

Curriculum Design for the Anthropocene: Review of Meinhard Doelle & Chris Tollefson, Environmental Law: Cases and Materials, Third Edition

Jason MacLean*

The Anthropocene poses a fundamental challenge to the traditional approaches of environmental law, policy, and governance. The rapid maturation of new and innovative ways of studying climate change and sustainability – including the planetary boundaries framework, socio-ecological systems modeling, and the transdisciplinary imagination of “good anthropocenes” – calls into question the relevance of monodisciplinary, statist, static, and siloed understandings of environmental law.

*In this article I draw out the Anthropocene’s implications for environmental law by critically assessing the third edition of Canada’s leading environmental law casebook, *Environmental Law: Cases and Materials*, written and edited by Meinhard Doelle and Chris Tollefson.*

I argue that the shortcomings of this otherwise impressive text reflect the limitations of traditional environmental law scholarship and pedagogy more generally, particularly its insufficient attention to Earth-system dynamics, the underrepresentation of society’s most marginal members, an uncritical acceptance of the neoliberal norm of perpetual economic growth, and the failure to advance our understanding of how to rapidly enact and implement transformative laws and policies capable of enhancing socio-ecological resilience and sustainability.

I conclude by sketching a new approach that integrates teaching and research and imagines what it might mean to think like an Anthropocene lawyer.

L’Anthropocène pose un défi fondamental aux approches traditionnelles du droit, de la gouvernance ainsi que des politiques environnementales. La maturation rapide de méthodes nouvelles et innovantes pour étudier le changement climatique et la durabilité - y compris le cadre des frontières planétaires, la modélisation des systèmes socio-écologiques et l’imagination transdisciplinaire des «bons anthropocènes» - remet en question la pertinence des conceptions monodisciplinaires, étatiques, statiques et cloisonnée du droit de l’environnement.

*Dans cet article, je tire les conséquences de l’Anthropocène pour le droit de l’environnement en évaluant de manière critique la troisième édition du principal recueil de jurisprudence sur le droit de l’environnement au Canada, *Environmental Law: Cases and Materials*, rédigé et édité par Meinhard Doelle et Chris Tollefson.*

J’avance que les lacunes de ce texte autrement impressionnant reflètent les limites de la recherche traditionnelle en droit de l’environnement et de la pédagogie en général. En particulier, l’attention insuffisante accordée à la dynamique du système terrestre, la sous-représentation des membres les plus marginaux de la société, l’acceptation non critique de la norme néolibérale de croissance économique perpétuelle et l’incapacité à faire progresser notre compréhension de la manière de promulguer et de mettre en œuvre rapidement des lois et des politiques transformatrices capables d’améliorer la résilience socio-écologique et la durabilité.

Je conclus en esquisant une nouvelle approche qui intègre l’enseignement et la recherche et imagine ce que cela pourrait signifier de penser comme un avocat de l’Anthropocène.

Titre en français : *Conception de programmes d’études pour l’anthropocène: examen de Meinhard Doelle et Chris Tollefson, Droit de l’environnement: cas et matériaux, troisième édition*

* Assistant Professor, Faculty of Law, University of New Brunswick; Adjunct Professor, School of Environment and Sustainability, University of Saskatchewan. For inquiries, please email j.macleam@unb.ca.

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*Knowing what I do, there would be no future peace for me if I kept silent.
– Rachel Carson¹*

*When I was younger I had lots of different plans of becoming different things, everything from an actor to a scientist. But then my teachers in school told me about climate change. That was sort of an eye-opener to me. The more I read about it, the more I understood how dangerous it was for everyone. I stopped going to school, I stopped talking because I was just so sad. And then that made me very concerned. One day I decided that this was enough, I wasn't going to accept this anymore. My future and everyone else's future is at risk and nothing is being done, no one is doing anything, so then I have to do something.
– Greta Thunberg²*

1. INTRODUCTION

What should environmental law students³ learn about the Anthropocene?⁴ What does the Anthropocene mean for how we conceive of and practice environmental law? And what contribution can environmental law make towards achieving a more

¹ Rachel Carson, "Letter to Dorothy Freeman" (June 1958) in Sandra Steingraber, ed, Rachel Carson: Silent Spring & Other Writings on the Environment (New York: Library of America, 2018) at xxvii.

² Greta Thunberg, quoted in BBC One, "Climate Change – The Facts" (18 May 2019), online (video): BBC <www.bbc.co.uk/programmes/m00049b1>.

³ More generally, what should *all* law students learn about the Anthropocene? I will return to this broader question towards the conclusion of this essay.

⁴ The term Anthropocene is increasingly used to denote the current geological epoch in which human activity is the dominant force of change on our planet. See e.g. Patrick W Keys et al, "Anthropocene

sustainable and just future, what some sustainability scientists call a “good Anthropocene”?⁵ These conceptual questions guide my review of the third edition of Canada’s leading environmental law casebook, *Environmental Law: Cases and Materials*,⁶ written and edited by Meinhard Doelle and Chris Tollefson.

The primary focus of the third edition of the authors’ casebook, as with its earlier versions, is Canadian federal environmental law and practice. For comparative purposes, the book integrates statutory and case law illustrations from provincial environmental law and other common law jurisdictions. The book also seeks to introduce readers to what the authors identify as the interdisciplinary nature of environmental law, the core theoretical debates that animate environmental law, and the complex ways that Canadian environmental law intersects with international law, Aboriginal and Indigenous laws, and natural resource law.⁷

Before proceeding to more fully describe the book’s contents – including its most notable updates – and critically assess its contribution to advancing our understanding of environmental law in the Anthropocene, I should disclose my own relationship to the book and its authors. I adopted the second edition of the book as my primary course text when I began teaching environmental law in 2014, and I assigned the second edition in three subsequent courses. It would be an understatement to say I am familiar with Doelle and Tollefson’s casebook; it was formative for me as a freshly appointed professor and novice teacher of environmental law.

Environmental Law: Cases and Materials also significantly influenced my initial environmental law scholarship.⁸ Following my first use of the book as a course text, I reached out to the authors, whom I did not yet know, to propose a unique collaboration – an academic article on the past, present, and future of Canadian environmental law structured in the form of a critical dialogue among the three of us whereby I posed five questions that Doelle and Tollefson each answered in turn.⁹ The first question of our dialogue considered both the tone of their book’s second edition and its outlook on Canada’s prospects for moving towards greater sustainability.¹⁰ Following the publication of this initial article, I have continued to collaborate

risk” (2019) 2 Nature Sustainability 667 [Keys et al, “Anthropocene risk”]; Thomas Sterner et al, “Policy design for the Anthropocene” (2019) 2 Nature Sustainability 14 [Sterner et al, “Policy design for the Anthropocene”]. For a discussion of the debate over the term’s formal status and chronological starting point, see Paul J Crutzen, “Geology of mankind” (2002) 415 Nature 23.

⁵ Elena M Bennett et al, “Bright spots: seeds of a good Anthropocene” (2016) 14:8 Front Ecol Environ 441 [Bennett et al, “Bright spots”].

⁶ Meinhard Doelle & Chris Tollefson, *Environmental Law: Cases and Materials, Third Edition* (Toronto: Thomson Reuters, 2019). For a review of the first edition of the book appearing in these pages, see Elaine L Hughes, “Book Review: Making the List: A Note on Environmental Law Education Materials and a Review of Doelle & Tollefson’s *Environmental Law: Cases and Materials*” (2010) 6:1 JSDLP 81.

⁷ *Ibid* at iv (Doelle & Tollefson).

⁸ The book has also influenced my practice of environmental law. I relied on it heavily in representing the Council of Canadians’ intervention in *Forest Ethics Advocacy Association v National Energy Board*, [2014] FCA 88 (CanLII). Readers should not confuse the regrettable result in that case with the practical utility of *Environmental Law: Cases and Materials*. Doelle and Tollefson’s text remains an indispensable reference for practitioners of environmental law.

⁹ See Jason MacLean, Meinhard Doelle & Chris Tollefson, “The Past, Present, and Future of Canadian Environmental Law: A Critical Dialogue” (2015–2016) 1:1 Lakehead LJ 79.

¹⁰ *Ibid* at 82–87.

with both Doelle and Tollefson;¹¹ I am fortunate to call each of them a professional mentor and a personal friend.

My own understanding and approach to teaching and researching environmental law has shifted considerably since my first encounter with Doelle and Tollefson's casebook. This shift is due principally to the emergence and maturation of new and innovative approaches to understanding and responding to climate change, including the planetary-boundaries framework,¹² socio-ecological-systems modelling,¹³ and a more integrated understanding of the nature of global systemic risks in the Anthropocene epoch,¹⁴ including: (1) cascading anthropogenic changes in the Earth system (e.g., climate change, land-use change, and biodiversity loss);¹⁵ (2) the co-evolution of socio-economic and ecological systems, often accompanied by structural inequality and injustice;¹⁶ and (3) cross-scale interactions across space, from local to regional to global, and over time, from short-term to deep-time, including potential Earth-system tipping points.¹⁷

Anthropocene risks pose a fundamental conceptual and practical challenge to traditional approaches to environmental law and policy. My goal, therefore, in reviewing the latest version of Doelle and Tollefson's book is to determine whether it still meets my needs as a teacher of environmental law, and to assess its contribution to our understanding of how to bring about transformative laws, policies, and governance mechanisms – a new *Lex Anthropocena* – capable of stabilizing our climate and achieving a just transition to sustainability, the defining challenge of the twenty-first century.¹⁸ Because I know the authors to be scholars and individuals of the

¹¹ Disclosure: the authors have excerpted one of our collaborative projects in chapter 6 of the casebook on judicial review of environmental decision-making: Jason MacLean & Chris Tollefson, "Climate-Proofing Judicial Review after Paris: Judicial Competence, Capacity, and Courage" (2018) 31 J Envtl L & Prac 245. I hasten to add, however, that the authors draw liberally from the work of several of their environmental-law colleagues, as well as their own excellent work, and that this is a strength of the book.

¹² See Johan Rockström et al, "Planetary boundaries: Exploring the Safe Operating Space for Humanity" (2009) 14:2 Ecology and Society 1; see also Will Steffen et al, "Planetary boundaries: Guiding human development on a changing planet" (2015) 347:6223 Science 736.

¹³ See Fikret Berkes, Carl Folke & Johan Colding, eds, *Navigating Socio-Ecological Systems: Building Resilience for Complexity and Climate Change* (New York: Cambridge University Press, 2003).

¹⁴ Keys et al, "Anthropocene risk", *supra* note 4 at 668.

¹⁵ *Ibid.*

¹⁶ *Ibid.*

¹⁷ See Timothy M Lenton et al, "Tipping elements in the Earth's climate system" (2008) 105:6 Proceedings National Academy Sciences United States America 1786; see also Timothy M Lenton et al, "Climate tipping points – too risky to bet against" (2019) 575 Nature 592 [Lenton et al, "Climate tipping points"].

¹⁸ See Elena G Irwin et al, "Bridging barriers to advance global sustainability" (2018) 1:7 Nature Sustainability 324 at 325 [Irwin et al, "Bridging barriers"]. See also Jason MacLean, "Learning to overcome political opposition to transformative environmental law" (2020) 117:15 Proceedings of the National Academy Sciences of the United States of America 8243; Ahjond Garmestani et al, "Untapped capacity for resilience in environmental law" (2019) 116:40 Proceedings of the National Academy Sciences of the United States of America 19899 [Garmestani et al, "Untapped capacity in environmental law"].

highest integrity,¹⁹ I have no apprehensions about assessing their book in the most rigorous manner possible; they would neither expect nor accept anything less.

This essay unfolds in three parts. In part II, I read *Environmental Law: Cases and Materials* in light of the guiding conceptual questions posed at the beginning of this essay. My principal argument is that *Environmental Law: Cases and Materials* fails to adequately analyze the law-and-policy dimensions of climate change and sustainability, which must be at the core of and integrated throughout the research, teaching, and practice of environmental law in the Anthropocene. In part III, I sketch out an alternative research-cum-curriculum-design approach to thinking about how to create transformative climate laws, policies, and governance mechanisms for the Anthropocene, a new *Lex Anthropocenae*. I conclude with some closing observations about the nature of law in the Anthropocene and what it might mean to think like an Anthropocene lawyer.

