International law and the sustainable governance of shared natural resources: A principled approach

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Introduction

This dissertation consists of five chapters. Four chapters have been published in peer-reviewed international law journals[1] and one is a published book chapter subjected to review by the book editors. All five chapters form together a coherent whole (this thesis) and are at the same time stand-alone pieces, each with their individual and independent *raison d'être*. In this introduction, I describe the general background and context in which the chapters, seen as a whole, position themselves. I explain the specific background and context relevant to each particular chapter in their respective introductory sections.

The term 'shared natural resources' refers in the narrow sense to resources shared by a limited number of states, also known as transboundary natural resources, including international watercourses, aquifers, oil and gas reservoirs, and forests. In a wider sense, the term also includes global commons, such as biological diversity, the atmosphere and high seas fisheries.[2] Transboundary resources form a single unit but are distributed over the territory of two or more states. The first two chapters focus on transboundary freshwater resources, underground and surface waters respectively. Global resources are those beyond the limits of national jurisdiction. Chapter 3 and Chapter 4 focus on the atmosphere, addressing the problems of atmospheric degradation and climate change respectively. Chapter 5 focuses on marine resources beyond national jurisdiction or 'ocean global commons'. In this thesis, the term 'shared natural resources' is used in the broad sense referring to both transboundary and global resources. This terminological choice is based on three reasons. First, the most prominent governance problems identified in this thesis are applicable to all those natural resources examined. Second, the 'inherent and fundamental interdependence of the world environment'[3] warrants searching for common solutions to common governance problems. In this regard, it has been submitted that fresh water 'is no longer just an aggregated sum of local events, but rather it is becoming a resource of global concern and with poten-

1 See publication status per chapter in section 7 of this introduction.

2 N. Schrijver, *Development without Destruction: The UN and Global Resource Management* (2010 Indiana University Press), at 5.

3 P. Allott, *Eunomia: A New Order for a New World* (Oxford: Oxford University Press, 1990), at 359, para. 17.52.

tially global implications'.[4] Third, the principles discerned and assessed in this thesis could provide solutions to those common problems promoting coherence of state practice. In addition, the term 'shared natural resource governance' refers to the norms, institutions, and processes that determine how state sovereignty over shared natural resources is exercised, how decisions are made, and how non-state actors have access to, participate in, and are affected by the management of said resources.[5] The principles examined in this dissertation promote the sustainable governance of shared resources whenever they support norms, institutions and processes that conserve the ecological balance by avoiding resource degradation or depletion.

I selected natural resources that are significant to the world's population, that have the potential to be a source of conflict (between the states sharing the resource and/or between the states and the populations affected) and whose governance presents problematic aspects. This PhD project was motivated by the research on transboundary freshwater resources I have conducted previously.[6] I intended to explore in my doctoral research the questions I was left with after concluding my previous research, including the question I considered to be the most intriguing one: how to reconcile the exercise of permanent sovereignty over natural resources and the equitable use and protection of resources that are shared by two or more states?

Consequently, Chapter 1 discusses the principle of sovereignty in the context of transboundary aquifer governance. This was a topical discussion at the time of the consideration by the United Nations General Assembly (UNGA) of the UN International Law Commission (ILC)'s Draft Articles on the Law of Transboundary Aquifers and the adoption of the Guaraní Aquifer Agreement in 2010 for the governance of one of the largest reservoirs of freshwater on Earth.[7] In addition, Chapter 2 discusses a topic frequently encountered in law, court decisions and literature but which appeared to be

4 E. Brown Weiss, *International Law for a Water-Scarce World* (Martinus Nijhoff Publishers 2013), at 67.

5 Adapted from the definition of natural resource governance in IUCN, *Natural Resource Governance Framework Assessment Guide: Learning for improved natural resource governance* (2016) <https://www.iucn.org/sites/dev/files/content/documents/the_nrgf_assessment_guide_working_paper.pdf> at 1.

6 LLM thesis entitled 'Recent legal and political changes in the Nile Region and their implications for equitable water sharing in the Nile River Basin' (Leiden University). In addition to my LLM thesis, joint publication with professor Yongmin Bian from the University of International Business and Economics in Beijing, China. N. Sanchez and Y. Bian, 'China's Obligation to Conduct Transboundary Environmental Impact Assessment (TEIA) in Utilizing Its Shared Water Resources', 55 Natural Resources Journal 1 (2014) 105–125.

7 Acuerdo sobre el Acuífero Guaraní (Agreement on the Guarani Aquifer) between Argentina, Brazil, Paraguay and Uruguay, adopted 2 August 2010 in San Juan, Argentina, not in force. See F Sindico, R Hirata and A Manganelli, 'The Guarani Aquifer System: From a Beacon of hope to a question mark in the governance of transboundary aquifers', 20 *Journal of Hydrology: Regional Studies* (2018) 49-59, which traces the trajectory of transboundary cooperation for the Guarani Aquifer System.

insufficiently elaborated: the legal nature of the principle of community of interests and its role in the exercise of sovereignty over shared water resources. Chapters 3-5 address global natural resources, namely the atmosphere (Chapters 3 and 4) and marine resources in areas beyond the limits of national jurisdiction (Chapter 5).

Chapter 3 addresses the principle of common concern of humankind and its application to atmospheric governance with the intention to clarify what the principle entails, including with regard to its legal consequences, and establish whether atmospheric degradation is an issue of common concern. Chapter 4 addresses the principle of public participation in the context of climate change governance in search of ways to enhance observer participation in international climate change decision-making processes. Finally, Chapter 5 addresses the principle of sustainable development in the context of high seas fisheries and deep seabed minerals with the purpose of establishing whether the Sustainable Development Goals could influence and thus strengthen the institutions governing these natural resources. The specific research problems identified concerning the selected resources and principles are presented in section 2 of this introduction.

1 Research background and context

This dissertation discusses principles of international law applicable to the governance of natural resources that are shared by two or more states. International rules for the governance of shared natural resources emerged initially in the context of international watercourses.[8] States sharing transboundary rivers developed forms of cooperation that gradually distanced them from theories and practices of absolute sovereignty.[9] At first, water agreements focused on allocating the economic benefits derived from water uses such as

8 For an early in-depth analysis on the utilization of shared freshwater resources see X. Fuentes, 'The Criteria for the Equitable Utilization of International Rivers' 67 *British Yearbook of International Law* 1 (1996) 337–412.

