UNECE water and environmental regime (1) add to international water law, international environmental law and general international law (distinguishing whether they do so from a normative and/or institutional perspective); (2) merely reiterate water/environment/general international law; or (3) are less developed than, and thus can/should be interpreted by reference to, water/environment/general international law. This involves examination of the rules and principles of international law, including equitable and reasonable use, the due diligence obligation to prevent significant transboundary harm, the duty to cooperate, the obligation of prior notification and good faith consultation for planned measures with transboundary risk, the duty to exchange information, and transboundary environmental impact assessment. It also explores whether the UNECE water and environmental regime is *lex specialis* in its relationship to the UN Watercourses Convention.

Following this is an examination of how the UNECE regime contributes to international law on an ecosystem approach. This research seeks to identify key elements of an ecosystem approach in international environmental law and international water law. It demonstrates how the ecosystem

approach potentially affects interpretation and implementation of existing rules and principles of international water law towards enhancing ecosystem protection and intra-state equity. Progress has been made within and between selected environmental regimes²⁸ and water²⁹ on what an ecosystem approach means within each of those regimes. However, further research is needed to understand the full potential of this concept in international water law and to strengthen mutually supportive interpretation across different regimes. This research shows how the ecosystem approach itself contributes to mutually supportive interpretation and institutional interaction between water law and international environmental law relevant to environmental protection of freshwater ecosystems.

The simultaneous examination of ‘transboundary watercourses’ and ‘freshwater ecosystems’ throughout this book reflects the evolving language of international water law that also underlines the paradigm shift that is arguably happening in this field. A transformation is underway involving a move away from international water law’s historically predominant focus on issues of watercourse utilisation and prevention of harm (often from pollution) towards a stronger ecosystem oriented approach to environmental protection and equitable use of transboundary river basins and freshwater ecosystems – a theme that is explored as a central preposition of this book.

²⁸ J Chong, ‘Ecosystem-Based Approaches to Climate Change Adaptation: Progress and Challenges’ (2014) 14 *International Environmental Agreements: Politics, Law and Economics* 391–405; EA Kirk, ‘The Ecosystem Approach and the Search for an Objective and Content for the Concept of Holistic Ocean Governance’ (2015) 46 *Ocean Development & International Law* 33–49; R Long, ‘Legal Aspects of Ecosystem-Based Marine Management in Europe’ in A Chircop, M McConnell and S Coffen-Smou (eds), *Ocean Yearbook* (Brill Nijhoff 2012); V de Lucia, ‘Competing Narratives and Complex Genealogies: The Ecosystem Approach in International Environmental Law’ (2015) 27 *Journal of Environmental Law* 91–117; E Morgera, ‘Ecosystem and Precautionary Approaches’ in J Razzaque and E Morgera (eds), *Encyclopedia of Environmental Law: Biodiversity and Nature Protection Law* (Edward Elgar 2017); A Trouwborst, ‘The Precautionary Approach and the Ecosystem Approach in International Law: Differences, Similarities and Interlinkages’ (2009) 18 *Review of European Community & International Environmental Law* 26–37.

²⁹ J Brunnée and SJ Toope, ‘Environmental Security and Freshwater Resources: A Case for International Ecosystem Law’ (1994) 5 *Yearbook of International Environmental Law* 41–76; O McIntyre, ‘The Emergence of an “Ecosystem Approach” to the Protection of International Watercourses under International Law’ (2004) 13 *Review of European Community & International Environmental Law* 1–14; O McIntyre, ‘The Protection of Freshwater Ecosystems Revisited: Towards a Common Understanding of the “Ecosystems Approach” to the Protection of Transboundary Water Resources’ (2014) 23 *Review of European, Comparative & International Environmental Law* 88–95; A Rieu-Clarke and C Spray, ‘Ecosystem Services and International Water Law: Towards a More Effective Determination and Implementation of Equity?’ (2013) 16 *Potchefstroom Electronic Law Journal* 12–65.

Public participation that includes public participation in decision-making processes, access to justice and information, is a fundamental element of good governance and is essential for implementing sustainable development and an equitable process of decision-making³⁰ in international water law. Provisions for public participation are often missing in international water treaties, which weakens accountability, fair and equitable process, and often implementation and compliance with these treaties. This book explores how the common normative framework of the UNECE water and environmental regime contributes to public participation within and beyond the region and identifies critical areas for improvement.