2. ENVIRONMENTAL LAW: CASES AND MATERIALS

Environmental Law: Cases and Materials consists of ten chapters. The book begins with an introduction to international environmental law, including new material on the Paris Climate Agreement, the United Nations (UN) Sustainable Development Goals (SDGs), and the UN Declaration on the Rights of Indigenous Peoples (UNDRIP). There is much to recommend international law as point of departure for the study of Canadian environmental law. As Doelle and Tollefson explain, the days have long since passed when developments in international law – including debates over whether international law is really “law” at all – followed domestic initiatives. In Canada today, domestic environmental measures tend to have their origin in, and are interpreted in light of, international instruments.²⁰ The recently enacted *Impact Assessment Act*,²¹ discussed in chapter 7, is a case in point: neither its origins nor its eventual interpretation can be understood without taking into account Canada’s commitments to reduce its greenhouse-gas emissions under the Paris Agreement, its endorsement of the UN SDGs, and its aspiration – however uncertain at this point – to make Canadian law consistent with UNDRIP and achieve reconciliation with Indigenous peoples.

The book’s introduction to international-environmental-law regimes begins with a historical account of the sources of international environmental law and proceeds to trace its evolution from the creation of the UN to the UN’s 1972 Stockholm Conference on the Human Environment (including the resulting Stockholm Declaration), and then from the 1992 UN Conference on the Environment and Development in Rio (including the Rio Declaration and Agenda 21) to the present.²² It was at this juncture that I expected the authors to begin to unpack the implications of this newly formative influence of international environmental law on Canadian environmental law, policy, and governance, or at the very least flag those

¹⁹ Professors Doelle and Tollefson are leading figures in Canadian environmental law scholarship and practice. Professor Doelle is a Professor at the Schulich School of Law at Dalhousie University and presently the Canadian Chair at the World Maritime University in Malmö, Sweden. Chris Tollefson is a Professor at the University of Victoria Faculty of Law and founding Executive Director of the Pacific Centre for Environmental Law and Litigation (CELL).

²⁰ See Doelle & Tollefson, *supra* note 6 at 1.

²¹ See *Impact Assessment Act*, SC 2019, c 28, s 1 [*Impact Assessment Act*].

²² See Doelle & Tollefson, *supra* note 6 at 3–10.

implications and signal where they will arise throughout the book.²³ Instead, the first part of the book's introduction concludes abruptly with a list of the 17 SDGs and a somewhat technical – and, as the authors candidly acknowledge, dated²⁴ – discussion of how sources of international law are translated into domestic Canadian law, including, it must be said, a supremely constructive and practical elaboration of the precautionary principle.²⁵

The book's introduction proceeds by outlining a number of “key international environmental regimes to watch,”²⁶ including the *Convention on Biological Diversity*,²⁷ the *Basel Convention on Transboundary Movement of Hazardous Wastes*,²⁸ the *General Agreement on Tariffs and Trade*²⁹ and the World Trade Organization (WTO), international-trade-and-investment agreements, particularly the North American Free Trade Agreement (NAFTA),³⁰ and—very briefly—the UN Framework Convention on Climate Change (UNFCCC).³¹

The book's treatment of these core international law regimes is in each instance seriously out of date. The discussion of the Convention on Biological Diversity, both in the introductory chapter and later in chapter 9 on species at risk, omits any discussion of the UN Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). More fundamentally, the book does not adequately address the central issue of biodiversity research and policy: the troubling fact that biodiversity within species, between species, and of ecosystems is declining faster than at any time in human history.³²

The book's treatment of the *Basel Convention* similarly omits any discussion of one of the central issues of global chemical pollution – plastic waste – and recent amendments to

²³ The authors do signal, however, that the discussion in the introductory chapter of the *Convention on Biological Diversity* and its implications for species-at-risk legislation in Canada is out of date, and that the current implementation status of the *Convention* is discussed later in chapters 8 and 9: *ibid* at 19.

²⁴ *Ibid* at 19.

²⁵ *Ibid* at 29–40.

²⁶ *Ibid* at 40.

²⁷ See *Convention on Biological Diversity*, 5 June 1992, 1760 UNTS 79, 31 ILM 818 (entered into force 29 December 1993).

²⁸ See *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal*, 22 March 1989, 1673 UNTS 126 (entered into force 5 May 1992).

²⁹ See *General Agreement on Tariffs and Trade 1994*, in *Annex 1A of the Marrakesh Agreement Establishing the World Trade Organization*, 15 April 1994, 1867 UNTS 187 (entered into force 1 January 1995).

³⁰ See *North American Free Trade Agreement Between the Government of Canada, the Government of Mexico and the Government of the United States*, 17 December 1992, Can TS 1994 No 2, 32 ILM 289 (entered into force 1 January 1994).

³¹ See *United Nations Framework Convention on Climate Change*, 9 May 1992, 1771 UNTS 107, 31 ILM 849 (entered into force 21 March 1994).

³² See UN Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), “Summary for policymakers of the IPBES global assessment report on biodiversity and ecosystem services” (29 May 2019) at 10, online (pdf): [IPBES <ipbes.net/global-assessment-report-biodiversity-ecosystem-services>](https://ipbes.net/global-assessment-report-biodiversity-ecosystem-services) [UN Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, “Summary for policymakers”]. See more generally Elizabeth Kolbert, *The Sixth Extinction: An Unnatural History* (New York: Henry Holt and Company, 2014); Edward O Wilson, *Half-Earth: Our Planet's Fight for Life* (New York: Liveright Publishing Company, 2016).

the *Convention* relating to the transboundary disposal of plastic waste.³³ Nor does the book discuss Canada's opposition to amending the *Basel Convention* so as to prohibit the dumping of hazardous waste in developing countries, including Canada's apparent violation of the *Convention* arising out of a Canadian company's shipment of hazardous household waste disguised as recyclable plastic in 2013 and 2014 to the Philippines.³⁴

Regarding the global trade regime, while the book duly notes US President Donald Trump's skeptical stance towards existing free trade arrangements, including NAFTA,³⁵ subsequent events have since overtaken the book's publication in 2019. The United States is presently blocking the appointment of new members to the WTO's Appellate Body, effectively precluding it from hearing new cases.³⁶ Moreover, the US House of Representatives approved the implementing legislation for the successor to NAFTA, the United States-Mexico-Canada (USMCA) trade agreement.³⁷ While the book cannot be reasonably criticized for omitting developments occurring as it went to press and afterwards, such developments nevertheless raise the larger question of whether it is feasible in the ever-changing Anthropocene epoch to try to write books that admirably strive for both depth and breadth of coverage like *Environmental Law: Cases and Materials*. More on this existential question in part III below.

These caveats aside, the book insufficiently discusses a critical dimension of the trade-environment relationship, and ignores another dimension altogether. The book relegates the important issue of trade disputes concerning renewable energy to a traditional casebook "notes and questions" topic. Specifically, the book alludes to – but fails to analyze – a WTO dispute between Japan and Canada over an Ontario feed-in tariff including a local-manufacturing requirement for solar-photovoltaic-generated electricity.³⁸ The authors note that the case resulted in Ontario eliminating the local-manufacturing requirement and, soon after, the province's discontinuation altogether of the feed-in tariff.³⁹ The authors then pose but decline

³³ See Sabaa A Khan, "Basel Convention Parties Take Global Lead on Mitigating Plastic Pollution" (2019) 23:7 ASIL Insights, online: <www.asil.org/insights/volume/23/issue/7/basel-convention-parties-take-global-lead-mitigating-plastic-pollution>.

³⁴ See Mia Rabson, "Canadian garbage rotting in Manila violates international law, experts say" *The Star* (17 April 2019), online: <www.thestar.com/news/canada/2019/04/17/canadian-garbage-rotting-in-manila-violates-international-law-experts-say.html>; Ainslie Cruickshank, "Canada opposes ban on 'indefensible' practice of shipping hazardous waste to developing countries" *The Star* (10 May 2019), online: <www.thestar.com/news/canada/2019/05/10/canada-opposes-ban-on-indefensible-practice-of-shipping-hazardous-waste-to-developing-countries.html>.

³⁵ See Doelle & Tollefson, *supra* note 6 at 53.

³⁶ See "Who shot the sheriff? It's the end of the World Trade Organisation as we know it" *The Economist* (30 November 2019), online: <www.economist.com/finance-and-economics/2019/11/28/its-the-end-of-the-world-trade-organisation-as-we-know-it>.

³⁷ See Emily Cochrane & Ana Swanson, "Revised North American Trade Pact Passes House" *The New York Times* (19 December 2019), online: <www.nytimes.com/2019/12/19/us/politics/usmca-deal.html>.

³⁸ On 24 May 2013, the WTO Dispute Settlement Body adopted recommendations and rulings in *Canada – Certain Measures Affecting the Renewable Energy Sector* (WT/DS412) and *Canada – Measures Relating to the Feed-in-Tariff Program* (WT/DS426). See Alexandre Genest, "The *Canada—FIT* Case and the WTO Subsidies Agreement: Failed Fact-Finding, Needless Complexity, and Missed Judicial Economy" (2014) 10:2 JSDLP 237.

³⁹ Doelle & Tollefson, *supra* note 6 at 53.

to discuss the following question: “What does this case suggest about the compatibility of international environmental law and international trade law?”⁴⁰ Given the complexity of seeking to reconcile domestic government support for renewable energy, foreign investment protections, and climate change law and policy,⁴¹ it is doubtful that the book’s brief preceding discussions of the WTO’s shrimp-turtle case and asbestos case adequately equip readers to essay their own answers. This unresolved topic is too important to leave to an unanswered discussion question.

So too is the idea of using trade measures to combat the free rider problem central both to environmental protection generally and climate change mitigation in particular. In 2015, the environmental economist William Nordhaus proposed creating “climate clubs” as a mechanism of international climate policy.⁴² In Nordhaus’ proposed climate-club model, a state may only join the climate club if it (1) domestically prices carbon emissions at or above an agreed-upon floor price, and (2) imposes international trade sanctions on non-members.⁴³ The climate-club proposal is among the most important and innovative of potential solutions to the free rider problem and the broader challenge of marrying economic and environmental policies.⁴⁴ Glimmers of its initial application are already apparent. France, for example, opposed a trade deal between the European Union and the Mercosur countries – Argentina, Brazil, Paraguay, and Uruguay – because of Brazil’s lack of commitment to the Paris Agreement.⁴⁵ France subsequently concluded a trade deal with China, and in doing so both countries affirmed their commitment to the Paris Agreement while singling out countries like Brazil and the United States that are openly hostile to international cooperation on trade and climate issues.⁴⁶ Given the critical importance of diffusing new technologies and practices to mitigate climate change

⁴⁰ *Ibid* at 53.

⁴¹ See e.g. Freya Baetens, “Renewable energy incentives: reconciling investment, EU State aid and climate change law” (18 December 2019), online: [EJIL Talk <www.ejiltalk.org/renewable-energy-incentives-reconciling-investment-eu-state-aid-and-climate-change-law/>](http://www.ejiltalk.org/renewable-energy-incentives-reconciling-investment-eu-state-aid-and-climate-change-law/). See also Freya Baetens, “Combating climate change through the promotion of green investment: from Kyoto to Paris without regime-specific dispute settlement” in Kate Miles, ed, *Research Handbook on Environment and Investment Law* (Northampton, MA: Edward Elgar, 2019) 107; Zobaida Khan, “Trade-Sustainable Development Relationship: The Role of WTO Adjudication in Interpreting and Operationalizing Sustainable Development” (2017) 14:1 MJSDL 35.

⁴² William Nordhaus, “Climate Clubs: Overcoming Free-riding in International Climate Policy” (2015) 105:4 *American Economic Review* 1339. Nordhaus went on to share the Nobel Prize in economics in 2018 for his work on climate policy. For a brief discussion of the potential application of carbon tariffs by Canada, see e.g. Patrick Brethour, “Carbon regulations may be better route than tax for heavy emitters, SFU professor says” *The Globe and Mail* (31 December 2019), online: [<www.theglobeandmail.com/business/article-carbon-regulations-would-have-a-larger-impact-than-taxation-sfu/>](http://www.theglobeandmail.com/business/article-carbon-regulations-would-have-a-larger-impact-than-taxation-sfu/).

⁴³ *Ibid* at 1341.

⁴⁴ See e.g. Jedediah Britton-Purdy, “The Green New Deal Is What Realistic Environmental Policy Looks Like” *The New York Times* (14 February 2019), online: [<www.nytimes.com/2019/02/14/opinion/green-new-deal-ocasio-cortez-.html>](http://www.nytimes.com/2019/02/14/opinion/green-new-deal-ocasio-cortez-.html).