9 Two absolute sovereignty theories have been developed in the context of international watercourses: absolute territorial sovereignty and absolute territorial integrity. The former, also known as the 'Harmon Doctrine', is used by upper riparian States to claim the right to do whatever they choose with the water regardless of its effect on lower riparians. The latter is invoked by downstream States to claim that upstream States can do nothing that affects the quantity or quality of the water that flows down the river. See N. Sanchez and J. Gupta, 'Recent Changes in the Nile Region May Create an Opportunity for a More Equitable Sharing of the Nile River Waters', 58:3 *Netherlands International Law Review* (2011), 363, at 378. For a discussion on the evolving nature of national sovereignty in international water law, with a focus on China, see P. Wouters, 'The Yin and Yang of International Water Law: China's Transboundary Water Practice and the Changing Contours of State Sovereignty', 23:1 *Review of European, Comparative and International Environmental Law* (2014), 67.

navigation, hydropower generation, and agricultural and industrial uses.[10] Later on, rules for the environmental protection of shared water resources began to appear.[11] Although states sharing international watercourses have regulated their use through treaties for centuries,[12] it was only after the rise of international environmental awareness in the early 1970s, marked by the adoption of the 1972 Declaration of the United Nations Conference on the Human Environment (Stockholm Declaration), that the international community began articulating principles of general application to the use and protection of shared natural resources.

In 1973, the UNGA Resolution 3129 (XXVIII) considered it necessary to ensure effective cooperation between states through 'the establishment of adequate international standards for the conservation and harmonious exploitation of natural resources common to two or more States'.[13] It also considered that cooperation between states sharing natural resources and interested in their exploitation 'must be developed on the basis of a system of information and prior consultation'.[14] The UNGA requested the Governing Council of the United Nations Environment Programme (UNEP) to report on measures adopted for implementing resolution 3129 (XXVIII).[15] In 1978, the Inter-governmental Working Group of Experts on Natural Resources Shared by Two or More States, established by the UNEP Governing Council in fulfilment of said request, issued a report containing the 'Draft Principles of Conduct in the Field of the Environment for the Guidance of States in the Conservation and Harmonious Utilization of Natural Resources Shared by Two or More States' (1978 UNEP Draft Principles).[16]

The UNGA took note of the 1978 UNEP Draft Principles[17] and requested all states to use them as guidelines and recommendations in the formulation

10 See, e.g., Convention on the Regime of Navigable Waterways of International Concern (Barcelona, 20 April 1921; in force 31 October 1922); Convention Relating to the Development of Hydraulic Power Affecting More Than One State (Geneva, 9 December 1923; in force 30 June 1925); Declaration of Montevideo Concerning the Agricultural and Industrial Use of International Rivers, Inter-American Conference 1933, in: Yearbook of the International Law Commission, Volume II, Part Two (UN Doc. A/CN.4/SER.A/1974/Add.l, 1974), at 58.

11 See E. Brown Weiss, 'The Evolution of International Water Law', 331 *Recueil de Cours* (2007), at 199–210.

12 See, e.g., S.C. McCaffrey, *The Law of International Watercourses* (Oxford University Press, 2007), 58–65.

13 Cooperation in the Field of the Environment Concerning Natural Resources Shared by Two or More States, UN Doc Res A/RES/3129(XXVIII), 13 December 1973, para. 1.

14 Ibid. para. 2.

15 Ibid. para. 3.

16 UNEP Draft Principles of Conduct in the Field of the Environment for the Guidance of States in the Conservation and Harmonious Utilization of Natural Resources Shared by Two or More States, 17 I.L.M. 1091 (1978).

17 Cooperation in the Field of the Environment Concerning Resources Shared by Two or More States, UN Doc Res A/RES/34/186, 18 December 1979, para. 2.

of bilateral or multilateral conventions regarding natural resources shared by two or more states.[18] Most of the draft principles are now part of conventional and/or customary international law applicable to shared natural resources including the principles of international cooperation,[19] equitable use,[20] no harm,[21] transboundary environmental impact assessment,[22] and information exchange, consultations, and prior notification of planned measures that could have adverse effects on the environment.[23] In the meantime, the UNGA adopted the 1974 Resolution 3281 (XXIX) 'Charter of Economic Rights and Duties of States'[24] which contains a provision referring specifically to shared natural resources: 'In the exploitation of natural resources shared by two or more countries, each State must co-operate on the basis of a system of information and prior consultations to achieve optimum use of such resources without causing damage to the legitimate interest of others.'[25]

Legally binding international agreements on shared natural resources followed these initial soft law elaborations of general rules and principles in the subsequent decades including, for instance, the 1982 United Nations Convention on the Law of the Sea (UNCLOS), the 1992 United Nations Framework Convention on Climate Change (UNFCCC) and the 1997 Convention on the Law of the Non-navigational Uses of International Watercourses (UNWC). In addition, several events relevant to the governance of the resources examined took place during the course of this study, namely the entry into force of the UNWC (2014); the adoption and entry into force of the Paris Agreement under the UNFCCC (2015 and 2016 respectively); the adoption of the 2030 Agenda for Sustainable Development and the accompanying Sustainable Development Goals (2015); the initiation by the International Seabed Authority of a process to develop regulations for the exploitation of mineral resources in the seabed beyond the limits of national jurisdiction (the so-called Area) according to UNCLOS (since 2014, still in progress);[26] the consideration of the ILC Draft Articles on the Law of Transboundary Aquifers by the UNGA (since 2011, still in progress); and the inclusion of the topic 'protection of the atmosphere' in the programme of work of the ILC (2013, still in progress). These events and the related legal and soft law instruments form part of the general context of this dissertation.

18 Ibid. para. 3.
19 N. 16 above, Principles 1 and 2.
20 Ibid. Principle 1.
21 Ibid. Principle 3.
22 Ibid. Principle 4.
23 Ibid. Principle 5–7.
24 Charter on the Economic Rights and Duties of States, UN Doc Res 3281(XXIX), 12 December 1974, ('CERDS').
25 Ibid., Article 3.
26 See, e.g., L. Sun, *International Environmental Obligations and Liabilities in Deep Seabed Mining* (Meijers Instituut, Leiden University, 2018).

