

Teaching Climate Law: Trends, Methods and Outlook

Michael Mehling ,* Harro van Asselt,** Kati Kulovesi*** and
Elisa Morgera****

ABSTRACT

Climate change presents unique challenges for legal education. As a subject matter, it is technically complex and normatively contested, evolves at a dynamic pace and crosses established boundaries between academic disciplines, branches of law, and levels of jurisdiction. Still, it has, by now, firmly entered the legal curriculum through general and specialised courses, and is also increasingly featured in courses on neighbouring areas of law. This article offers an initial, exploratory survey of the current state of climate law education, including courses, degree programmes, and teaching material, as well as teaching methods and the role of interdisciplinary approaches. Based on this survey, it identifies broader trends in the still nascent field, including a tendency towards consolidation and specialisation. Climate law will evolve over time, as will approaches to its instruction. For future climate lawyers, practical skills and sound judgment will therefore weigh more heavily than exhaustive command of doctrinal detail. Interactive teaching formats and experiential learning are therefore recommended as integral elements of climate law education, as is cautious exploration of an interdisciplinary approach to the topic.

KEYWORDS: climate change law, interdisciplinarity, legal education

1. INTRODUCTION

Climate law has grown of age in the legal curriculum. In little over a decade, it has evolved from being, at best, a nascent theme featured alongside other sectoral topics in environmental law classes to becoming the subject of its own degree programmes, courses, textbooks, and dedicated journals. While its existence as a separate field of

* Deputy Director, Center for Energy and Environmental Policy Research (CEEPR), Massachusetts Institute of Technology (MIT), Cambridge, MA, USA; Professor of Practice, University of Strathclyde, Glasgow, UK. (mmehling@mit.edu)

** Professor of Climate Law and Policy, Centre for Climate Change, Energy and Environmental Law (CCEEL), University of Eastern Finland Law School, Joensuu, Finland.

*** Professor of International Law, Centre for Climate Change, Energy and Environmental Law (CCEEL), University of Eastern Finland Law School, Joensuu, Finland.

**** Professor of Global Environmental Law, University of Strathclyde, Glasgow, UK.

law has been debated,¹ and its boundaries to neighbouring areas of law—most notably environmental and energy law²—are unquestionably porous, it has seen the emergence of a vibrant community of academic teachers who identify themselves as climate lawyers, passing on their knowledge and interest to a rapidly growing student body.

As climate change mitigation and adaptation rise in importance, so should demand for legal expertise in government bureaucracies and international organisations, the judiciary, private corporations, civil society and interest groups, and traditional law firms and consultancies. Accompanying that demand is a growing interest in relevant courses and academic credentials through which to build and document climate law expertise.

But climate change also poses unique challenges for academic educators. It has become commonplace to designate it a ‘super-wicked problem’,³ reflecting its uncertainties, urgency, contentiousness, and intractability. Not unlike environmental law, students have to first develop an appreciation of the underlying natural phenomenon, its anthropogenic causes and its physical and socioeconomic impacts before they can fully understand the objectives, principles, and instruments of climate law. Legal responses to climate change are, in turn, shaped by complex and rapidly evolving scientific, political, moral, and economic considerations, necessitating an interdisciplinary perspective that transcends the traditional confines of legal doctrine and methodology.⁴

Addressing climate change calls for solutions across all regulatory planes, from international to local to transnational,⁵ with repercussions across jurisdictions and between different levels of governance.⁶ Climate law also tends to encroach on other areas of law, such as constitutional and administrative law, energy market regulation, or planning, and natural disaster law.⁷ Teaching the law of climate change, in short,