⁴⁵ See e.g. Helene Fouquet & Simone Preissler Iglesias, “Macron Opposes Mercosur Trade, Saying Brazil ‘Lied’ on Climate” *Bloomberg* (23 August 2019), online: [<www.bloomberg.com/news/articles/2019-08-23/macron-pulls-support-for-mercosur-trade-deal-over-brazil-fight>](http://www.bloomberg.com/news/articles/2019-08-23/macron-pulls-support-for-mercosur-trade-deal-over-brazil-fight).

⁴⁶ See “France, China back ‘irreversible’ Paris climate pact, sign deals worth \$15bn” *France24* (6 November 2019), online: [<www.france24.com/en/20191106-macron-and-xi-sign-deals-worth-15-billion-back-irreversible-paris-climate-pact>](http://www.france24.com/en/20191106-macron-and-xi-sign-deals-worth-15-billion-back-irreversible-paris-climate-pact).

and accelerate the global transition to sustainability,⁴⁷ proposals capable of reconciling the international-trade-law regime with climate and sustainability laws and policies merit serious discussion.

The book's introductory chapter concludes with a very brief introduction to the global climate change regime, the UNFCCC, focusing on the transition from the Kyoto Protocol to the Paris Agreement and the latter's ambitious aspiration of limiting the average global temperature increase to 1.5 °C above the pre-industrial norm.⁴⁸ The authors resume their discussion of climate change in the book's concluding chapter (chapter 10). In between, the book includes chapters on the common law (chapter 2), federal-provincial jurisdiction over the environment in Canada (chapter 3), environmental regulation, including the crucial topic of environmental governance (chapter 4), regulatory compliance and enforcement (chapter 5), judicial review of environmental decision-making (chapter 6), the ever-controversial federal environmental assessment regime (chapter 7), parks and protected areas (chapter 8), and species at risk (chapter 9).

Before proceeding to discuss these chapters in detail, it is important to pause and consider the manner in which the book introduces the Paris Agreement and the defining challenge of the twenty-first century: mitigating climate change and transitioning to sustainability. Concluding chapter 1, the authors make the following observation about the Paris Agreement:

The temperature goal [1.5 °C] is supplemented with a collective commitment to ensure emissions peak and decline as soon as possible, and to reach a balance of emissions and removals in the second half of the century. Arguably, 1.5 °C has now become the ultimate standard against which the success of collective mitigation efforts under the UNFCCC will be measured. The ambitious set of long-term goals provides an important foundation for each State's nationally determined contributions (NDCs), their justification on the grounds of equity, and the five-year cycles of NDC communication and the Global Stocktake.⁴⁹

For those uninitiated in UN bureaucratese, States' NDCs are their emissions-reductions pledges under the Paris Agreement; Canada's initial and subsisting NDC is to reduce its emissions by 30% from 2005 by 2030.⁵⁰ The Global Stocktake is the ambition-ratcheting mechanism of the Paris Agreement: every five years, signatories to the Agreement are to gather and review their performance and establish new, progressively more ambitious emissions-reduction targets.⁵¹

⁴⁷ See e.g. Jeffrey D Sachs et al, "Six Transformations to Achieve the Sustainable Development Goals" (2019) 2 *Nature Sustainability* 805 [Sachs et al, "Six Transformations to Achieve the SDGs"]; David G Victor, Frank W Geels & Simon Sharpe, *Accelerating the Low Carbon Transition: The Case For Stronger, More Targeted and Coordinated International Action* (UK Department for Business, Energy and Industrial Strategy, 2019), online (ebook): <www.energy-transitions.org/content/accelerating-low-carbon-transition>.

⁴⁸ Doelle & Tollefson, *supra* note 6 at 64–66.

⁴⁹ Doelle & Tollefson, *supra* note 6 at 63.

⁵⁰ Environment and Climate Change Canada, "Canadian Environmental Sustainability Indicators: Progress towards Canada's greenhouse gas emissions reduction target" (2019), online: *Government of Canada* <www.canada.ca/en/environment-climate-change/services/environmental-indicators/progress-towards-canada-greenhouse-gas-emissions-reduction-target.html>. According to its own data, Canada is not currently on track to meet its initial emissions-reduction target.

⁵¹ See Daniel Klein et al, eds, *The Paris Climate Agreement: Analysis and Commentary* (Oxford: Oxford University Press, 2017) at 319–337.

The Paris Agreement's first Global Stocktake was scheduled to take place in November 2020 as part of the UNFCCC's Conference of the Parties (COP) 26 before being postponed due to the global COVID-19 pandemic.

Doelle and Tollefson's introduction to the UNFCCC and the Paris Agreement is jarring, not because of what it says – it is accurate as far as it goes – but rather because of what it omits. The Paris Agreement is failing as disruptive climatic changes continue to mount. The Earth has already warmed 1.1 °C since 1880, and 2014–2019 was the hottest five-year period ever recorded for mean global-surface temperatures.⁵² Fossil carbon dioxide emissions increased 2.7% in 2018.⁵³ In 2019, global carbon dioxide emissions increased again, reaching a record high,⁵⁴ and at this writing are projected to rise yet again in 2020.⁵⁵

These numbers tell a grim tale. The gap between the ambition of countries' NDCs under the Paris Agreement and the Agreement's targets is growing. In its 2018 emissions-gap report, the United Nations Environment Programme (UNEP) showed that countries must *triple* the level of ambition of their current NDCs to get on track towards limiting global warming to well below 2 °C.⁵⁶ To align global climate action with what Doelle and Tollefson rightly assert is the ultimate standard of success of global climate-stabilization efforts, limiting global warming to 1.5 °C, UNEP calculates that a *fivefold* increase in the ambition of countries' NDCs is needed.⁵⁷ In its 2019 gap report, UNEP observes that for these targets to be realistic, new and enhanced NDCs must be agreed on by 2020, and the implementation of existing actions must be accelerated.⁵⁸ According to UNEP, this will require a "giant leap in ambition".⁵⁹ It is not hard to see why. As of this writing, no country in the world has implemented sufficiently ambitious and comprehensive carbon pricing across all economic sectors;⁶⁰ no country presently plans to fully phase out all fossil-fuel subsidies;⁶¹ and no country has aligned all of its finance policies and flows with the Paris Agreement's targets.⁶²

⁵² World Meteorological Organization, *United in Science* (Geneva, CH: WMO, 2019), online (ebook): <public.wmo.int/en/resources/united_in_science>.

⁵³ See Robert B Jackson et al. "Global energy growth is outpacing decarbonization" (2018) 13:12 *Environmental Research Letters* 120401 at 1.

⁵⁴ See Robert B Jackson et al, "Persistent fossil fuel growth threatens the Paris Agreement and planetary health" (2019) 14:12 *Environmental Research Letters* 121001 [Jackson et al, "Persistent fossil fuel growth"]; see also Pierre Friedlingstein et al, "Global carbon budget 2019" (2019) 11:4 *Earth System Science Data* 1783. In 2019, global carbon emissions reached a record high of 36.8 ± 1.8 gigatonnes of carbon dioxide.

⁵⁵ Jackson et al, "Persistent fossil fuel growth", *supra* note 54.

⁵⁶ See United Nations Environment Programme (UNEP), *Emissions Gap Report 2018* (Nairobi, KE: UNEP, 2018) at XV.

⁵⁷ *Ibid.*

⁵⁸ See United Nations Environment Programme (UNEP), *Emissions Gap Report 2019* (Nairobi, KE: UNEP, 2019) at XIV.

⁵⁹ United Nations Environment Programme (UNEP), "Lessons from a decade of emissions gap assessments" (Nairobi, KE: UNEP, 2019) at 5.

⁶⁰ See United Nations Environment Programme (UNEP), *supra* note 58 at 32.

⁶¹ *Ibid.*

⁶² *Ibid.*

The numbers tell a similarly dismal story about the UN SDGs. While data on the outcomes of the SDGs – with the exception of SDG 13 (climate change) – remain incomplete,⁶³ the UN IPBES’s landmark 2019 report on biodiversity and ecosystem services provides a snapshot of the lack of progress achieved to date.⁶⁴ The IPBES examined the targets of those SDGs whose wording and currently available evidence make it possible to assess the implications of trends in nature and nature’s contributions to people – biodiversity and ecosystem services, respectively – as they relate to the achievement of the target; those SDGs include SDG 1 (no poverty), SDG 2 (zero hunger), SDG 3 (good health and well-being), SDG 6 (clean water and sanitation), SDG 11 (sustainable cities and communities), SDG 13 (climate action), SDG 14 (life below water), and SDG 15 (life on land).⁶⁵ Of the 44 targets analyzed, 14 were scored “Partial support,” which the IPBES defined as meaning that “the overall global status and trends are positive, but still insubstantial or insufficient;”⁶⁶ 21 of the targets were scored “Poor/Declining support,” defined as indicating “poor status or substantial negative trends at a global scale.”⁶⁷ None of the targets was scored “Full support,” defined as “having a good status or substantial positive trends on a global scale.”⁶⁸

The climate and sustainability stories for Canada are much the same. The Commissioner of the Environment and Sustainable Development’s 2018 Report on Climate Action in Canada issued the following indictment:

Canada’s auditors general found that most governments in Canada were not on track to meet the commitments to reducing greenhouse gas emissions and were not ready for the impacts of a changing climate. On the basis of current federal, provincial, and territorial policies and actions, Canada is not expected to meet its 2020 target for reducing greenhouse gas emissions. Meeting Canada’s 2030 target will require substantial efforts beyond those currently planned or in place. Most Canadian governments have not assessed and, therefore, do not fully understand what risks they face and what actions they should take to adapt to a changing climate.⁶⁹

The Commissioner issued a similar charge regarding Canada’s progress towards implementing the SDGs, observing that the federal government has “not adequately prepared to implement the United Nations’ 2030 Agenda for Sustainable Development.”⁷⁰ She concluded her 2018 audit by observing that “there was no governance structure and limited national consultation

⁶³ Sachs et al, “Six Transformations to Achieve the SDGs”, *supra* note 46 at 813.

⁶⁴ See United Nations Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), “Summary for policymakers”, *supra* note 32 at 26.

⁶⁵ *Ibid* (see generally).

⁶⁶ *Ibid* at 36–37.

⁶⁷ *Ibid*.

⁶⁸ *Ibid*.

⁶⁹ Commissioner of the Environment and Sustainable Development, “Perspectives on Climate Action in Canada”, (27 March 2018) at 4, online: *A Collaborative Report from Auditors General—March 2018* <www.oag-bvg.gc.ca/internet/English/parl_otp_201803_e_42883.html>.

⁷⁰ Commissioner of the Environment and Sustainable Development, “Report 2—Canada’s Preparedness to Implement the United Nations Sustainable Development Goals” (24 April 2018) at 24, online: *2018 Spring Reports of the Commissioner of the Environment and Sustainable Development* <www.oag-bvg.gc.ca/internet/English/parl_cesd_201804_02_e_42993.html>.

and engagement on the 2030 Agenda. There was no implementation plan with a system to measure, monitor, and report on progress nationally.⁷⁷¹

Doelle and Tollefson's introduction to the UNFCCC, the Paris Agreement, and the SDGs conveys neither the growing gap between the level of ambition and the level of implementation of these regimes, both globally and in Canada, nor the urgency of closing this gap.