International environmental agreements and soft law instruments stress international cooperation as a fundamental principle in the governance of natural resources shared by two or more states. However, tensions between national interests and the common interests of the states sharing natural resources can make it difficult for states to cooperate. Hindered cooperation can lead to problems such as protracted conflict (e.g. between riparians of the Nile River), slow ratification processes of joint management agreements (e.g. Guaraní Aquifer Agreement) or judicial battles (e.g. several cases before the International Court of Justice concern shared resources including landmark cases *Gabčíkovo-Nagymaros* and *Pulp Mills*). Meanwhile, the sustainable management of the resource in question and the human rights of the populations involved can be affected. In the next section, I describe the specific problems the present thesis deals with.

2 Problem statement

The most prominent problems concerning shared resource governance that I identified are: (1) the reconcilement of the exercise of permanent sovereignty over natural resources and the equitable use and protection of resources that are shared by two or more states; (2) the insufficient legal conceptualization of the common interests and concerns that exist between states sharing natural resources; and (3) the inclusion of non-state actors in governing processes. The aim of this dissertation is to discern, examine and evaluate principles of international law that could address these problems. Two reasons justify this aim.

First, principles could promote coherence in state practice. The 1996 report of a UNEP expert group described the role of principles as 'providing coherence and consistency to international environmental law; guiding governments in negotiating future international instruments; providing a framework for the interpretation and application of domestic environmental laws and policies; and assisting the integration of international environmental law with other international law fields.'[27] Principles of general application, such as permanent sovereignty over natural resources, the responsibility not to cause transboundary environmental damage, and the principles of cooperation and sustainable development, 'provide a framework that shapes the structure and development of international environmental law'.[28] Principles 'embody legal standards, but the standards they contain are more general than commitments and do

27 Final Report of the Expert Group Workshop on International Environmental Law Aiming at Sustainable Development, Washington DC, 30 September-4 October 1996, UN Doc UNEP/IEL/WS/3/2 (4 October 1996) Annex I at para. 29.

28 P. Sands and J. Peel, *Principles of International Environmental Law* (CUP 2018, 4th ed.) at 392.

not specify particular actions'.[29] Principles may influence 'the interpretation, application, and development of treaties in accordance with Article 31(3) of the 1969 of the Vienna Convention on the Law of Treaties'[30] and derive their authority and legitimacy from the endorsement by states.[31]

Following the 1978 UNEP Draft Principles of Conduct in the Field of the Environment for the Guidance of States in the Conservation and Harmonious Utilization of Natural Resources Shared by Two or More States' (1978 UNEP Draft Principles),[32] shared natural resources began to be regulated by resource-specific legal regimes creating separate self-contained sets of rules. State practice through treaty bodies established for the governance of particular resources (e.g. UNFCCC treaty bodies) is not necessarily coherent with state practice through bodies governing other resources (e.g., the International Seabed Authority, river commissions). One example of this situation relates to my experience during COP22 in Marrakech. While attending negotiations, I observed that some Latin American delegations held positions that were less favourable to public participation than those the same delegations held at the then parallel negotiation process of the Escazú Agreement.[33] Despite fragmented regulation and implementation in shared resource governance, two of the three prominent problems identified in this thesis -the exercise of permanent sovereignty over shared resources and the inclusion of non-state actors-[34] occur in the governance of all resources examined. This suggests that the same discerned principles could apply to address those two problems. The discerned principles could serve as the initial foundation for a set of principles on sustainable shared resource governance applicable to all types. Such a set of principles could offer a general framework to guide states in an integrated

29 D. Bodansky, 'The United Nations Framework Convention on Climate Change: A Commentary' 18 *Yale Journal of International Law* 2 (1993), at 501.

30 P. Birnie, A. Boyle and C. Redgwell, *International Law & the Environment*, (OUP 2009, 3rd ed.) at 28.

31 Ibid.

32 N. 16 above.

33 Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean (adopted 4 March 2018, open for signature on 27 September 2018, not in force) available at https://treaties.un.org/doc/Treaties/2018/03/20180312%2003-04%20PM/CTC-XXVII-18.pdf. See also N. Sanchez, 'What Latin America and the Caribbean could do to strengthen public participation in the climate change regime', an opinion piece on channeling the regional consensus on public participation reached in the context of the Escazú Agreement to global climate negotiations < http://www.iei.uchile.cl/noticias/strengthen-public-participation-in-the-climate-change-regime>

34 The remaining identified problem -the legal conceptualization of common interests and concerns- appears to be more resource specific. Generally, the principle of community of interests applies to transboundary freshwater resources while the principle of common concern of humankind applies to the natural global commons. However, it has already been argued that the availability and use of freshwater should be recognized as a common concern of humankind, see Brown Weiss (n. 4) at 70-77.

way regarding the equitable utilization and environmental protection of their shared resources and promote coherence in state practice.

Second, the 1978 UNEP Draft Principles remain to be the most influential effort to provide principles applicable to all shared natural resources. While the Draft Principles stress international cooperation as a principle *sine qua non* in shared resource governance and refer to the no-harm rule, equitable use, environmental impact assessment and information exchange, consultations and prior notification between states, they do not address the exercise of sovereignty over shared resources, community of interests and common concerns among states, or non-state actor participation in the governance of shared natural resources. Building on the 1978 UNEP Draft Principles, the principles discerned in this dissertation reflect developments in international environmental law particularly since the 1990s and current trends relating to shared resource governance.

Each chapter in this dissertation identifies a specific problem or gap in the knowledge related to the three most prominent problems mentioned above and advances an original and cogent argument to address it. The problems identified in each chapter are:

Chapter 1: The recognition of PSNR over transboundary aquifers is controversial. The main objections are that the exercise of PSNR over transboundary aquifers might discourage transboundary cooperation and be insufficient to protect the environment of shared freshwater resources.

Chapter 2: The legal nature of community of interests and its role in the exercise of sovereignty over shared water resources remain unclear.

Chapter 3: The International Law Commission removed from its Draft Guidelines on the Protection of the Atmosphere the concept that the degradation of atmospheric conditions is a 'common concern of humankind' because of objections by ILC members concerning the insufficient clarity of the concept of common concern of humankind and its legal consequences.