- 1 See, for instance, John C Dembach and Seema Kakade, ‘Climate Change Law: An Introduction’ (2008) 29 *Energy L J* 1, 1: ‘[c]limate change law is a new and rapidly developing area of law’; Jacqueline Peel, ‘Climate Change Law: The Emergence of a New Legal Discipline’ (2008) 32 *MULR* 922, 923: ‘a distinctive body of legal principles and rules identified as “climate change law”’; but see also Daniel Bodansky, Jutta Brunnée and Lavanya Rajamani, *International Climate Change Law* (OUP 2011) 11: ‘we do not mean to suggest that it is a discrete body of law with its own sources, methods of law-making, and principles, or that it is a self-contained regime’; JB Ruhl and James Salzman, ‘Climate Change Meets the Law of the Horse’ (2013) 62 *Duke L J* 975, 1013, arguing against the ‘need for a new field’.
- 2 Tracing how climate change has been situated within environmental law as a ‘typical pollution problem’: John C Nagle, ‘Climate Exceptionalism’ (2010) 40 *Envtl L* 53; see also Chris Hilson, ‘It’s All about Climate Change, Stupid! Exploring the Relationship Between Environmental Law and Climate Law’ (2013) 25 *JEL* 359.
- 3 See, for instance, Richard J Lazarus, ‘Super Wicked Problems and Climate Change: Restraining the Present to Liberate the Future’ (2009) 94 *Cornell L Rev* 1153; Kelly Levin and others, ‘Overcoming the Tragedy of Super Wicked Problems: Constraining our Future Selves to Ameliorate Global Climate Change’ (2012) 45 *Pol’y Sci* 123.
- 4 See, for instance, Petra Molthan-Hill and others, ‘Climate Change Education for Universities: A Conceptual Framework from an International Study’ (2019) *J Clean Prod* 1092.
- 5 From the extensive literature, see Andrew Jordan and others (eds), *Governing Climate Change: Polycentricity in Action?* (CUP 2018).
- 6 On this point, see Duncan French and Lavanya Rajamani, ‘Climate Change and International Environmental Law: Musings on a Journey to Somewhere’ (2013) 25 *JEL* 437, 458.
- 7 Dembach and Kakade (n 1) 2. See also Elizabeth Fisher, Eloise Scotford and Emily Barritt, ‘The Legally Disruptive Nature of Climate Change’ (2017) 80 *Mod L Rev* 173, discussing how climate change, due to

requires both a generalist perspective to capture its sprawling horizontal scale and manifold linkages, as well as a specialist perspective to reflect its vertical layers and complex technicalities.⁸

These very attributes of climate change are also what justify thinking about how it is taught at universities.⁹ As the stakes of climate change continue to rise, law schools are increasingly unable to ignore the subject in their course offerings. Similarly, many established areas of law can no longer be taught without at least some reference to climate change, yet the scale and breadth of the problem make it nearly impossible to do it justice with mere passing treatment. Its complexity along multiple dimensions also prompts questions of teaching methodology, and challenges established approaches to legal instruction and student evaluation.

Contending with such exigencies of climate law in the classroom is the focus of this article, which offers an initial, exploratory, survey of climate law education, including courses, degree programmes, and teaching material. The information presented in Part 2 of this article is drawn from the repository of course syllabi and teaching resources maintained by the IUCN Academy of Environmental Law,¹⁰ online searches, as well as our own experience and networks. These methods are likely to lead to some biases. For instance, the IUCN Academy of Environmental Law repository, by its own description, is based on voluntary submissions by IUCN members; it does not appear to be actively or systematically curated, and may thus suffer from a selection bias. However, it is the most comprehensive resource of its kind currently available, and can serve—within limits—as a useful heuristic indicator, which is the capacity in which it has been relied upon for this article. In addition, our own backgrounds and the limited availability of information for programmes, courses and teaching material in languages other than English are likely to have led to a bias towards climate law education in Western and Northern academic institutions, both in terms of the information presented here, as well as our observations derived from this. Venturing diagnoses across jurisdictions with diverse educational systems and traditions is fraught with particular challenges, and our conclusions hence not necessarily applicable in every context. We have therefore sought to make these limitations explicit wherever appropriate.

With these important methodological caveats in mind, this article uses the results of this survey as anecdotal indicators for identifying overarching trends in climate law as part of the legal curriculum, and ventures some tentative explanations for observed patterns. It then proceeds to a discussion of learning objectives, instruction formats, methods, and interdisciplinarity for teaching climate law. A concluding section offers some thoughts for the future trajectory of climate law education.

its polycentric, interdisciplinary, normative and scientifically uncertain nature, renders it difficult to apply established legal doctrines and principles.