The book's concluding chapter on climate change scores only marginally better. Chapter 10 provides a clear explanation of the Paris Agreement's key provisions, and then devotes approximately one page to the IPCC's 2018 special report on the impacts of 1.5 °C global warming in largely the same detached tone sounded in the book's introduction.⁷² While the book's sole chapter devoted to climate change emphasizes the core finding of the IPCC's special report that limiting global warming to 1.5 °C will require "rapid and far-reaching transitions in energy, land, urban and infrastructure (including transport and building), and industrial systems",⁷³ it does not trace the implications of these rapid and far-reaching transitions for the Canadian economy and Canadian environmental law, policy, and governance. This is a significant omission. As UNEP explains in its 2018 emissions-gap report, "[g]reen policies must set a direction for the whole economy, not for each sector separately."⁷⁴ What will this transition look like in Canada, given its economy's heavy reliance on natural-resource extraction as a source of fiscal revenues and job creation? What role will environmental laws, policies, and governance mechanisms play in catalyzing and stewarding this transition? These are the key questions I expected the book's discussion of climate change to tackle, but chapter 10 proceeds instead with a series of siloed discussions of a number of only loosely connected topics: (1) the constitutional division of powers and the authority to regulate greenhouse gas emissions, including Nathalie Chalifour's leading analysis of the federal government's ample authority to legislate in respect of climate change; (2) a brief but highly ineffectual reflection on the federal government's inaction on climate change (more on this below); (3) a technical comparison of cap-and-trade markets and carbon taxes; (4) an overview of climate litigation, including (a) judicial review and statutory appeals, (b) division-of-powers challenges, (c) tort litigation and other common law claims, and (d) climate litigation under the *Charter of Rights and Freedoms*; (4) a high-level consideration of how to incorporate climate change in environmental assessment processes and the protection of biodiversity and species at risk; and

⁷¹ *Ibid.*

⁷² Doelle & Tollefson, *supra* note 6 at 868–869. See also United Nations Intergovernmental Panel on Climate Change, "Global Warming of 1.5 °C: An IPCC Special Report on the impacts of global warming of 1.5 °C above pre-industrial and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty: Summary for Policymakers" (2018), online: IPCC <www.ipcc.ch/sr15/chapter/summary-for-policy-makers/> [IPCC, "Global Warming of 1.5 °C"]. For an introductory discussion of the implications of this special report for Canada, see Jason MacLean, Meinhard Doelle & Chris Tollefson, "The Science, Law, and Politics of Canada's Pathways to Paris: Introduction to *UBC Law Review's* Special Section on Canada and Climate Change" (2019) 52:1 UBC L Rev 227.

⁷³ United Nations Intergovernmental Panel on Climate Change (IPCC), "Global Warming of 1.5 °C", *supra* note 72 at 15.

⁷⁴ United Nations Environment Programme (UNEP), *supra* note 56 at XXIII.

(5) a thin and significantly outdated discussion of the future of climate change law and policy drawing on short excerpts from articles originally published in 2009 and 2010.⁷⁵

Equally jarring as the book's muted tone on climate change is its studied reluctance to squarely confront the politics of climate change law and policy, or the politics of environmental law more generally. As Elizabeth Fisher argues, environmental law is “hot law” because it is directly concerned with “hot situations” in which the frames through which we see the world are constantly contested and changing.⁷⁶ Characterizing environmental-law-and-policy situations as “hot” signals not only that they are often controversial, but also that they are controversial because they are structural and foundational.⁷⁷ Behind every environmental law is a “theory of society.”⁷⁸

Environmental Law: Cases and Materials' tacit theory of Canadian society, by contrast, reflects Canada's ambivalence about undertaking deep decarbonization.⁷⁹ The authors acknowledge that “we encounter governments who listen to the fossil fuel industry more than the renewable energy industry” and “the relentless and powerful lobby from industry sectors trying to prevent or slow down the decarbonization of the economy [...] has inevitably resulted in domestic inaction on this critical issue in Canada.”⁸⁰ Yet the authors immediately proceed by arguing that “[a]ffected industries have an important role to play in helping to find effective, efficient and fair ways to reach a given policy goal, such as the decarbonization of our society.”⁸¹ But we “cross a line”, the authors argue, “when those industries are given a role in deciding whether we will even work toward critical societal goals at all, and at what pace.”⁸²

In Canada, we long ago crossed that line,⁸³ and we remain firmly planted on the oil and gas industry's side of it.⁸⁴ In the book's 1,000 pages, the authors devote only two pages

⁷⁵ While the authors are right to draw attention to the opportunities that climate actions create for democratic change, they omit much else in respect of the future of climate law and policy, including the potential limits of democratic governance for rapid and robust climate policies (e.g., the emergence of the *gilet jaunes* protest movement in France); the law-and-policy implications of geoengineering and carbon-dioxide removal; and the climate-governance-and-coordination issues raised by the emergence of the “Fourth Industrial Revolution” (e.g., artificial intelligence and machine learning, Big Data, blockchain, the Internet of Things, and 3D printing), which is already upon us.

⁷⁶ Elizabeth Fisher, “Environmental Law as ‘Hot’ Law” (2013) 25:3 J Envtl L 347 at 347 [Fisher, “Hot Law”].

⁷⁷ *Ibid* at 350.

⁷⁸ *Ibid* at 352, paraphrasing Carol Harlow & Richard Rawlings, *Law and Administration*, third edition (Cambridge, UK: Cambridge University Press, 2009) at 1.

⁷⁹ See Jason MacLean, “Climate Change, Constitutions, and Courts: The *Reference Re Greenhouse Gas Pollution Pricing Act* and Beyond” (2019) 82:2 Sask L Rev 147 at 169–170 [MacLean, “Climate Change, Constitutions, and Courts”].

⁸⁰ Doelle & Tollefson, *supra* note 6 at 884.

⁸¹ *Ibid* at 885.

⁸² *Ibid*.

⁸³ See Stepan Wood, Georgia Tanner & Benjamin J Richardson, “Whatever Happened to Canadian Environmental Law” (2010) 37 Ecol LQ 981 at 1025.

⁸⁴ See Jason MacLean, “Striking at the Root Problem of Canadian Environmental Law: Identifying and Escaping Regulatory Capture” (2016) 29 J Envtl L & Prac 111; Jason MacLean, “Regulatory Capture

to a global industry whose top five companies have together already spent US\$1 billion on influencing political and public opinion since the Paris Agreement was adopted in 2015.⁸⁵ With respect, there is an appalling air of unreality to the authors' assertion that "affected industries" – particularly the oil, gas, and coal industries – have an important role to play in decarbonizing the Canadian economy. As an "Open Letter to Canadians" (Figure 1) published – read: purchased – in Canadian newspapers days before the 2019 federal election illustrates, the Canadian oil and gas industry traffics in misinformation, false equivalencies, and Orwellian double-speak, including the industry's central claim that "[a] healthy Canadian oil and natural gas industry is vital in leading the way to a lower carbon future."⁸⁶

and the Role of Academics in Public Policymaking: Lessons from Canada's Environmental Regulatory Review Process" (2019) 52:2 UBC L Rev 479.

⁸⁵ See Farhana Yamin, "Why I broke the law for climate change" (2019) 573 Nature 337 at 339.

⁸⁶ Cenovus Energy, "Open Letter to Canadians" (2019), online: *Cenovus* <www.cenovus.com/news/our-stories/open-letter-to-canadians.html>. To be clear, this misleading "open letter" is a paid-for advertisement, not an opinion-editorial subject to standard editorial vetting and fact-checking. Additional examples of the letter's misinformation include (1) the companies' false claim that oil and natural gas will remain a large part of the world's future energy mix in even the *most optimistic* scenarios for renewable energy deployment, and (2) their counterfactual suggestion that phasing out Canada's oil and gas industry may actually undermine global emissions-reduction targets because "higher carbon fuels" might replace Canada's "lower emissions products." Neither claim is accurate or scientifically defensible. For an accessible and comprehensive analysis of energy production and climate change mitigation, see Mark Jaccard, *The Citizen's Guide to Climate Success: Overcoming Myths That Hinder Progress* (New York, NY: Cambridge University Press, 2020), especially chapter 5. See also Julie L MacArthur et al, "Canada's Green New Deal: Forging the socio-political foundations of climate resilient infrastructure?" (2020) 65 Energy Research & Social Science 101.

Open Letter to Canadians

We have big decisions to make as a country, and there is an opportunity for each of you to influence the outcome.

Canadians want to know what the energy sector is doing to address the global climate change challenge while working to strengthen our economy.

As energy company leaders, we believe Canada is ideally positioned to do its part to both positively impact climate change and ensure a strong and vibrant economy for the future.

This is not an ‘either’ ‘or’ conversation, it’s an ‘and’ conversation.

The world needs more energy to sustain a growing global economy that is expected to lift three billion people out of poverty in the decades ahead. We need more wind, solar and hydro, but oil and natural gas remain a large part of the mix too. This is true in even the most optimistic scenarios for the worldwide adoption of renewable energy.

The world also needs to significantly reduce greenhouse gas emissions. But shutting down Canada’s oil industry will have little impact on global targets. In fact, it could have the opposite effect, with higher carbon fuels replacing our lower emissions products.

A healthy Canadian oil and natural gas industry is vital in leading the way to a lower carbon future.

Made-in-Canada technologies that reduce emissions at our oil and natural gas operations could be adapted for sharing with other industries worldwide. We are already making meaningful progress developing those solutions.

We’ve reduced the emissions intensity in the oil sands by about 30% over the past two decades, and a number of oil sands operations are producing oil with a smaller greenhouse gas impact than the global average. We’re working to get those numbers even lower.

And Canada’s energy companies are the country’s single largest investors in clean tech. Through organizations such as Canada’s Oil Sands Innovation Alliance (COSIA), Petroleum Technology Alliance Canada (PTAC) and the Clean Resource Innovation Network (CRIN) we are continuing to work on – and share – breakthrough technologies.

But we can’t do it alone.

And that’s why we are writing this letter.

As we head into the upcoming election, we are asking you to join us in urging Canada’s leaders of all political stripes to help our country thrive by supporting an innovative energy industry. One that can contribute to solving the global climate change challenge and play a significant role in creating future energy solutions by developing our resources in the cleanest most responsible way possible today.

The choices we make will determine the quality of life we create for ourselves and future generations. These choices will impact our ability to fund schools, hospitals, parks and the social programs that we as Canadians so deeply value.

This isn’t about any particular pipeline, policy or province. This is about the future of Canada.

Tim McKay, President Canadian Natural Resources Limited

Alex Pourbaix, President & CEO Cenovus Energy

Derek Evans, President & CEO MEG Energy

Figure 1. Open Letter to Canadians from Cenovus Energy, Canadian Natural Resources Limited, and MEG Energy.⁸⁷

⁸⁷ *Ibid.*

So complete is the oil and gas industry's penetration of public policymaking in Canada – both federally and provincially – that the line between regulators and the regulated has become blurred beyond recognition. There are too many examples to cite here, but the Saskatchewan provincial government's 2020-2030 growth plan⁸⁸ helpfully lays bare the rhetorical identification of special private interests with the broader public interest. Touting the benefits of economic growth, Saskatchewan's plan cites the example of the recently opened Jim Pattison Children's Hospital on the campus of the University of Saskatchewan, and proceeds to make the following connection to the oil and gas sector: "For people across the country or within our province who would advocate policies to shut down or curtail the oil and gas sector, it is important to note that seven of the 22 donors who contributed more than \$1 million to the construction of the facility were able to do so because of the oil industry."⁸⁹

Environmental Law: Cases and Materials does not begin to untangle the complex processes by which the oil and gas and other hard-to-decarbonize industrial sectors (e.g., coal, steel, cement, transportation), aided and abetted by corporate-owned media,⁹⁰ the financial sector,⁹¹ and weak politicians and policymakers, have "captured" climate law and policy in Canada, and the book is silent altogether on how to rethink environmental law, policy, and governance to strategically counter industry capture and catalyze the transition towards deep decarbonization and sustainability, the central challenge of the Anthropocene.⁹²

Moreover, as noted above, this analytical gap is accompanied by a dissonantly detached tone. Reading the book, I longed for some echo of the passion of Greta Thunberg and her fellow climate strikers, who told the world's leaders, investors, and policymakers at the 2020 World Economic Forum in Davos that "[a]nything less than immediately ceasing these investments in the fossil fuel industry would be a betrayal of life itself."⁹³ Ironically, the book's all-too-brief analysis of the politics of climate policy inaction in Canada includes the observation that "[a]s individuals, we have not adequately connected with the climate crisis in our capacities as investors, as employees, as parents, as voters and as citizens."⁹⁴ But neither have we yet connected with the climate crisis in our capacities as university teachers, researchers, public policy advocates, and role models for our students and local communities, a troubling finding

⁸⁸ See "Saskatchewan's Growth Plan: The Next Decade of Growth, 2020–2030" (2019), online: *Government of Saskatchewan* <www.saskatchewan.ca/government/budget-planning-and-reporting/plan-for-growth>.

⁸⁹ *Ibid* at 5.

⁹⁰ See e.g. Jason MacLean, "Manufacturing Consent to Climate Inaction: A Case Study of *The Globe and Mail's* Pipeline Coverage" (2019) 42:2 Dal LJ 283.