Chapter 4: Parties to the UNFCCC acknowledged the need to further enhance the effective engagement of observer organizations as the UNFCCC process moves towards implementation of the Paris Agreement. However, climate law does not stipulate *how* parties are to ensure effective observer participation.

Chapter 5: While binding and non-binding international instruments provide for and decisively encourage public participation in environmental governance, the existing conception of ocean commons governance primarily involves states and industry organizations and restricts access to civil society.

3 RESEARCH QUESTIONS

Based on the problems identified, this dissertation deals with the following general research questions:

> *What principles of international law promote the reconcilement of the exercise of permanent sovereignty over natural resources and the common interests of states sharing natural resources? How are such common interests conceptualized in international law? (Chapters 1-3)*
>
> *What principles of international law promote the inclusion of non-state actors in the governance of shared natural resources? (Chapters 4 and 5)*

The general research questions are divided into the following sets of sub-questions per chapter:

Chapter 1: Is the sovereignty exercised over natural resources under the exclusive jurisdiction of a state different from the sovereignty exercised over resources that are shared by two or more states? If that is the case, what distinguishes one from the other? What is the usefulness of differentiating between them from the perspective of transboundary cooperation and environmental protection?

Chapter 2: What is the legal nature of the principle of community of interests? How does community of interests relate to the exercise of sovereignty over shared water resources? Does international water law show any trends indicating that the emerging principle of community of interests is evolving in a certain direction?

Chapter 3: What does the principle of common concern of humankind entail according to international law? What are the legal consequences of the principle? Is atmospheric degradation a common concern of humankind?

Chapter 4: What characterizes observer participation in international climate change decision-making processes? What does the acknowledgement in the Paris Agreement that parties should comply with human rights obligations mean? What does the human right to participate in public affairs entail? Does it encompass decision-making processes at the international level? How could the right to participate in public affairs complement climate law and possibly contribute to enhancing observer participation in international climate change decision-making?

Chapter 5: What is the state of affairs regarding the use and protection of high seas fisheries and deep seabed minerals? What is the situation of public participation in institutions governing these resources and the legal framework

applicable thereto? What role for public participation in the Sustainable Development Goals (SDGs)? What is the legal nature of the SDGs? In what way could SDG 14 (sustainable use of marine resources) and SDG 16 (building strong institutions at all levels) influence institutions governing high seas fisheries and deep seabed minerals for sustainable resource governance?

Each chapter answers the respective set of sub-questions focusing on one international legal principle relevant to the governance of shared natural resources, namely sovereignty (Chapter 1), community of interests (Chapter 2), common concern of humankind (Chapter 3), public participation (Chapter 4) and sustainable development (Chapter 5). In addition to the principle in focus, the chapters pay attention to related principles applicable to the governance of the shared resource being discussed.[35] The concluding chapter highlights the findings in chapters 1-5 and the answers to the research questions, discusses the interrelationship between the discerned principles and other principles of international law – as well as that of the discerned principles among themselves, and evaluates the outlook for the governance of shared waters, the atmosphere and the ocean commons based on the discerned principles.

4 Methodology

This dissertation is primarily based on a classical legal research methodology. Where necessary and possible, I combined primary and secondary source analysis with a certain level of practical exposure or 'in situ observation' in order to fully understand the issues at hand and answer the research questions mindful of the practical implications of my propositions. This dissertation is thus also generally informed by the experiences I describe below. In this section I explain first the general methodological approach and subsequently the methodology used per chapter.

The general methodological approach consists of a thorough examination of the applicable treaties – whether universal, regional or bilateral – , their level of acceptance and ratification record and their subsequent interpretation by international courts and tribunals. I also analysed relevant decisions adopted

35 Besides sovereignty, Chapter 1 discusses the principle of transboundary cooperation. It also touches upon the principles of equitable utilization, no harm, information exchange, prior notification of planned measures and consultation.
Besides community of interests, Chapter 2 discusses the principles of sovereignty, equitable and reasonable use and transboundary cooperation.
Besides common concern of humankind, Chapter 3 discusses the principle of international cooperation.
Chapter 4 brings forward a human rights approach to public participation in climate change decision-making, implying the principle of respect for human rights.
Besides sustainable development, Chapter 5 discusses the principle of public participation.

by institutions in charge of overseeing the implementation of specific international treaties such as those by the International Seabed Authority and the Human Rights Committee. In addition, wherever relevant, the chapters discuss customary international law and general principles of international law. I also examined applicable soft law instruments – i.e. non-legally binding instruments used in contemporary international relations[36] – , some of which play a significant role in shared resource governance. These include intergovernmental conference declarations such as the 1992 Rio Declaration on Environment and Development; UNGA resolutions such as the one adopting the 2030 Agenda for Sustainable Development; and guidelines and recommendations such as the 1978 UNEP Draft Principles on shared resources and the ILC Draft Articles on the Law of Transboundary Aquifers. Present-day international law 'is often the product of a complex and evolving interplay of instruments, both binding and non-binding.'[37] Soft law may not be legally binding in the strict sense of the word, but some of the non-binding instruments studied in this thesis are deeply rooted in international law and call on states to fulfil their legally binding obligations. Examples abound and include the 1962 Declaration on PSNR, the 1978 UNEP Draft Principles, the 1992 Rio Declaration on Environment and Development, the UNGA Declaration on Human Rights Defenders and the 2030 Agenda for Sustainable Development. Such interaction results in instruments that are non-binding yet influential in national and international law and policy. As for secondary sources, each chapter reviews legal academic scholarship on the issues examined as well as scholarship from other disciplines where relevant, including natural resource science, natural resource governance and global environmental politics.

With regard to practical exposure, Chapters 1 and 3 discuss the work of the International Law Commission (ILC). In addition to a rigorous examination of ILC documents, the chapters are generally informed by my experience as research assistant to ILC member Professor Shinya Murase. In this role I was able to attend part of the ILC's sixty-fifth session (2013) and sixty-eighth session (2016). I had the opportunity to hold informal conversations concerning my research questions with several ILC members, academics at the University of Geneva Faculty of Law, and participants of the International Law Seminar (summer of 2013).[38] This contributed to developing my own opinion about the issues discussed in Chapters 1 and 3. Similarly, Chapter 4 is generally informed by my experience as member of the Chilean delegation to COP 22 in Marrakech (7-18 November 2016). I was able to observe and experience first-hand climate change negotiations and to hold informal conversations about my research questions with government officials and members of civil society

36 A. Boyle and C. Chinkin, *The Making of International Law* (Oxford 2007), at 212.
37 Ibid. 210.
38 The International Law Seminar is organised by the UN Office at Geneva (UNOG) during the annual session of the ILC.

organizations. This dissertation is also generally informed by the experience I gained through presenting papers at seminars and conferences throughout the course of the study.[39]

The next section provides a summary of each chapter followed by the specific methodological approach employed.