- 8 These challenges have already been encountered in environmental law more generally, see Zygmunt B Plater, 'Environmental Law and Three Economies: Navigating a Sprawling Field of Study, Practice and Societal Governance in Which Everything Is Connected to Everything Else' (1999) 23 *Harv Envtl L Rev* 359; Joseph L Sax, 'Environmental Law in the Law Schools: What We Teach and How We Feel About It' (1989) 19 *Envtl L Rep* 10251.
- 9 See, also, generally Molthan-Hill and others (n 4) 1091.
- 10 IUCN Academy of Environmental Law, 'Climate Law Teaching Resources' <www.iucnael.org/en/online-resources/climate-law-teaching-resources> accessed 7 March 2019.

2. THE CURRENT LANDSCAPE OF CLIMATE LAW TEACHING

2.1 Trends in Climate Law Education

Climate law education can already count on dedicated journals,¹¹ case- and textbooks,¹² and an expanding number of university courses around the world.¹³ Students seeking a specialist degree have been able to choose, at different times, from several Master of Laws (LLM) programmes focused on climate change (see Table 1 for a non-exhaustive overview of programmes for which recent information is available online) or offering a relevant concentration (see Table 2 for a selection of programmes). Given the wealth of fertile questions for advanced research, climate law is also a popular subject of doctoral studies. Because of the individual nature of supervisory arrangements and chosen research topics, however, information on these studies is less readily available, precluding their inclusion in the survey in this section.

Any attempt to infer broader trends from the foregoing observations has to acknowledge that the latter are, at best, anecdotal and invariably biased towards course offerings and resources available in English. Relevant activities at universities in continental Europe, Africa, Asia and Latin America are thus almost certainly underrepresented. Still, with that caveat in mind, available indicators offer some tentative insights on the state and evolution of climate law education. For instance, while the subject is being taught at universities on five continents, a vast majority of the course syllabi available online have their origin in the USA¹⁴; likewise, the market for climate law textbooks is dominated by North American publishers.¹⁵

Although other factors may be in play,¹⁶ this dominance of the USA when it comes to relevant course syllabi and textbooks is likely also a consequence of the

11 This includes *Carbon & Climate Law Review* (Lexxon), published since 2007, *Climate Law* (Brill), published since 2010, the *San Diego Journal of Climate & Energy Law* (University of San Diego), published since 2009 and the *Washington and Lee Journal of Energy, Climate, and the Environment* (Washington and Lee University), published since 2009.

12 See, for instance, Bodansky and others (n 1); Daniel A Farber and Cinnamon P Carlarne, *Climate Change Law* (Foundation Press 2018); Richard G Hildreth and others, *Climate Change Law: Mitigation and Adaptation* (West Academic 2009); Leonardo Massai, *European Climate and Clean Energy Law and Policy* (Routledge 2011); John R Nolon and Patricia E Salkin, *Climate Change and Sustainable Development Law in a Nutshell* (West Academic 2010); Hari M Osofsky and Lesley K McAllister, *Climate Change Law and Policy* (Aspen Publishers 2012); Chris Wold, David Hunter and Melissa Powers, *Climate Change and the Law* (2nd edn, LexisNexis 2013); Edwin Woerdman, Martha M Roggenkamp and Marijn Holwerda (eds), *Essential EU Climate Law* (Edward Elgar 2015); Benoit Mayer, *The International Law on Climate Change* (CUP 2018). Mayer's book is accompanied by a dedicated website including teaching and research materials: <<https://internationalclimatelaw.com/>> accessed 7 March 2019.

13 See IUCN Academy of Environmental Law (n 10).

14 Of the 71 climate law syllabi available in March 2019 on the IUCN Academy of Environmental Law repository (n 10), 59 (83%) originate from North America (with 58 from the USA), seven (10%) from Europe, three (4%) from Asia, one (1.4%) from Africa and one (1.4%) from Australia.

15 Of the eight textbooks mentioned above (n 12), five—or 63%—are published in the USA as entries in established text- and casebook series, mirroring the structure and didactic approach of traditional US teaching and studying literature, and eliciting a clear focus on US law.