⁹¹ See Rainforest Action Network, "Banking on Climate Change: Fossil Fuel Finance Report Card 2019" (20 March 2019), online (pdf): *Rainforest Action Network* <ran.org/bankingonclimatechange2019/>. According to the report, since the Paris Agreement was adopted in 2015, 33 global banking institutions have collectively invested US\$1.9 trillion in the fossil-fuel sector.

⁹² See e.g. Michael Pahle et al, "Sequencing to ratchet up climate policy stringency" (2018) 8 *Nature Climate Change* 861; Kyle C Meng & Ashwin Rode, "The social cost of lobbying over climate policy" (2019) 9 *Nature Climate Change* 472; Garmestani et al, "Untapped capacity in environmental law", *supra* note 18.

⁹³ See Greta Thunberg et al, "At Davos we will tell world leaders to abandon the fossil fuel economy" *The Guardian* (10 January 2020), online: <www.theguardian.com/commentisfree/2020/jan/10/greta-thunberg-davos-tycoons-fossil-fuels-dismantle-climate-crisis>.

⁹⁴ Doelle & Tollefson, *supra* note 6 at 884.

well documented beyond the disappointing disconnect in *Environmental Law: Cases and Materials*.⁹⁵

The shortcomings of the book's initial introduction to, and concluding chapter on, climate change law and politics are amplified by the book's equally dissonant decision not to thread climate change law and politics throughout the book's other chapters. Sustainability science shows that climate change is capable of disrupting and ultimately undermining the remaining 16 SDGs,⁹⁶ almost all of which (see Figure 2) are implicated either directly or indirectly in the book's other core topics, including the common law, jurisdiction, regulation, compliance and enforcement, judicial review, environmental assessment, parks and protected areas, and species at risk. Moreover, synergies are possible among laws and policies designed to implement the SDGs across diverse sectors, but only if they are pursued prospectively in a forward-looking, coordinated, and integrated manner.⁹⁷



Figure 2. The UN Sustainable Development Goals.⁹⁸

The book's middle chapters decline to take up this challenge. The book's second chapter turns to the common law, and only the final part of that chapter attempts to take up a potentially related area of environmental litigation: the public trust doctrine and the emergence of an expanded role for so-called public environmental rights. Yet the chapter's discussion of these

⁹⁵ See e.g. Irwin et al, "Bridging barriers", *supra* note 18 at 324 (arguing that despite "well-intentioned initiatives, enormous potential and occasional successes, our academic institutions are largely failing to support society's effort to achieve global sustainability"); see also Seth Wynes et al, "Academic air travel has a limited influence on professional success" (2019) 226 *J Cleaner Production* 959 at 965, showing that academics who study environmental issues are responsible for the same level of carbon emissions from air travel as other academics. Finally, see also Tom Dedeurwaerdere, "Transdisciplinary Sustainability Science at Higher Education Institutions: Science Policy Tools for Incremental Institutional Change" (2013) 5:9 *Sustainability* 3783, illustrating the institutional barriers to establishing sustainability science-and-policy research in universities.

⁹⁶ See Francesco Furso Nerini et al, "Connecting climate action with other Sustainable Development Goals" (2019) 2 *Nature Sust* 674.

⁹⁷ See Matteo Pedercini et al, "Harvesting synergy from sustainable development goal interactions" (2019) 116:46 *Proceedings National Academy Sciences United States America* 23021.

⁹⁸ Figure 2 is reproduced from "Sustainable Development Goals", online: *United Nations* <www.un.org/sustainabledevelopment/news/communications-material/>.

developments is little changed from the second edition. Referring to “the recent Supreme Court of Canada decision in *British Columbia v. Canadian Forest Products Ltd.*, 2004 SCC 38 (“Canfor)”, the authors report that “some commentators are predicting that in coming years the doctrine could have a similarly transformative impact [as it had in the United States] in Canadian environmental law.”⁹⁹ Fifteen years later, in 2019, this had not yet occurred,¹⁰⁰ although it is possible that the doctrine might yet influence Canadian environmental law and policy, as it was pleaded by the 15 youth plaintiffs who in 2019 commenced a class action against the federal government over its inaction on climate change.¹⁰¹ The balance of chapter 2 covers the application of traditional tort law to environmental law cases, and includes an excellent discussion of both the perennial problem of establishing causation and the abuse of tort litigation to deter public participation in environmental decision-making (i.e., Strategic Lawsuits Against Public Participation, or SLAPPs).

Chapter 3 addresses constitutional jurisdiction over the environment. Shortly after the book’s new edition was published, the Courts of Appeal for Saskatchewan and Ontario released their advisory opinions on Saskatchewan’s and Ontario’s respective references challenging the constitutional validity of the federal government’s *Greenhouse Gas Pollution Pricing Act*.¹⁰² Nevertheless, this chapter provides a useful discussion of the leading environmental-federalism cases in Canada, which will undoubtedly figure in the Supreme Court of Canada’s ultimate resolution of these and other provincial challenges to the federal government’s constitutional authority to regulate greenhouse gas emissions.

Chapter 3 also covers municipal jurisdiction over the environment and Aboriginal rights. In a new and innovative feature of the book’s third edition, the authors bring these two areas together in a case study of the dispute over the expansion of the Trans Mountain oil pipeline.¹⁰³ This case study is exceptionally well done, weaving together multiple levels of legal analysis across a number of issues and judicial decisions. And yet, as well done as it is, the book’s Trans Mountain case study also raises the question of why the chapter’s coverage of emerging jurisdictional issues limits itself to Aboriginal rights and ignores the revitalization of unextinguished Indigenous laws, including the intersection of Indigenous laws with environmental and natural resource laws. As the Trans Mountain pipeline dispute plays out in British Columbia, another dispute over jurisdiction, pipelines, and environmental protection is unfolding in that province involving the Wet’suwet’en Nation and its ongoing efforts to

⁹⁹ Doelle & Tollefson, *supra* note 6 at 165.

¹⁰⁰ As the authors belatedly note in chapter 10, “aside from a brief mention of the public trust doctrine in *British Columbia v. Canadian Forest Products Ltd.*, 2004 SCC 38, the doctrine has gained little traction in Canadian courts”; *ibid* at 953.

¹⁰¹ See *La Rose et al v Her Majesty the Queen*, Federal Court File No T-1750-19, filed 25 October 2019. Chris Tollefson is among the legal counsel representing the plaintiffs and was a key architect of the legal theory of the case.

¹⁰² In chapter 10, however, the authors briefly discuss some of the competing arguments raised in respect of federal-provincial jurisdiction over the regulation of greenhouse-gas emissions. For an analysis of the legislation and the advisory opinions of the Courts of Appeal for Saskatchewan and Ontario, each finding that the federal government’s carbon-pricing regulatory framework was constitutionally valid, see MacLean, “Climate Change, Constitutions, and Courts”, *supra* note 79. As of this writing, appeals from these opinions to the Supreme Court of Canada are pending.

¹⁰³ Doelle & Tollefson, *supra* note 6 at 295–304.

assert Wet'suwet'en law to prevent the construction of a natural gas pipeline on its unceded lands and waters (yin'tah).¹⁰⁴ In the most recent legal development as of this writing, the British Columbia Court of Appeal granted a further and expanded interlocutory injunction in favour of the pipeline proponent, Coastal GasLink Pipeline Ltd., preventing members of the Wet'suwet'en Nation from blockading the forest service road constructed by the proponent.¹⁰⁵ The Court's decision effectively denies Wet'suwet'en law any effectual meaning or force as "law." Given *Environmental Law: Cases and Materials'* brief introduction to UNDRIP in its introductory chapter,¹⁰⁶ and its insightful discussion of Indigenous approaches to conservation in parks and protected areas later in chapter 8,¹⁰⁷ I hoped the book would engage not only with Aboriginal law – i.e., the application of Canadian law to Indigenous peoples in Canada – but also with Indigenous laws. The book's decision not to do so is a significant missed opportunity.

Chapter 4 turns to the topic of regulation. Chapter 4 traces the transition away from *government-centered* (i.e., top-down, command-and-control) approaches to environmental regulation to *governance-based* approaches premised on the idea that businesses, consumers, and civil society actors are often better positioned to leverage change.¹⁰⁸ Students in particular will benefit from the overview in chapter 4 of the key Canadian regulatory models, including the *Fisheries Act* and the *Canadian Environmental Protection Act* (CEPA). In particular, chapter 4 nicely illustrates the distinction and tension in Canadian environmental law between risk-based approaches to decision-making and precautionary approaches.¹⁰⁹

Chapter 5 covers the closely related topic of compliance, and provides an interesting discussion of the role of adaptive management in environmental regulation and compliance mechanisms. Adaptive management refers in this context to the idea that adverse impacts of human activities can be mitigated through changes to the management and regulation of existing facilities and practices as problems are identified through monitoring and ongoing scientific research.¹¹⁰ The discussion in chapter 5 of the Federal Court's decision in *Taseko Mines Limited v Canada (Environment)*¹¹¹ provides a useful corrective to government and industry mischaracterizations of adaptive management as a panacea for all environmental problems, as well as a helpful judicial affirmation of the importance of interpreting and implementing Canadian environmental legislation and supporting regulations in a precautionary manner.¹¹²

Notwithstanding these strengths, the book's decision to treat climate change separately rather than integrate its law-and-policy implications throughout its chapters limits the ambit of the book's treatment of governance and compliance. Built into the design of the Paris

¹⁰⁴ See Stephen O'Neill, "For the Wet'suwet'en and Gitksan peoples, justice has been denied. What else is new?" *The Globe and Mail* (15 January 2020), online: <www.theglobeandmail.com/opinion/article-for-the-wetsuweten-and-gitksan-peoples-justice-has-been-denied/>.

¹⁰⁵ See *Coastal GasLink Pipeline Ltd v Huson*, 2019 BCSC 2264.

¹⁰⁶ Doelle & Tollefson, *supra* note 6 at 9.

¹⁰⁷ *Ibid* at 712–717.

¹⁰⁸ *Ibid* at 322.

¹⁰⁹ *Ibid* at 388.

¹¹⁰ *Ibid* at 451.

¹¹¹ See *Taseko Mines Limited v Canada (Environment)*, 2017 FC 1099 at paras 121–124.

¹¹² Doelle & Tollefson, *supra* note 6 at 458–463.

Agreement is a significant and unprecedented space and role for nonstate actors – corporations, international and nongovernmental organizations, universities, subnational governments, civil-society actors – to drive climate action from the bottom up through polycentric governance mechanisms. Since the adoption of the Paris Agreement in 2015, and particularly in light of the ongoing failure of States to undertake rapid and robust mitigation actions in line with the Agreement’s ambitious targets, polycentric climate governance has arguably emerged as the most important approach to mitigating climate change.¹¹³ The book’s discussion of the shift in the 1990s and 2000’s from government-centered regulation to governance-based mechanisms lends itself to engaging in this new global conversation about polycentric climate governance and its core unresolved issues, including learning how to effectively seed, diffuse, and scale local climate policy innovations to help close the mitigation gap created by State inaction. But the authors’ decision to leave climate change to the end of the book effectively precludes this further engagement.

The authors’ decision to silo climate change similarly precludes a reflection on the emerging tension between voluntary, bottom-up, and polycentric governance, on the one hand, and on the other hand efforts on behalf of the “invisible college of international lawyers” to revive “the blunt edge of climate change-based national, regional, or international litigation, adjudication, and arbitration towards reaching sufficiency of climate pledges for 70% of the world, and actual monitoring and enforcement of all climate pledges.”¹¹⁴ Advocates and practitioners of polycentric climate governance may view such a proliferation of coercive legal enforcement as counter-productive, but these are precisely the sorts of law-and-policy questions that arise out of the recognition that “we are faced with a shared time-sensitive global emergency”.¹¹⁵

Chapter 6 covers the judicial review of administrative environmental decision-making and environmental assessment. Unfortunately, much of the general background the authors provide about administrative law and the nature of judicial review was quickly superseded by the Supreme Court of Canada’s most recent attempt at clarifying the standard of review of administrative action in *Canada (Minister of Citizenship and Immigration) v Vavilov*¹¹⁶ and its companion cases. Chapter 6’s guide to the administrative law dimensions of environmental decision-making, however, retains much of its relevance, including its helpful discussion

¹¹³ See e.g. Elinor Ostrom, “Polycentric systems for coping with collective action and global environmental change” (2010) 20:4 *Global Environmental Change* 550; Daniel H Cole, “Advantages of a polycentric approach to climate change policy” (2015) 5 *Nature Climate Change* 114; Angel Hsu et al, “Towards a new climate diplomacy” (2015) 5 *Nature Climate Change* 501; Andrew J Jordan et al, “Emergence of polycentric climate governance and its future prospects” (2015) 5 *Nature Climate Change* 977; Charles F Sabel & David G Victor, “Governing global problems under uncertainty: making bottom-up climate policy work” (2017) 144 *Climatic Change* 15.