5 Outline and methodological approach per chapter

Each chapter in this dissertation identifies a problem or 'knowledge gap' concerning the principle in focus and its application to a particular shared natural resource. Subsequently, each chapter puts forward an original and cogent argument to address the problem identified. Finally, each chapter suggests ways to strengthen the role of the principle under review in the governance of the shared resource in question. All chapters are kept in the same way as they appear in their respective publications except for a few minor revisions and updates I considered necessary.

Chapter 1 on Sovereignty over natural resources

Chapter 1 is entitled 'Differentiating between sovereignty over exclusive and shared resources in the light of future discussions on the law of transboundary aquifers'.[40] It identifies the problem that the recognition of PSNR over transboundary aquifers is controversial primarily because PSNR might discourage transboundary cooperation and be insufficient to protect the environment of shared freshwater resources. The chapter argues that PSNR and 'sovereignty over shared natural resources' (SSNR) are distinct from each other. First, it presents the controversy caused by applying the principle of PSNR to resources that are shared by two or more states. It then analyses relevant international instruments in order to identify characteristics that distinguish sovereignty over exclusive resources from sovereignty over shared resources. This compared analysis finds three main differences. First, PSNR is exercised exclusively by one state over the natural resources located entirely within its national

39 Young Scholars Forum, International Conference on Energy, Water & Climate Change/ Building Bridges between Europe, the Middle East and North Africa (EWACC) 10-12 December 2012, Nicosia, Cyprus; Strathclyde Postgraduate Colloquium on Environmental Law and Governance, University of Strathclyde, 6 June 2013, Glasgow, Scotland; Latin-American Society of International Law, Annual Meeting of the Interest Group on International Courts and Tribunals, 15 August 2015, Rio de Janeiro, Brazil; International Conference on Global Public Goods, Global Commons and Democracy: Interdisciplinary Perspectives, Leuven Centre for Global Governance Studies, 22–23 February 2016, Leuven, Belgium.

40 Peer-reviewed journal article originally published in 24:1 *Review of European Comparative & International Environmental Law (RECIEL)* (2015) 4-15.

boundaries and in areas under its exclusive economic jurisdiction (exclusive economic zone and continental shelf), while SSNR is exercised jointly by two or more states over resources distributed over their respective territories and where utilization by one state affects utilization by the other(s). Second, the original purpose of PSNR was to ensure political and economic self-determination, while that of SSNR was to regulate the benefit sharing from, and the environmental protection of, shared natural resources. Third, the essential and characteristic right under PSNR to freely dispose of natural resources does not apply to resources that are shared, while the essential and characteristic duty under SSNR to cooperate does not apply to resources under exclusive jurisdiction. Based on these findings, the chapter concludes that PSNR and SSNR are conceptually different, constituting distinct legal regimes. The chapter suggests that understanding SSNR as a set of rules different from those of PSNR could promote that shared resource governance continues to be increasingly focused on cooperation and environmental protection, and less and less oriented towards satisfying state's territorial interests. In addition, increased awareness of the differences between sovereignty over exclusive and shared resources could facilitate negotiations, particularly in the light of the ongoing discussions on the law of transboundary aquifers at the UNGA.

Methodology

- Detailed examination of the *travaux préparatoires* of the Draft Articles on the Law of Transboundary Aquifers and other relevant instruments[41] in order to identify and understand the reasons why recognizing PSNR with respect to transboundary aquifers – and shared water resources in general- causes controversy within UN organs.
- Study of legal academic scholarship in order to identify and understand the reasons why recognizing PSNR with respect to transboundary aquifers gives rise to disagreement among international water law scholars.
- Analysis of UNGA resolutions concerning PSNR[42] in order to identify PSNR's distinctive characteristics.
- Analysis of instruments concerning shared natural resources[43] in order

41 The Charter of Economic Rights and Duties of States (CERDS), the UNEP Draft Principles, and the UNWC.

42 UNGA Resolutions 523 (VI), 626 (VII), 1515 (XV), 1803 (XVII), 2158 (XXI), 3171 (XXVIII), 3201 (S-VI), CERDS.

43 UNGA Resolutions 2995 (XXVII), 3129 (XXVIII), 34/186, CERDS. Other soft law instruments: UNEP Draft Principles, ILC Draft Articles on the Law of Transboundary Aquifers. Treaties: UNWC; Convention on the Protection and Use of Transboundary Watercourses and International Lakes, Agreement on Cooperation for the Sustainable Development of the Mekong River Basin; Revised Protocol on Shared Watercourses in the Southern African Development Community; Indus Waters Treaty; Protocol for Sustainable Development of Lake Victoria Basin, East African Community; 1995 Protocol on Shared Watercourses in the Southern African Development Community (SADC) Region. I also studied the following

to determine whether the sovereignty exercised over shared resources – 'sovereignty over shared natural resources (SSNR)' – is different from PSNR and, if that is the case, identify SSNR's distinctive characteristics.
- Compared analysis of the identified characteristics in order to establish that PSNR and SSNR are conceptually different and constitute distinct legal regimes.
- Evaluation of the usefulness of differentiating between PSNR and SSNR from the perspective of transboundary cooperation and environmental protection.