A third overarching objective is to understand how the UNECE regime adds to or interacts (on a normative and an institutional level) with river basin agreements, river basin commissions and European Union (EU) water law. This research explores how the UNECE regime has been interpreted, implemented and complied with at the basin level, and to a lesser degree the national level, in pan-Europe. There is scarce but valuable existing research that is contributing to evolving understanding on how the UNECE Water Convention has been interpreted or implemented in specific river basins.³¹ However, there is almost no existing scholarly research on how the UNECE Water Convention has worked across the spectrum of pan-European basins, and also no systematic analysis on the combined impact of the UNECE environmental conventions across the basins of pan-Europe,³² two contributions this book seeks to make.

The UNECE Water Convention was used as a frame of reference for the drafting of numerous river basin agreements and influenced the development of the EU's 2000 Water Framework Directive (EUWFD).³³ The EU

³⁰ UNECE (2005) ECE/MP.PP/2005/2/Add.5 paras 11, 15.

³¹ H Jekel, 'Integrated Water Resources Management as a Tool to Prevent or Mitigate Transboundary Impact' in A Tanzi and others (eds), *The UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes: Its Contribution to International Water Cooperation* (Brill Nijhoff 2015); B Libert, 'The UNECE Water Convention and the Development of Transboundary Cooperation in the Chu-Talas, Kura, Drin and Dniester River Basins' (2014) 40 *Water International* 168–182; D Ziganshina, *Promoting Transboundary Water Security in the Aral Sea Basin through International Law* (Brill Nijhoff 2014).

³² For research on Central Asia, see UNECE, *Strengthening Water Management and Transboundary Water Cooperation in Central Asia: The Role of UNECE Environmental Conventions* (UNECE 2011).

³³ An objective of the EUWFD is to contribute to the implementation of the UNECE Water Convention and any succeeding agreements on its application (EUWFD Preamble, para 35). Principles and concepts such as sustainable use and IWRM as formulated in the UNECE Water Convention were incorporated into the EUWFD.

itself plays a significant role in contributing to the contemporary development of the legal regime for protection and management of transboundary freshwater resources for EU countries in the UNECE pan-region and also to a lesser extent for non-EU members. Although there is existing research on the contribution of the EU environmental law to national water law in EU member states,³⁴ there is scarce research that engages with the questions of how EU water law (1) adds to (on a normative and an institutional level) the UNECE water and other UNECE environmental treaties, international water law and general international law at the river basin level; or (2) is less detailed than and therefore should be interpreted by reference to the UNECE water and other UNECE environmental treaties, international water law and general international law at the river basin level.³⁵ Existing research on the relationship between EU water law and international river basin agreements and their commissions suggests that normative and institutional interplay is ‘multi-dimensional’ in the sense that ‘there are no distinct layers of governance impacting on each other in a hierarchical manner’³⁶ and instead ‘entails various legal interlinkages between its various dimensions, which mutually influence one another’.³⁷ This research ascertains the UNECE regime’s contribution to coherent normative clarification, development and institutional coordination in the basins and countries of pan-Europe. This will lead to clarification regarding the hurdles for

³⁴ M Alberton and F Palermo (eds), *Environmental Protection in Multi-layered Systems: Comparative Lessons from the Water Sector* (Martinus Nijhoff 2012); SM Hendry, ‘River Basin Management and the Water Framework Directive: In Need of a Little Help?’ (2008) 19 *Journal of Water Law* 150–156; M Lee, ‘Law and Governance of Water Protection Policy’ in J Scott (ed), *Environmental Protection: European Law and Governance* (Oxford University Press 2009); M van Rijswijk and A Keesen, ‘The EU Approach for Integrated Water Resource Management: Transposing the EU Water Framework Directive within a National Context – Key Insights from Experience’ in A Rieu-Clarke, A Allan and S Hendry (eds), *Routledge Handbook of Water Law and Policy* (Routledge 2017).

³⁵ G Baranyai, ‘The Water Convention and the European Union’ in A Tanzi and others (eds), *The UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes: Its Contribution to International Cooperation* (Brill Nijhoff 2015); E Hey, ‘Multi-dimensional Public Governance Arrangements for the Protection of the Transboundary Aquatic Environment in the European Union: The Changing Interplay between European and Public International Law’ (2009) 6 *International Organizations Law Review* 191–223; G Reichert, ‘Transboundary Water Cooperation in Europe: A Successful Multidimensional Regime?’ (2016) 1 *Brill Research Perspectives in International Water Law* 1–111.

³⁶ Hey, ‘Multi-dimensional Public Governance Arrangements for the Protection of the Transboundary Aquatic Environment in the European Union: The Changing Interplay between European and Public International Law’ 3.

³⁷ Reichert, ‘Transboundary Water Cooperation in Europe: A Successful Multidimensional Regime?’ 6.