¹¹⁴ See Diane Desierto, “COP25 Negotiations Fail: Can Climate Change Litigation, Adjudication, and/or Arbitration Compel States to Act Faster to Implement Climate Obligations?” (19 December 2019), online: *EJIL Talk* <www.ejiltalk.org/cop25-negotiations-fail-can-climate-change-litigation-adjudication-and-or-arbitration-compel-states-to-act-faster-to-implement-climate-obligations/> [Desierto, “COP25 Negotiations Fail”]. See also Margaretha Wewerinke-Singh & Diana Hinge Salili, “Between negotiations and litigation: Vanuatu’s perspective on loss and damage from climate change” (2019) 20:6 *Climate Pol’y* 681.

¹¹⁵ *Ibid.*

¹¹⁶ See *Canada (Minister of Citizenship and Immigration) v Vavilov*, 2019 SCC 65.

of the use of scientific evidence in administrative proceedings.¹¹⁷ Moreover, the chapter's discussion of costs in judicial review proceedings remains a critical resource for public-interest environmental lawyers.¹¹⁸

However, at the risk of belabouring the core contention of this review, the effect of cordoning off climate change in its own chapter manifests itself once again in chapter 6, which might have otherwise explored the contributions that the kinds of small and mundane administrative law cases might make to what Kim Bouwers ingeniously refers to as the “unsexy future of climate litigation.”¹¹⁹ While climate advocates and academics continue to chase the Holy Grail of climate litigation, be it actions against governments or major investor-owned oil companies, Bouwers argues that small cases also matter, observing for example that administrative law challenges have already shaped the consumption and production of domestic energy in the United States.¹²⁰ It may turn out that the most mundane and technical of administrative law challenges ultimately prove to be the most consequential in combatting climate change if such challenges ultimately succeed in keeping remaining fossil-fuel reserves in the ground.¹²¹

Chapter 7 provides an overview, including a detailed historical account, of Canada's environmental assessment regime. While the chapter provides a good overview of the *Impact Assessment Act (IAA)* enacted in 2019,¹²² the authors were simply not in a position to offer any practical insight into Canada's latest federal environmental assessment framework because its supporting regulations and practice-guidance documents are still as of this writing in development, and we do not yet have any tangible experience in working with the *IAA*.

The book's final two chapters focus on parks and protected areas (chapter 8) and species at risk (chapter 9). Chapter 8 grapples with reconciling parks-and-protected-areas policy with Aboriginal rights and title, explaining that many of Canada's parks and protected areas were created without any consultation of First Nations.¹²³ The chapter proceeds with an insightful discussion of the importance of Indigenous knowledge to conservation efforts (as noted above),¹²⁴ a brief overview of the Edézhíe Protected Area, the first Indigenous protected area in Canada created in 2018 under Canada's Nature Legacy program,¹²⁵ and an incisive analysis of the implications of the Supreme Court of Canada's decision in *Mikisew Cree First Nation v Canada (Minister of Canadian Heritage)*,¹²⁶ not only for First Nations' treaty rights in respect of Canadian parks, but also for the obligations of the government when making land and resource-use decisions that potentially affect treaty rights.¹²⁷ These are significant new additions to the third edition. They transform a chapter that might otherwise be overlooked – despite their

¹¹⁷ Doelle & Tollefson, *supra* note 6 at 525–528.

¹¹⁸ *Ibid* at 582–590.

¹¹⁹ Kim Bouwer, “The Unsexy Future of Climate Change Litigation” (2018) 30:3 J Envtl L 483.

¹²⁰ *Ibid* at 487.

¹²¹ I am grateful to Sébastien Jodoin for articulating this particular point.

¹²² *Impact Assessment Act*, *supra* note 21.

¹²³ Doelle & Tollefson, *supra* note 6 at 706.

¹²⁴ *Ibid* at 712–716.

¹²⁵ *Ibid* at 716–718.

¹²⁶ See *Mikisew Cree First Nation v Canada (Minister of Canadian Heritage)*, 2005 SCC 69.

¹²⁷ Doelle & Tollefson, *supra* note 6 at 724–726.

importance, parks and protected areas typically receive less attention than the environmental impacts of economic activities – into a must-read, especially because of the absence of coverage of Indigenous knowledge, laws, and worldviews throughout the rest of the book.

Regrettably, this focus on Indigenous perspectives is not carried through to its potential in chapter 9 on species at risk. Other than a brief excerpt of a report providing a critical analysis of the omission of Indigenous knowledge and worldviews in Canada's *Species at Risk Act's* (SARA) – “How can there be ‘ecological management’ when the single largest management element, the work and ethics of [Indigenous] people, is left out?”¹²⁸ – chapter 9 discusses biodiversity and species at risk from an exclusively western legal and scientific perspective. The recent work of the UN IPBES, by contrast, gives pride of place to the efficacy of Indigenous knowledge and ecological stewardship.¹²⁹ Its landmark 2019 report shows, for example, that biodiversity and ecosystem services are “generally declining less rapidly in indigenous peoples’ land than in other lands, but is nevertheless declining, as is the knowledge of how to manage it.”¹³⁰ The report goes on to describe the contributions that Indigenous peoples make to the enhancement and maintenance of both wild and domesticated biodiversity and landscapes, characterizing Indigenous knowledge systems as “locally based, but regionally manifested and thus globally relevant.”¹³¹ Specific Indigenous contributions to enhancing and maintaining ecosystems include: (1) domesticating and maintaining crops and animal breeds; (2) creating cultural landscapes with enhanced habitat heterogeneity; (3) developing production systems with a multitude of domestic and wild species; (4) preventing forest loss; (5) habitat management; (6) wild-species management; (7) restoration; and, not least, (8) providing and teaching alternative values and worldviews.¹³² A critical task for biodiversity-conservation research and practice is to better understand the role of culture in Earth-system stewardship by learning from these long-established counter-narratives of human-nature interaction and reciprocity. Greater attention to Indigenous knowledge and worldviews would have significantly enhanced not only the book's coverage of biodiversity, *but also its analysis of environmental protection and enhancement throughout*. Given the profound disconnect within regional and global socio-ecological systems, we need knowledge from beyond the “typical Anthropocene ken”¹³³ now more than ever.

Environmental Law: Cases and Materials is the authoritative resource on the history and evolution of pre-Anthropocene Canadian environmental law, and it remains an indispensable resource for environmental lawyers and law reformers. It also remains firmly rooted,

¹²⁸ *Ibid* at 853, citing Joshua E McNeely & Roger J Hunka, *Policy Critique of the Draft Species at Risk Act Overarching Policy Framework: Perspectives for the Improvement of the Government of Canada's Implementation of the Species at Risk Act* (Truro Heights, NS: Maritime Aboriginal Peoples Council, 2011). This excellent excerpt includes a discussion of the “two-eyed seeing approach” largely credited to Mi'kmaq Elder Albert Marshall recognizing that Indigenous knowledge systems and western science each have valuable insights about the workings of the natural world. Unfortunately, this framework is not more broadly utilized throughout the book.

¹²⁹ See UN Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), “Summary for policymakers”, *supra* note 32 at 31–33.

¹³⁰ *Ibid* at 14.

¹³¹ *Ibid* at 32.

¹³² *Ibid*.

¹³³ Keys et al, “Anthropocene risk”, *supra* note 4 at 672.

however, in the traditional model of environmental law as a subject widely perceived to be marginal to “mainstream” decision-making processes.¹³⁴ Arising from the familiar “tragedy of the commons”¹³⁵ and traditional pollution-abatement narratives,¹³⁶ the book’s largely monodisciplinary, static, State-focused, and siloed ordering of narrowly defined sectoral topics neither reflects nor effectively intervenes in the socio-political conflicts, polycentricism, interdisciplinarity, and epistemological diversity and complexity inherent in environmental-cum-societal challenges.¹³⁷ Neither is the book capable of keeping pace with the cross-scale – local, regional, global – and dynamic interaction of anthropogenic changes occurring both slowly (i.e., climate change) and rapidly and unpredictably (e.g., increasingly destructive forest fires) that are characteristic of our new Anthropocene epoch.¹³⁸ A new approach is urgently needed.

3. CURRICULUM DESIGN FOR LEX ANTHROPOCENAE

The shortcomings of *Environmental Law: Cases and Materials* reflect the shortcomings of much environmental law scholarship and pedagogy more generally, including the following four tendencies. First, environmental law scholarship and pedagogy tends to be insufficiently reflective of and responsive to Earth-system dynamics (i.e., systemic interactions among the Earth’s spheres and human activities), including teleconnections, feedback effects, and potential tipping points.¹³⁹ Second, it tends to underrepresent, and sometimes exclude entirely, the vital voices and views of society’s most marginal and unequal members, including Indigenous peoples, women, children, animals, and nature itself.¹⁴⁰ Third, it largely fails to confront dominant norms of anthropocentrism, the unquestioned goal of perpetual economic growth,¹⁴¹ and the use of economic efficiency as the default lens through which competing economic and environmental laws and policies are assessed.¹⁴² And fourth, environmental law scholarship and pedagogy has thus far failed to advance our understanding of how to rapidly enact and implement transformative laws and policies – a new *Lex Anthropocenae* –

¹³⁴ Fisher, “Hot Law”, *supra* note 76 at 348.

¹³⁵ See generally Garrett Hardin, “The Tragedy of the Commons” (1968) 162:3859 *Science* 143.

¹³⁶ See e.g. D Paul Emond, “Are We There Yet? Reflections on the Success of the Environmental Law Movement in Ontario” (2008) 46:2 *Osgoode Hall LJ* 218 at 219–225.

¹³⁷ Fisher, “Hot Law”, *supra* note 76.

¹³⁸ Keys et al, “Anthropocene risk”, *supra* note 4 at 668.

¹³⁹ Lenton et al, “Climate tipping points”, *supra* note 17.

¹⁴⁰ See Louis J Kotzé, “Reflections on the Future of Environmental Law Scholarship and Methodology in the Anthropocene” in Ole W Pedersen, ed, *Perspectives on Environmental Law Scholarship: Essays on Purpose, Shape and Direction* (New York: Cambridge University Press) 140 at 144; for a powerful corrective, see Sara L Seck, “Relational Law and the Reimagining of Tools for Environmental and Climate Justice” (2019) 31:1 *CJWL* 151.

¹⁴¹ See e.g. Louis J Kotzé, “International Environmental Law and the Anthropocene’s Energy Dilemma” (2019) 36 *Environmental & Planning LJ* 437; Steven Bernstein, “Liberal Environmentalism and Global Environmental Governance” (2002) 2:3 *Global Environmental Politics* 1.

¹⁴² See e.g. Sterner et al, “Policy design for the Anthropocene”, *supra* note 4 at 14, asserting without establishing that “policy choice and design needs to be based on efficiency, achieving [the] desired outcome at lowest costs”.

to shift local, regional, and global socio-ecological systems towards greater sustainability and resilience.¹⁴³

The central challenge and opportunity for research-cum-curriculum design for the *Lex Anthropocena*¹⁴⁴ is to “build a unified political project, based upon the common ecological fate we all share.”¹⁴⁵ This integration of research and curriculum design is intentional, and necessary. Climate change and sustainability are dynamic, shifting challenges. Their solutions, including transformative climate laws, policies, and governance mechanisms, cannot be formulated apart from our ongoing efforts to better understand climate change mitigation and sustainability transitions as “super wicked” problems.¹⁴⁶ This demands, for starters, that we climate change scholars integrate our research into our teaching, and vice versa.