16 Among these factors is the more established tradition of developing and publishing an elaborate course syllabus in the USA, with an outline and instructions for students, a course schedule, and required or recommended reading materials, see Jeanne M Slattery and Janet F Carlson, 'Preparing an Effective Syllabus: Current Best Practices' (2005) 53 Coll Teach 159.

Table 1: Postgraduate climate law programmes

University	Programme	Teaching mode	Duration	Relevant courses	Comments
Jean Moulin Lyon 3 University (France)	Master in Global Climate Change Law (<i>Master droit global du changement climatique</i>)	Presence Learning	24 months (full time)	Law and litigation of climate change Public authorities and climate change Business and climate change Taxation and climate change International Environmental Law	Strong focus on European Union law and institutions
University of Edinburgh (UK)	LLM in Global Environment and Climate Change Law	Presence Learning	12 months (full time)	International Climate Change Law	
University of Malta & KU Leuven (Malta/Belgium)	LLM in Energy, Environmental and Climate Change Law	Blended Learning	24 months (part time)	International Law of the Sea International Environmental and Climate Change Law European Energy, Environmental and Climate Change Law Comparative Energy, Environmental and Climate Change Law	Jointly hosted by the University of Malta and the Institute for Environmental and Energy Law at KU Leuven Discontinued 2017–18

(Continued)

Table 1: (continued)

University	Programme	Teaching mode	Duration	Relevant courses	Comments
University of Strathclyde (UK)	LLM in Climate Law and Policy	Blended Learning	12 months (full time) 24 months (part time)	Climate, Energy & International Law Climate, Energy & Comparative Law Climate & Energy Finance Sustainable Energy Governance Climate, Energy & Litigation Climate, Energy & the Global Economy	Programme was affiliated with the Strathclyde Center for Environmental Law & Governance; discontinued 2018–19
University of Tasmania (Australia)	Master of Environmental Governance (Oceans, Polar and Climate)	Presence Learning	12 months (full time) 24 months (part time)	Oceans, Polar and Climate Practicum Climate Politics and Policy	Programme is affiliated with the Institute for Marine and Antarctic Studies
University of Wales, Aberystwyth (UK)	LLM in Climate Change and Human Rights	Presence Learning	12 months (full time)	Climate Change Law and Policy International Human Rights Law Human Rights, Environment and International Business Philosophy of Human Rights Protection	Discontinued 2017–18

(Continued)

Table 1: (continued)

University	Programme	Teaching mode	Duration	Relevant courses	Comments
University of Warsaw (Poland) & Sustainability College Bruges (Belgium)	LLM in Energy, Environmental and Climate Change Law	Presence Learning	12 months (full time)	International Energy, Climate Change and Environmental Law European Energy, Climate Change and Environmental Law Comparative Energy, Climate Change and Environmental Law	

Based on information provided in the websites of the programmes and authors' own research; current as of 31 August 2019.

Table 2: Postgraduate programmes with climate change specialisation or modules

University	Programme	Teaching mode	Duration	Relevant courses	Comments
Chinese University of Hong Kong (People's Republic of China)	LLM in Energy and Environmental Law	Presence Learning	12–24 months (full time) 24–36 months (part time)	International Law and Climate Change Introduction to Environmental Law and Climate Regulation Regulatory Instruments for a Low-Carbon Economy	Jointly organised by the Programme on Development, Innovation and Society, and the Programme on Law and Public Goods
Facultad Latinoamericana de Ciencias Sociales (Argentina)	Master in Climate Change Law and Economics (Maestría en Derecho y Economía del Cambio Climático)	Presence, Blended and Distance Learning	12 months (full time)	Advanced Environmental Law: Climate Change	Programme is affiliated with the Georgetown Climate Center
Georgetown University (USA)	LLM in Environmental and Energy Law	Presence Learning	12 months (full time) 24 months (part time)	Climate Change and Risk Management International, National and Local Climate Change Law	Participants can apply course load towards acquisition of a degree (Licenciatura) in engineering, natural sciences or social sciences
National Autonomous University of Mexico (UNAM)	Diploma in Climate Change Law and Governance	Presence Learning	8 months (part time)		

(Continued)

Table 2: (continued)