Chapter 2 on Community of Interests

Chapter 2 is entitled 'Community of interests: furthering the ecosystems approach and the rights of riparian populations'.[44] It identifies the problem that the legal nature of community of interests and its role in the exercise of sovereignty over shared water resources remain unclear. Chapter 2 examines treaties that expressly recognize 'common interests' or a 'community of interests' between riparian states in order to ascertain the legal conceptualization of community of interests, determine its foundational elements, and identify trends indicating the general direction in which community of interests is evolving. Based on this analysis, the chapter argues that community of interests is a principle that, when provided for in a treaty or subsequently interpreted as such, governs riparian states' relations concerning the shared water resources. Its basic legal features are: (1) the unity of the shared drainage basin; (2) riparian solidarity and cooperation; and (3) the harmonization of riparians' national laws and policies on water governance. In addition, Chapter 2 identified two trends shedding light on the general direction in which the emerging principle of community of interests is evolving: a shift from the traditional approach to environmental protection based on the no-harm rule to the ecosystems approach, and the inclusion of the basin populations as subjects of rights and duties concerning shared drainage basins. Chapter 2 suggests that community of interests promotes a shift from protecting primarily state interests to protecting the environment – irrespective of whether harm is caused to other riparian states – and the rights of the riparian populations. Community of interests thus contributes to harmonising the pivotal dimensions of state sovereignty, environmental protection and human rights.

judicial decisions: River Oder, Gabčíkovo-Nagymaros Project, Pulp Mills on the River Uruguay and Rhine Clorydes; and the for Stockholm Declaration contextual background.

44 Peer-reviewed journal article originally published in 24:2 *The Journal of International Water Law* (2015) 62-72.

Methodology

- Study of legal academic scholarship in order to identify gaps in the knowledge concerning the principle of community of interests.
- Study of a range of secondary sources[45] in order to identify water treaties that expressly recognise a 'community of interests' or 'common interests' between the riparian states.
- Detailed examination of the identified water treaties[46] in order to ascertain the legal conceptualization of community of interests.
- Analysis of said water treaties and relevant judicial decisions[47] in order to identify the foundational elements of community of interests.
- Analysis of said water treaties and judicial decisions in order to identify trends indicating the general direction in which community of interests is evolving.

Chapter 3 on Common concern of humankind

Chapter 3 is entitled 'Why "common concern of humankind" should return to the work of the International Law Commission on the atmosphere'.[48] It identifies the problem that the ILC removed from its Draft Guidelines on the Protection of the Atmosphere (Draft Guidelines) the concept that the degradation of atmospheric conditions is a 'common concern of humankind'. This decision was the result of objections by ILC members concerning the insufficient clarity of the concept of common concern of humankind and its legal con-

45 Legal academic scholarship (treatises, law journals) and databases (International Water Law Project <https://www.internationalwaterlaw.org/>; International Freshwater Treaties Database <https://transboundarywaters.science.oregonstate.edu/content/international-freshwater-treaties-database>; FAO water treaties database < http://www.fao.org/legal/databases/water-treaties/en/>) and my own personal database created during my previous academic work on international water law issues.

46 The water agreements examined in Chapter 2 are: the 1950 Treaty between Canada and the United States concerning the Diversion of the Niagara River, the 1960 Indus Waters Treaty, the 1992 Agreement between Namibia and South Africa on the Establishment of a Permanent Water Commission, the 1995 Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin, the 1995 Protocol on Shared Watercourse Systems in the Southern African Development Community (SADC) Region and the 2000 Revised SADC Protocol, the 2000 Agreement between Botswana, Lesotho, Namibia and South Africa on the Establishment of the Orange-Senqu River Commission (ORASECOM), the 2002 Water Charter of the Senegal River, the 2003 Protocol for Sustainable Development of Lake Victoria Basin, the 2008 Water Charter of the River Niger and the 2012 Water Charter of the Lake Chad Basin.

47 The judicial decisions examined in Chapter 2 are: *River Oder* case, Lake Lanoux arbitral award, *Gabčíkovo-Nagymaros, Indus Waters Kishenganga* (2011), 2004 *Rhine Chlorides* arbitration (Netherlands/France), 2010 *Pulp Mills* case.

48 Peer-reviewed journal article originally published in 29 *Georgetown Environmental Law Review* (2017) 131-151.

sequences. The chapter argues that atmospheric degradation is in fact a common concern of humankind and suggests reinstating the principle in the Draft Guidelines. Two reasons support this argument. First, several international instruments recognize issues of common concern as being those which affect human health and the environment and which require the concerted actions of all states to be effectively addressed. Atmospheric degradation shares these basic characteristics and is therefore a common concern of humankind. Second, short-lived climate pollutants such as black carbon both degrade the atmosphere and cause climate change. Since the UN Framework Convention on Climate Change recognizes climate change as an issue of common concern, atmospheric degradation necessarily also falls within this category. The chapter suggests that returning common concern to the Draft Guidelines would allow the ILC the opportunity to contribute to elaborating on the meaning and scope of this rather controversial principle.

Methodology

- Detailed examination of ILC reports in order to determine and understand the reasons why the concept that the degradation of atmospheric conditions is a 'common concern of humankind' was removed from the ILC Draft Guidelines on the Protection of the Atmosphere.
- Study of treaties, non-binding international instruments, and legal academic scholarship in order to identify the origin, evolution and meaning of the principle of common concern of humankind.
- Analysis of five treaties and five non-binding international instruments containing the principle of common concern of humankind[49] in order to identify the distinctive features shared by the issues currently considered as common concerns of humankind.
- Examination of whether the issue of atmospheric degradation shares those distinctive features.
- Study of reports and scientific academic scholarship in order to gain knowledge of the effects of short-lived climate pollutants (SLCPs) on atmospheric conditions and the linkage between air pollution and climate change.

49 Treaties: UN Framework Convention on Climate Change (UNFCCC) and its Paris Agreement; the Convention on Biological Diversity (CBD); the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA); Convention for the Safeguarding of the Intangible Cultural Heritage (CICH). Non-binding or soft law instruments: the Earth Charter; the Langkawi Declaration on the Environment; the Hague Recommendations on International Environmental Law; the International Law Association (ILA)'s New Delhi Declaration of Principles of International Law Relating to Sustainable Development; and the International Union for Conservation of Nature (IUCN)'s Draft Covenant on Environment and Development.

- Analysis of the Air Convention[50] and the 2012 amendment to its Gothenburg Protocol[51] in order to establish the legal recognition of the linkage between SLCPs and climate change.