Yet there does not yet exist an established oeuvre of effective research and practice capable of serving as the core curriculum for a *Lex Anthropocena*. Moreover, a demand for such a definitive core curriculum may be fundamentally incompatible with the Anthropocene insofar as the Anthropocene continues to be characterized by rapid, non-linear, and unpredictable climatic and environmental shifts across multiple local and regional scales in an Earth system in which social and natural systems continuously co-evolve. To briefly answer the existential question posed above in part II (i.e., whether it is still possible in the ever-changing Anthropocene epoch to provide definitive accounts of our relationship to the environment), it may no longer be either feasible or advisable to try to write a text aiming for both the comprehensiveness and depth of coverage sought by *Environmental Law: Cases and Materials* during the Anthropocene and its continuously shifting baseline conditions. Instead, professors and their students must begin co-producing new and up-to-date research and curriculum in real time and in partnership with a growing diversity of climate governance actors, from climate policymakers to climate protestors like Extinction Rebellion and Fridays-for-Future climate strikers, from CEOs, accountants, and engineers to visual artists and Hip Hop activists, from Indigenous knowledge-holders and four-seasons farmers to the UN IPCC and IPBES. The era of environmental law’s splendid isolation must end.

For example, in 2019 I opted not to assign *Environmental Law: Cases and Materials* to my environmental law students, and embarked instead on a fundamental redesign of the course with two interrelated objectives: (1) to bring the standard materials of Canadian environmental law into a critical dialogue with cutting-edge Earth-system science and governance research,¹⁴⁷

¹⁴³ Garmestani et al, “Untapped capacity in environmental law”, *supra* note 18 at 19899.

¹⁴⁴ See e.g. Louis J Kotzé, “Earth System Law for the Anthropocene” (2019) 11:23 *Sustainability* 6796 at 6 [Kotzé, “Earth System Law”]; Jane Holder, “‘Doing the Sustainable Development Dance’: Tracing a Critical Route from the Education for Sustainable Development Movement to Environmental Justice in Legal Education” (2012) 65:1 *Current Leg Probs* 145 (for earlier and still-relevant discussions of the challenges that the Anthropocene poses for legal education); Nicole Graham, “This is Not a Thing: Land, Sustainability and Legal Education” (2014) 26:3 *J Envtl L* 395; Mari J Matsuda, “Admit That the Waters Around You Have Grown: Change and Legal Education” (2014) 89:4 *Indiana LJ* 1381.

¹⁴⁵ See Mark Whitehead, *Environmental Transformations: A Geography of the Anthropocene*, (Abingdon: Routledge, 2014) at 481.

¹⁴⁶ See e.g. Kelly Levin et al, “Overcoming the tragedy of super wicked problems: constraining our future selves to ameliorate global climate change” (2012) 42:2 *Policy Sci* 123.

¹⁴⁷ The reading list for this course, *Environmental Law 444*, taught during the Fall 2019 semester at the University of Saskatchewan’s College of Law, is reproduced in Appendix A. In Appendix B, I provide a

and (2) to undertake a course-based research project to co-produce with my students and other collaborators the kind of new, actionable, and problem-and-solution-based knowledge required to effect local, and ideally diffusible and scalable, change.

Our course-based research project – “Paris of the Prairies: Making the Paris Agreement a Reality at the University of Saskatchewan” – investigated the obstacles and opportunities associated with deeply decarbonizing the University, which we conceptualized as a living laboratory for climate policy innovation and leadership. Collaborating with the University’s heating plant engineers, its Office of Sustainability and other members of the University’s administration, and local Indigenous knowledge-holders, our class sought to make a contribution to the emerging body of bottom-up, polycentric climate policy experimentation. As the members of the class introduced our project in an opinion-editorial they published in the University’s student newspaper as their final course assignment:

Other governance actors like cities, non-governmental organizations and universities are stepping up to help close the gap between political rhetoric and policy reality. Inspired by the University of California’s efforts to become carbon-neutral, our course on environmental law set out this semester to examine how to decarbonize the University of Saskatchewan.¹⁴⁸

Based on our course-based climate-action-research project, I subsequently prepared the first draft of an “undisciplinary” academic article describing our approach and preliminary findings, and then shared this draft with the students enrolled in a subsequent interdisciplinary Masters-level course that I designed and taught in the University’s School of Environment and Sustainability. On the strength of the improvements suggested by my Masters students, I substantially revised the article and re-circulated it to the members of both classes and our collaborators for additional comments before ultimately submitting it for publication on behalf of my student co-authors.¹⁴⁹

Our course-based research project mirrored the principally “undisciplinary” approach¹⁵⁰ embodied by our courses’ reading lists, which were designed to invite students to rethink

subsequent iteration of this course design for an interdisciplinary Masters-level course on sustainability management that I taught in the University’s School of Environment and Sustainability.

¹⁴⁸ The Members of Environmental Law 444, “Paris of the Prairies: Making the Paris Agreement a reality at the U of S” (6 December 2019), online: *The Sheaf* <thesheaf.com/2019/12/06/paris-of-the-prairies-making-the-paris-agreement-a-reality-at-the-u-of-s/>. I hasten to add that my course is by no means the only such sustainability-research-based course offered at the University of Saskatchewan. For example, my colleague in the School of Environment and Sustainability, Dr. Colin Laroque, has taken this approach to his course on Environment and Sustainability (ENVS 401) for several years. Students across several iterations of Professor Laroque’s course have been advancing a project called “Farm the Sun with US” seeking to promote the generation of solar power on the University of Saskatchewan’s campus; see generally “Farm the Sun With Us” (26 March 2018), online: *University of Saskatchewan* <sens.usask.ca/news-articles/2018/farm-the-sun-with-us.php> for more information on this innovative research-based course initiative.

¹⁴⁹ As of this writing, the article is under peer review.

¹⁵⁰ See e.g. John Robinson, “Being undisciplined: Transgressions and intersections in academia and beyond” (2007) 40:1 *Futures* 70 [Robinson, “Being undisciplined”]. See generally L. Jamila Haider et al, “The undisciplinary journey: early-career perspectives in sustainability science” (2018) 13 *Sustainability Science* 191 (for a helpful elaboration of undisciplinary sustainability science).

received categories and approaches to environmental law in the context of the Anthropocene. Undisciplinary research is (1) problem-and-solution-based, (2) integrative, and (3) reflexive, involving strong forms of collaboration and partnership among scholars and non-scholars.¹⁵¹ Crucially, undisciplinary research also embodies the resilience and sustainability principle of “learning by doing.”¹⁵² While there is already a burgeoning scholarly literature *describing* what a *Lex Anthropocenae* might ideally look like,¹⁵³ there is much less undisciplinary problem-and-solution-based research focused on actively *creating* hybrid forms of actionable knowledge and scalable solutions to climate change.¹⁵⁴ Undisciplinary problem-and-solution-based research is highly complex, sometimes exhausting, and frequently exhilarating.¹⁵⁵ It is also the epistemological and methodological foundation of any effective *Lex Anthropocenae* curriculum.

4. CONCLUSION: THINKING LIKE AN ANTHROPOCENE LAWYER

At the beginning of this essay, I posed the question of what environmental law students should learn about the Anthropocene. Parenthetically, I also suggested that this question should be framed more broadly in terms of what *all* law students should learn about our new epoch in which humans are powerful geological agents.¹⁵⁶ Three principal reasons support this call for broader curricular reform.

Achieving a rapid and just transition to global sustainability is the defining challenge of the twenty-first century. It is trite to observe that as a regulatory social institution, law, however it is defined (more on that in a moment), will play a crucial role in structuring and governing this transition across multiple jurisdictions and legal cultures, for better or worse.¹⁵⁷ Put more pointedly, it is ethically and professionally irresponsible to graduate law students without providing them with a grounding in the law-and-policy dimensions and implications of the Anthropocene.

The Anthropocene, moreover, is not the exclusive preserve of environmental law, be it international or domestic. Energy law, for example, is increasingly focused on the process of decarbonization, achieved by simultaneously limiting and ultimately eliminating the use of fossil fuels while expanding the use of renewable energy and energy-conservation measures.¹⁵⁸

¹⁵¹ *Ibid* at 71 [Robinson, “Being undisciplined”].

¹⁵² See e.g. Georgina Cundill et al, “Principle 5 – Encourage Learning” in Reinette Biggs, Maja Schlüter & Michael L Schoon, eds, *Principles for Building Resilience: Sustaining Ecosystem Services in Socio-Ecological Systems* (Cambridge: Cambridge University Press, 2015) 174 at 190–192.

¹⁵³ See Kotzé, “Earth System Law”, *supra* note 144 for the review provided.

¹⁵⁴ Notable and exciting exceptions include Bennett et al, “Bright spots”, *supra* note 5; David G Victor et al, “Turning Paris into reality at the University of California” (2018) 8 *Nature Climate Change* 183; Carl Folke et al, “Transnational corporations and the challenge of biosphere stewardship” (2019) 3 *Nature Ecology & Evolution* 1396.

¹⁵⁵ See Robinson, “Being undisciplined”, *supra* note 150 at 84.

¹⁵⁶ See Kotzé, “Earth System Law”, *supra* note 144 at 2.

¹⁵⁷ See generally Eric Biber, “Law in the Anthropocene Epoch” (2017) 106 *Geo LJ* 1; Jason MacLean, “Autonomy in the Anthropocene? Libertarianism, Liberalism, and the Legal Theory of Environmental Regulation” (2017) 40:1 *Dal LJ* 279.

¹⁵⁸ See also Alexandra B Klass, “Climate Change and the Convergence of Environmental and Energy Law” (2013) 4 *Fordham Envtl LJ* 180.

Land-use and municipal-planning law bear on significant and growing sources of greenhouse gas emissions and biodiversity loss, and will figure prominently in climate change adaptation efforts.¹⁵⁹ Insurance law, bankruptcy law, corporate securities law, and several other fields of law formally outside of environmental law are at once reflecting and reshaping notions of climate risks and liabilities.¹⁶⁰ Few areas of law are *not* intimately implicated in the human practices and systems responsible for creating the Anthropocene.

Finally, because the corollary of the Anthropocene is the insight that “[t]he world we inhabit will henceforth be the world we have made”,¹⁶¹ it is regrettably evident that neither environmental law nor international environmental law as traditionally conceived and practiced is capable of stemming the tide of cascading climatic disruptions. Quite the opposite, in fact. Achieving deep decarbonization and sustainability calls for building new bridges rather than retreating into our respective silos.

Accordingly, if the Anthropocene is no longer exclusively environmental law’s problem, but rather the concern of law writ large, how do we learn to think like Anthropocene lawyers? What kind of law is *Lex Anthropocena*?

While there have been some promising positive-law developments of late, including the International Court of Justice’s adoption of a holistic ecosystem approach in valuing environmental damage in its decision in *Certain Activities Carried Out by Nicaragua in the Border Area (Costa Rica v. Nicaragua)*¹⁶² and the Netherlands’ Supreme Court’s affirmation in *State of the Netherlands v Urgenda Foundation* of the Dutch government’s positive obligation to protect its citizens (including future generations) from climate change,¹⁶³ *Lex Anthropocena* must embrace the diverse norms and undisciplined practices of nonstate actors across multiple scales of governance if it hopes to undo its predecessors’ mistaken assumptions and sins of omission. Learning to think like an Anthropocene lawyer lines up suggestively with what Sébastien Jodoin usefully describes as “professional legal pluralism,”¹⁶⁴ which embodies “the diverse skills, training, and career aspirations of jurists” across “multiple sites and forms of normativity in multiple ways.”¹⁶⁵

It is impossible to overemphasize the mutual importance of aspirations and methodological pluralism in pursuit of our common and unified project. If we are to somehow create a “good

¹⁵⁹ See JB Ruhl & James Salzman, “Climate Change Meets the Law of the Horse” (2013) 62 Duke LJ 975 at 1010.

¹⁶⁰ See Sarah E Light, “The Law of the Corporation as Environmental Law” (2019) 71:1 Stanford L Rev 137.

¹⁶¹ See Jedediah Purdy, “Surviving the Anthropocene: What’s Next for Humanity?” (1 March 2016), online: *ABC Religion and Ethics* <www.abc.net.au/religion/surviving-the-anthropocene-whats-next-for-humanity/10097262>.

¹⁶² See *Certain Activities Carried Out by Nicaragua in the Border Area (Costa Rica v. Nicaragua)*, [2018] ICJ Rep 15 (noting that “it is appropriate to approach the valuation of environmental damage from the perspective of the ecosystem as a whole, by adopting an overall assessment of the impairment or loss of environmental goods and services prior to recovery, rather than attributing values to specific categories of environmental goods and services and estimating recovery periods for each of them” at 78).

¹⁶³ Netherlands Supreme Court, The Hague, 20 December 2019, *State of the Netherlands (Ministry of Economic Affairs and Climate Policy) v Stichting Urgenda*, No 19/00135.