University	Programme	Teaching mode	Duration	Relevant courses	Comments
Pace University (USA)	LLM in Environmental Law Specialisation: Energy and Climate Change Law	Presence Learning	12 months (full time)	Human Rights and Climate-Induced Conflict Climate Change Law Climate and Corporate Practice Climate and Insurance Law Disaster Law and Emergency Preparedness State and Regional Climate Initiatives	Programme is affiliated with the Pace Energy and Climate Center
University of California, Berkeley (USA)	LLM Specialisation: Energy and Clean Technology Law	Presence and Blended Learning	8–11 months (full time, Traditional, Professional and Hybrid Track)	Climate Change & the Law Climate Change Mitigation Climate, Energy & Development Climate Change Economics	Programme is affiliated with the Center for Law, Energy & the Environment
University of Dundee (UK)	LLM Energy and Environmental Law	Presence Learning	12 months (full time)		Programme is affiliated with the Centre for

(Continued)

Table 2: (continued)

University	Programme	Teaching mode	Duration	Relevant courses	Comments
University of Eastern Finland (Finland)	Master's Degree Programme in Environmental Policy and Law Specialisation: Environmental and Climate Change Law	Presence Learning	24 months (part time) 24 months (full time)	Low Carbon Energy	Energy, Petroleum and Mineral Law and Policy; previously also offered an LLM in Climate Change and Energy Law and Policy
				Transition: Renewable Energy Law	
				Low Carbon Energy	
				Transition: Nuclear Energy and Carbon Capture and Storage	
				International Environmental Law I & II	Programme is affiliated with the Center for Climate Change, Energy and Environmental Law
				Climate Change Law and Policy	
				International Energy Law and Policy	
				EU Energy Law and Policy	
				WTO: Environment, Clean Energy and Natural Resources	
				International Law and Forests	
International Environmental					

(Continued)

Table 2: (continued)

University	Programme	Teaching mode	Duration	Relevant courses	Comments
University of Uppsala (Sweden)	Nordic Master's Degree Programme in Environmental Law	Presence Learning	24 months (full time)	Negotiations Simulation Exercise Global Environmental Politics UEF: Climate Change Law and Policy WTO: Environment, Clean and Natural Resources International Environmental Law II International Law and Forests	Participants spend a semester in each of the three universities. They will also get a degree from all three universities. The programme launched in September 2019.
University of Eastern Finland (Finland)				Arctic University. Energy and Climate Change Law	
UiT the Arctic University of Norway (Norway)					

Based on information provided in the websites of the programmes and authors' own research; current as of 31 August 2019.

large number of law schools in that country,¹⁷ the fact that law is taught there at graduate rather than undergraduate level, the US tradition of assigning a course textbook with mandatory reading for each class, and the more flexible curriculum and greater level of specialisation encouraged in US legal education after the first year.¹⁸ By contrast, our survey of degree programmes (Table 1) suggests that specialised degrees focused on climate change are almost exclusively offered by European institutions, a trend which could, in turn, be associated with the greater maturity of climate policy and legislation across Europe, the fact that a US law degree already is a graduate degree, as well as the considerable cost associated with university attendance in the USA. Differences in teaching norms and classroom culture may also explain the uneven geographic distribution of curricula and teaching resources. In this article, such connections can only be surmised; a more solid understanding of the underlying factors would require a wider base of better empirical data, as might be, for instance, generated through a series of structured interviews.¹⁹ Future research might thus offer deeper insights into these regional differences.

Viewed over time, the emergence of syllabi, degree programmes, and teaching material appears to have reached a high point between the final years of the previous and the early years of this decade. Any attempt to explain this anecdotal observation based on a non-exhaustive survey risks entering speculative territory, although a series of concurrent developments may account for it. Those same years mark a period during which several landmark publications,²⁰ media events²¹ and political milestones²² elevated the issue of climate change in broader public consciousness and generated expectations of a major breakthrough in the policy arena. It stands

17 As of March 2019, 203 law schools were accredited by the American Bar Association (ABA), see ABA, 'Approved Law Schools' <<http://www.abanet.org/legaled/approvedlawschools/approved.html>> accessed 7 March 2019.