Chapter 4 on Public participation in climate change governance

Chapter 4 is entitled 'Observer participation in international climate change decision-making: A complementary role for human rights?'[52]. It identifies the problem that while parties to the UNFCCC acknowledged the need to further enhance the effective engagement of observer organizations as progress is made towards the implementation of the Paris Agreement, climate law does not stipulate *how* parties are to ensure effective observer participation. The chapter argues that observance of the human right to participate in public affairs and the obligation to ensure effective participation derived from it could contribute to enhancing observer participation in international UNFCCC decision-making processes. This argument is based on the following reasons. First, the right to participate in public affairs requires states to adopt legislative and other measures as may be necessary to ensure effective participation in decision-making of public interest. Second, the right to participate in public affairs encompasses international decision-making processes. Third, although neither the UNFCCC nor the Paris Agreement expressly refer to ensuring effective observer participation, UNFCCC parties that are also party to relevant human rights treaties have nevertheless the obligation to ensure effective participation including at the international level. This obligation is reinforced by the parties' acknowledgement in the Paris Agreement that they should honour their existing human rights obligations when taking action to address climate change. Consequently, the human right to participate in public affairs provides for obligations for UNFCCC parties that are also party to relevant treaties, which could complement climate provisions and thus contribute to enhancing observer participation in international UNFCCC decision-making processes.

50 Convention on Long-Range Transboundary Air Pollution (13 Nov 1979) 1302 U.N.T.S. 217.

51 Protocol to the 1979 Convention on Long-range Transboundary Air Pollution to Abate Acidification, Eutrophication and Ground-Level Ozone (30 Nov 1999) 2319 U.N.T.S. 80.

52 Peer-reviewed journal article originally published in 31 *Colorado Natural Resources, Energy, & Environmental Law Review* 2 (2020), 315-378.

Methodology

- Examination of treaties and soft law instruments concerning public participation in environmental matters[53] in order to contextualize observer participation in climate change decision-making.
- Analysis of climate law[54] in order to identify the rules applicable to observer participation in international UNFCCC decision-making processes.
- Study of reports issued by the UNFCCC Subsidiary Body for Implementation and the UNFCCC Secretariat as well as legal and multidisciplinary academic scholarship in order to ascertain the state of affairs regarding public participation.
- Analysis of international human rights law[55] and soft law instruments[56] in order to determine whether and how the right to participate in public affairs and the obligation to ensure effective participation derived from it could complement climate law in such a way as to contribute to enhancing observer participation in international UNFCCC decision-making processes.

53 Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus Convention); Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean (Escazú Agreement); Rio Declaration on Environment and Development (Principle 10) and Agenda 21; and UNGA resolutions 'The Future We Want' and Transforming our world: the 2030 Agenda for Sustainable Development.

54 UNFCCC; Paris Agreement; Rules of Procedure of the Conference of the Parties and its Subsidiary Bodies; COP Decisions 18/CP.4 'Attendance of intergovernmental and non-governmental organizations at contact groups'; 1/CP.16 'The Cancun Agreements: Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention' (Cancun Agreements); 2/CP.17 'Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention' (Durban Outcome);

55 I surveyed the following human rights agreements stipulating the right to participate in public affairs: International Covenant on Civil and Political Rights (ICCPR), American Convention on Human Rights (ACHR), International Convention on the Elimination of All Forms of Racial Discrimination, Convention on the Elimination of All Forms of Discrimination against Women, International Convention on the Protection of the Rights of All Migrant Workers and Members of their Families, Convention on the Rights of Persons with Disabilities, African Charter of Human and Peoples Rights, and Protocol No. 1 to the European Convention on Human Rights. I selected the ICCPR and the ACHR (including subsequent interpretations by the institutions in charge of overseeing their implementation i.e. the Human Rights Committee, the Inter-American Court of Human Rights and the Inter-American Commission on Human Rights) because the other agreements surveyed focus on the rights to vote and be elected, which do not apply to international decision-making processes.

56 UNGA Declaration on the Right and Responsibility of Individuals, Groups and Organs of Society to Promote and Protect Universally Recognized Human Rights and Fundamental Freedoms (Declaration on Human Rights Defenders); UN High Commissioner for Human Rights (OHCHR) 2018 Draft Guidelines for States on the Effective Implementation of the Right to Participate in Public Affairs; OHCHR report *Factors that Impede Equal Political Participation and Steps to Overcome those Challenges* and the recommendations therein.

- Detailed examination of the parties' acknowledgement in the Paris Agreement that they should honour their existing human rights obligations when taking climate action and the history thereof, in order to ascertain the meaning of said acknowledgement for public participation.
- Exploration of possible ways in which the human right to participate in public affairs could complement climate provisions on observer participation at the international level.

Chapter 5 on Sustainable development and ocean commons governance

Chapter 5 is entitled 'How the Sustainable Development Goals promote a new conception of ocean commons governance'.[57] It identifies the problem that the existing conception of ocean commons governance primarily involves states and industry organizations and restricts access to civil society. Chapter 5 argues that the Sustainable Development Goals (SDGs) contribute to developing a new conception of ocean commons governance by emphasizing civil society participation in achieving sustainable development. This argument is based on two reasons. First, the SDGs encourage institutions at all levels to strengthen public access to information and participation in decision making in order to increase transparency, accountability and effectiveness of their administration. Second, the study of public participation in regional fisheries management organizations (RFMOs) and the International Seabed Authority (ISA) shows that the existing conception of ocean commons governance primarily involves states and industry organizations and restricts access to civil society. The chapter suggests that the SDGs promote a new understanding of ocean commons governance in which public participation is integral to the governing process and necessary to ensure institutional transparency, accountability and effectiveness for sustainable development.

Methodology

- Study of reports issued by the Global Ocean Commission,[58] UN organizations and bodies,[59] regional fisheries management organizations (RFMOs), the International Seabed Authority (ISA) as well as multidisciplinary aca-

57 Book chapter subjected to review by the book editors originally published in D. French and L. Kotzé (eds.) *Global Goals: Law, Theory and Implementation* (Edward Elgar, 2018) 117–146.

58 Independent commission established in 2013 to raise awareness and promote action to address ocean degradation. It was conceived by the Pew Charitable Trusts and hosted by Somerville College at the University of Oxford. Members of the GOC included José María Figueres (former President of Costa Rica), Vladimir Golitsyn (then President of the International Tribunal for the Law of the Sea), and Pascal Lamy (Former Director-General of the WTO).