¹⁶⁴ Sébastien Jodoin, “Teaching Approach”, online: <www.sjodoin.ca/teaching>.

¹⁶⁵ *Ibid.*

Anthropocene,”¹⁶⁶ we must first acknowledge that it will be a world that socially, economically, and ecologically differs radically from our present, business-as-usual reality.¹⁶⁷ Thinking radically yet realistically is crucial. At the same time, we cannot afford to ruminate exclusively on disruptive and maladaptive trends, lest we run the risk of collectively self-fulfilling a bleak future.¹⁶⁸ Aspirational visions can form the basis of transformative changes. And because people imagine the good and the just life in multiple ways, we must create multiple pathways across multiple sites of normativity – a legal-pluralist *Lex Anthropocenae*.

Although the challenges posed by the Anthropocene of our own making are daunting, they have crystallized for us the opportunity to transform our relationship with “nature” and with each other. Knowing what we do now, there can be no turning back. In a speech given to the National Audubon Society a few months before her death, at age fifty-six, two years after publishing her ground-breaking book *Silent Spring*, Rachel Carson presciently expressed the nature of this challenge and the opportunity before us: “And so the effort must and shall go on. Though the task will never be ended we must engage in it with a patience that refuses to be turned aside, with determination to overcome obstacles, and with a pride that it is our privilege to contribute so greatly.”¹⁶⁹

¹⁶⁶ See Bennett et al, “Bright spots”, *supra* note 5.

¹⁶⁷ See *ibid* at 442.

¹⁶⁸ See *ibid* at 441. See also Lynda Collins & Brandon D Stewart, “Engendering Hope in Environmental Law Students” (10 April 2020), online (pdf): *SSRN* <www.papers.ssrn.com/sol3/papers.cfm?abstract_id=3572751>.

¹⁶⁹ Rachel Carson, “Speech Accepting the Audubon Medal of the National Audubon Society” (3 December 1963) in Steingraber, ed, *supra* note 1 at 497.

APPENDIX A: ENVIRONMENTAL LAW 444 READING LIST**LAW 444.3 – ENVIRONMENTAL LAW**

University of Saskatchewan College of Law

Prof. Jason MacLean

Fall 2019

SYLLABUS

Sept 10	<p>Course introduction:</p> <p>Semi-structured student interviews facilitated by course TA; course introduction; research project planning session; tech set-up</p>
Sept 17	<p>The Anthropocene, and its implications for law, policy, and governance:</p> <p>“The Anthropocene: From Global Change to Planetary Stewardship”</p> <p>“H.Res 109 – Recognizing the duty of the Federal Government to create a Green New Deal”</p> <p>“UK needs sustainability act to avert economic collapse”</p> <p><i>Federal Sustainable Development Act, SC 2008, c 33</i></p> <p>“Turning Paris into reality at the University of California”</p> <p>---</p> <p><i>For background, consult the UN Paris Agreement and the UN Sustainable Development Goals (SDGs) online</i></p>

Sept 24	<p>Global-warming science versus politics:</p> <p>IPCC, “Global Warming of 1.5°C: Summary for Policymakers”</p> <p>“Robust abatement pathways to tolerable climate futures require immediate global action”</p> <p>“The social cost of lobbying over climate policy”</p> <p>“Project pulled after emails show ‘very cozy’ relationship between Sask. gov’t and Quill Lakes water group”</p> <p>---</p> <p>For background, consult the Saskatchewan Environmental Assessment Act (<i>it’s very short</i>) and the Saskatchewan Ministry of the Environment’s Quill Lakes EA Decision <i>online</i></p>
Oct 1	<p>The Planetary Boundaries concept:</p> <p>“Planetary boundaries: Guiding human development on a changing planet”</p> <p>Recommended: Associated TED Talk: https://www.ted.com/talks/johan_rockstrom_let_the_environment_guide_our_development/transcript?language=en#t-9992</p> <p>“Change the Goal: from GDP to the Doughnut”</p> <p>Recommended: Associated TED Talk: https://www.youtube.com/watch?v=1BHOfzxPjI</p> <p>“Trajectories of the Earth System in the Anthropocene”</p>
Oct 8	<p>Heating Plant class tour & guest presentation by Kevin Hudson, Office of Sustainability</p>

Oct 15	<p>Global interconnectedness, socio-ecological systems and resilience thinking:</p> <p>“Improving network approaches to the study of complex social-ecological interdependencies”</p> <p>“Anthropocene risk”</p> <p>“Rethinking resilience to wildfire”</p> <p>“Deathwatch for the Amazon”</p> <p>Guest presentation: Matt Wolsfeld, Office of Sustainability</p>
Oct 22	<p>Climate and sustainability policy and governance:</p> <p>“Policy design for the Anthropocene”</p> <p>“Six transformations to achieve the Sustainable Development Goals”</p> <p>Recommended: Associated TED Talk: https://www.youtube.com/watch?v=Rv-tDrv_mc</p>
Oct 26	<p>Class presentation to University Senate, Education Committee</p> <p>Marquis Hall, 1-2pm</p>
Oct 29	<p>The prospects and perils of technological innovations:</p> <p>“Net-zero emissions from energy systems”</p> <p>“Engineering climate debt: temperature overshoot and peak-shaving as risky subprime mortgage lending”</p> <p>“A Debate on Geoengineering: Vandana Siva vs. Gwynne Dyer”</p>
Nov 5	<p>How will we feed ourselves and two billion more people:</p> <p>“Food in the Anthropocene: the EAT-Lancet Commission on healthy diets from sustainable food systems”</p> <p>IPCC, “Climate Change and Land: Summary for Policymakers”</p> <p>---</p> <p><i>Environmental Stewardship, Indigenous Experiences and Worldviews</i> discussion circle at the Gordon Oakes Red Bear Centre, 5pm</p>

Nov 12	No class – Fall Break
Nov 19	<p>Biodiversity and adaptation challenges:</p> <p>“Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services”</p> <p>“Higher tide: The water is coming. The world is not ready”</p> <p>“Magnitude of urban heat islands largely explained by climate and population”</p>
Nov 26	<p>The Anthropocene as socio-legal benchmark:</p> <p>“Climate as a risk factor for armed conflict”</p> <p>“What’s law got to do with it?”</p> <p>“National Environmental Performance on Planetary Boundaries: A Study for the Swedish Environmental Protection Agency”</p> <p>---</p> <p><i>For background, consult the Impact Assessment Act, SC 2019, c 28, and the Greenhouse Gas Pollution Pricing Act, s 12, c 186 online</i></p>
Dec 3	<p>The Anthropocene is not binary, and our imagination matters:</p> <p>Concluding semi-structured student interviews (facilitated by Gwenna Moss Centre)</p> <p>---</p> <p>“Bright spots: seeds of a good Anthropocene”</p> <p>“Tower of Babylon” (short story)</p> <p>Greta Thunberg, <i>No One is Too Small to Make a Difference</i> (selected short speeches)</p>

**APPENDIX B: FUNDAMENTALS OF ENVIRONMENTAL LAW AND POLICY 898
COURSE DESCRIPTION AND READING LIST**

SCHOOL OF ENVIRONMENT AND SUSTAINABILITY

MASTER OF SUSTAINABLE ENVIRONMENTAL MANAGEMENT (MSEM) PRO-
GRAMME**ENVS 898.1: FUNDAMENTALS OF ENVIRONMENTAL LAW AND POLICY**

PROFESSOR JASON MACLEAN (J.MACLEAN@USASK.CA)

JANUARY 6–10, 2020, 8:30–11:50AM, ARTS 206

COURSE DESCRIPTION:

This intensive, one-credit-unit graduate-level course is an introduction to the fundamental concepts of environmental law and policy in the Anthropocene.

Rationale: Whereas traditional understandings of environmental law emerged in the late-1960s and early-1970s during the relatively-stable Holocene epoch, human activity is now the prime driver of physical and biological changes in the Earth system. Human activities now alter weather patterns, climate, land surfaces, the cryosphere (the frozen parts of the Earth), the deep ocean, and even evolutionary processes. In this new Anthropocene epoch, we urgently need to creatively rethink traditional understandings and practices of environmental law, policy, and governance. The figure above and its accompanying explanation illustrate the complexity of this challenge.

Delivery model: This course is an introduction to the fundamental principles of environmental law and policy, and how those principles are challenged by emerging understandings of Earth system science, including planetary boundaries, tipping points, and non-linear, cross-scale Anthropocene risks.

Put another way, this course is an introduction to the future of environmental law and policy for a future that has already arrived.

This course is also an intensive case-study-based research project. Working in groups, students will be challenged to apply their previous experiences as well as the new concepts and skills they have learned thus far in the MSEM programme to a trans-disciplinary research project led by the course instructor. The project—“Paris of the Prairies: Making the Paris Agreement a Reality at the University of Saskatchewan”—examines the socio-technical obstacles and opportunities associated with achieving net-zero greenhouse gas emissions here at the University of Saskatchewan.

SYLLABUS:

DAY	MODULE	READING TO BE DISCUSSED (see Reading List below)	STUDENT DELIVERABLES
Mon Jan 6	Welcome to the Anthropocene	<p>“Anthropocene risk” [4]</p> <p>“Behind the paper: Rethinking resilience to wildfire: interdisciplinary discussions provide better ideas for living with wildfire” [6]</p> <p>“Turning Paris into reality at the University of California” [9]</p> <p>“Paris of the Prairies: Making the Paris Agreement a Reality at the University of Saskatchewan” [5]</p> <p><i>Note: Students are expected to complete these readings over the break prior to the start of this course.</i></p>	Initial Reflection Exercise due by 4:00pm
Tues Jan 7	Law and Policy Design in the Anthropocene	“Policy design for the Anthropocene” [8]	N/A
Wed Jan 8	Environmental Law is Everything	<p>“Environmental Law as ‘Hot’ Law” [3]</p> <p>“The Green New Deal is What Realistic Environmental Policy Looks Like: In the 21st century, environmental policy is economic policy” [2]</p> <p>“H.Res.109 – Recognizing the duty of the Federal Government to create a Green New Deal” [7]</p>	Second Reflection Exercise due by 4pm
Thurs Jan 9	Imagination, Humility and Courage	<p>“Bright spots: seeds of a good Anthropocene” [1]</p> <p>“Why I broke the law for climate change” [10]</p>	N/A
Fri Jan 10	Group Presentations	N/A	Final Reports due by 4pm

READING LIST:

There is no textbook for this course. All of the course readings will be made available on the course's Blackboard site. The required readings are as follows:

1. Elena M. Bennett et al, "Bright spots: seeds of a good Anthropocene" (2016) 14:8 *Frontiers in Ecology and Environment* 441–448
2. Jedediah Britton-Purdy, "The Green New Deal is What Realistic Environmental Policy Looks Like: In the 21st century, environmental policy is economic policy", *The New York Times* (14 February 2019), online: <<https://www.nytimes.com/2019/02/14/opinion/green-new-deal-ocasio-cortez.html>> (4pp)
3. Elizabeth Fischer, "Environmental Law as 'Hot' Law" (2013) 25:3 *Journal of Environmental Law* 347–358
4. Patrick W. Keys et al, "Anthropocene Risk" (2019) *Nature Sustainability*, doi: 10.1038/s41893-019-0327-x (6pp)
5. Jason MacLean, "Paris of the Prairies: Making the Paris Agreement a Reality at the University of Saskatchewan" (2020) draft manuscript
6. David McWethy, "Behind the paper: Rethinking resilience to wildfire: interdisciplinary discussions provide ideas for better living with wildfire" (19 August 2019), *Sustainability Community*, *Nature.com*, online: <<https://sustainability-community.nature.com/users/290313-david-mcwethy/posts/52126-rethinking-resilience-to-wildfire-multi-disciplinary-discussions-provide-ideas-for-better-living-with-wildfire>> (3pp)
7. Alexandria Ocasio-Cortez (Representative), "House Resolution 109 – Recognizing the duty of the Federal Government to create a Green New Deal" 116th Congress (2019-2020), online: <<https://www.congress.gov/bill/116th-congress/house-resolution/109>> (7pp)
8. Thomas Sterner et al, "Policy design for the Anthropocene" (2019) 2 *Nature Sustainability* 14–21
9. David G. Victor et al, "Turing Paris into reality at the University of California" (2018) 8 *Nature Climate Change* 183–185
10. Farhana Yamin, "Why I broke the law for climate change" (2019) 573 *Nature* 337–339