59 Food and Agriculture Organization of the United Nations (FAO), UN Environment Programme (UNEP), Intergovernmental Panel on Climate Change (IPCC).

demic scholarship in order to ascertain the state of affairs regarding the use and protection of high seas fisheries and deep seabed minerals (ocean commons), and identify the source of prominent governance problems.
- Examination of treaties and soft law instruments concerning public participation in environmental matters[60] as well as multidisciplinary academic scholarship in order to contextualize public participation in ocean commons governance.
- Detailed study of the UN Convention on the Law of the Sea (UNCLOS), its Fish Stock Agreement[61] and 1994 Implementing Agreement,[62] rules and regulations issued by the ISA,[63] and relevant rules of procedure[64] in order to identify the legal framework applicable to public participation in RFMOs and the ISA.
- Detailed examination of reports,[65] performance reviews of RFMOs, ISA periodic review and multidisciplinary academic scholarship in order to ascertain the state of affairs regarding public participation in RFMOs and the ISA.
- Analysis of the 2030 Agenda for Sustainable Development and its Sustainable Development Goals (SDGs) in order to clarify its legal nature, ascertain the role of public participation in the drafting and subsequent implementation of the SDGs and establish the potential of SDGs 14 and 16 to influence ocean commons governance.
- Analysis of SDG 16 in order to determine the role of public participation in achieving the goal of building strong institutions at all levels set therein and to establish the potential of SDG 16 to influence institutions governing high seas fisheries and deep seabed minerals (RFMOs and the ISA respectively).

60 Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus Convention); Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean (Escazú Agreement); Rio Declaration on Environment and Development (Principle 10) and Agenda 21; and UNGA resolutions 'The Future We Want' and Transforming our world: the 2030 Agenda for Sustainable Development.

61 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks.

62 1994 Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea.

63 *Inter alia*, Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area, ISBA/19/C/17 (22 July 2013); Regulations on Prospecting and Exploration for Cobalt-rich Ferromanganese Crusts in the Area, ISBA/18/A/11 (27 July 2012); and Regulations on Prospecting and Exploration for Polymetallic Sulphides in the Area, ISBA/16/A/12/Rev.1 (7 May 2010).

64 Rules of procedure of RFMOs and organs of the ISA (Assembly, Council, Legal and Technical Commission).

65 Issued by the Global Ocean Commission, FAO, World Bank.

6 SUMMARY TABLE

The following table summarizes the problem or knowledge gap and the research questions per chapter.

Ch.	*Title*	*Problem*	*Research questions*
1	Differentiating between Sovereignty over Exclusive and Shared Resources in the Light of Future Discussions on the Law of Transboundary Aquifers	The recognition of PSNR over transboundary aquifers is controversial. The main objections are that the exercise of PSNR over transboundary aquifers might discourage transboundary cooperation and be insufficient to protect the environment of shared freshwater resources.	Is the sovereignty exercised over natural resources under the exclusive jurisdiction of a state different from the sovereignty exercised over resources that are shared by two or more states? If that is the case, what distinguishes one from the other? What is the usefulness of differentiating between them from the perspective of transboundary cooperation and environmental protection?
2	Community of Interests: Furthering the Ecosystems Approach and the Rights of Riparian Populations	The legal nature of community of interests and its role in the exercise of sovereignty over shared water resources remain unclear.	What is the legal nature of the principle of community of interests? How does community of interests relate to the exercise of sovereignty over shared water resources? Does international water law show any trends indicating that the emerging principle of community of interests is evolving in a certain direction?

Ch.	*Title*	*Problem*	*Research questions*
3	Why 'Common Concern Of Humankind' Should Return to the Work of the International Law Commission on the Atmosphere	The International Law Commission removed from its Draft Guidelines on the Protection of the Atmosphere the concept that the degradation of atmospheric conditions is a 'common concern of humankind' because of objections by ILC members concerning the insufficient clarity of the concept of common concern of humankind and its legal consequences.	What does the principle of common concern of humankind entail according to international law? What are the legal consequences of the principle? Is atmospheric degradation a common concern of humankind?
4	Observer participation in international climate change decision-making: A complementary role for human rights?	Parties to the UNFCCC acknowledged the need to further enhance the effective engagement of observer organizations as the UNFCCC process moves towards implementation of the Paris Agreement. However, climate law does not stipulate *how* parties are to ensure effective observer participation.	What characterizes observer participation in international climate change decision-making processes? What does the acknowledgement in the Paris Agreement that parties should comply with human rights obligations mean? What does the human right to participate in public affairs entail? Does it encompass decision-making processes at the international level? How could the right to participate in public affairs complement climate law and possibly contribute to enhancing observer participation in international climate change decision-making?

Ch.	*Title*	*Problem*	*Research questions*
5	How the Sustainable Development Goals promote a new conception of ocean commons governance	While binding and non-binding international instruments provide for and decisively encourage public participation in environmental governance, the existing conception of ocean commons governance primarily involves states and industry organizations and restricts access to civil society.	What is the state of affairs regarding the use and protection of high seas fisheries and deep seabed minerals? What is the situation of public participation in institutions governing these resources and the legal framework applicable thereto? What role for public participation in the Sustainable Development Goals (SDGs)? What is the legal nature of the SDGs? In what way could SDG 14 (sustainable use of marine resources) and SDG 16 (building strong institutions at all levels) influence institutions governing high seas fisheries and deep seabed minerals for sustainable resource governance?

7 PUBLICATION STATUS PER CHAPTER

Chapter 1

'Differentiating between Sovereignty over Exclusive and Shared Resources in the Light of Future Discussions on the Law of Transboundary Aquifers' published in 24 *Review of European Comparative & International Environmental Law (RECIEL)* 1 (2015) 4-15.

Chapter 2

'Community of Interests: Furthering the Ecosystems Approach and the Rights of Riparian Populations' published in 24 *The Journal of International Water Law* 2 (2015) 62-72.

Chapter 3

'Why "common concern of humankind" should return to the work of the International Law Commission on the atmosphere', published in 29 *Georgetown Environmental Law Review* 131 (2017) 131-151.

Chapter 4

'Observer participation in international climate change decision-making: A complementary role for human rights?', published in 31 *Colorado Natural Resources, Energy, & Environmental Law Review* 2 (2020) 315-378.

Chapter 5

'How the Sustainable Development Goals Promote a New Conception of Ocean Commons Governance' published in D. French and L. Kotzeì (eds.), *Sustainable Development Goals: Law, Theory and Implementation* (Edward Elgar 2018) 117–146.