18 See, generally, Martin Kellner, 'Legal Education in Japan, Germany and the United States: Recent Developments and Future Perspectives' (2007) 12 *J Japanese L* 195, 196; Sandra R Klein, 'Legal Education in the United States and England: A Comparative Analysis' (1991) 13 *Loy LA Int'l & Comp L Rev* 601, 606. For different approaches to legal education around the world, see Leo P Martinez, 'Legal Education in a Modern World: Evolution at Work' (2015) 9 *Charleston LR* 267.

19 For an example of an interview-based analysis of climate change in higher education more generally, see Molthan-Hill and others (n 4) 1096.

20 See, for instance, Rajendra K Pachauri and others (eds), *Climate Change 2007: Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (CUP 2007); and Nicholas H Stern, *The Economics of Climate Change: The Stern Review* (CUP 2007).

21 Relevant events include the launch 2006 launch of 'An Inconvenient Truth', a documentary directed by Davis Guggenheim and presented by the former Vice President of the USA, Albert A Gore, as well as a series of worldwide concerts organised in 2007 under the title 'Live Earth' by Kevin Wall and others, involving more than 150 musical acts in 11 locations and broadcast to a global audience through radio, television and the Internet.

22 Key events include the election of President Barack H Obama to the Presidency of the USA, heralding a radical change in domestic and foreign policies on climate change, and the 15th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP15) held in Copenhagen, Denmark, in 2009, which was expected to result in a comprehensive, legally binding climate agreement. See Daniel M Bodansky, 'The Copenhagen Climate Conference: A Post-Mortem' (2010) 104 *AJIL* 230. In Europe, the EU created a solid legal and policy framework to address climate change through emissions trading, renewable energy and energy efficiency. See Kati Kulovesi, Elisa Morgera and Miquel Muñoz, 'Environmental Integration and Multi-faceted International Dimensions of EU Law: Unpacking the EU's 2009 Climate and Energy Package' (2011) 48 *CMLR* 829.

to reason that the academic community—anticipating an expanding role of climate policy and legislation—would respond by creating relevant course offerings and content.

A more recent decline in the publication of new textbooks (or revised editions thereof) and the discontinuation of several specialised degree programmes (see Table 1) could be interpreted to bear out this assumption: as some of the heightened expectations for policy advances failed to materialise, notably the passage of federal climate legislation in the USA and the adoption of a binding international agreement during the Copenhagen climate summit, demand from students and prospective employers likely declined, and with it the strategic interest in relevant offerings at law schools.

At the same time, affected entities may have become more accustomed to the implementation needs and compliance obligations imposed by this new field, resulting in some consolidation of initial demand.²³ Meanwhile, the need for instruction in climate law—a subject matter in which research output and policy development have continued largely unabated—is arguably met with its integration in regular courses and degree programmes covering environmental law, energy law, natural resources law, and other established subjects (see Table 2 for examples).²⁴ Teaching climate law, in other words, has become mainstream.²⁵

Going forward, the broadening of climate action under the Paris Agreement, including a greater focus on the national level, and a continued rise in climate change impacts may spur renewed interest in specialised qualifications, especially in the developing world. A steady market for postgraduate degree programmes taught in English, coupled with growing efforts to strengthen global visibility and international student recruitment at European and North American universities,²⁶ could help sustain existing LLM programmes dedicated to climate change. For the climate law curriculum more generally, this evolving context may manifest itself in a shifting focus from mitigation to adaptation, as well as expanded coverage of practical issues such as renewable energy contracting, infrastructure project finance, and corporate climate risk disclosure. Emerging regulatory and governance challenges are also likely to feature increasingly in climate law education, including topics such as climate engineering and negative emissions technologies,²⁷ management of emissions from and impacts on, international spaces and activities, the use of new technologies

23 If so, this would echo a similar trajectory experienced with environmental law in its early years; see Robert V Percival, 'Green Briefs and Toxic Torts: Educating Lawyers with Environmental Savvy' (1993) 35 *Environment* 7, 8.

24 Whether that can accurately do justice to the complex topic is a question addressed in Section 3.

25 To some extent, this may also reflect a broader trend in climate change education, where an initial need for relevant instruction was met by 'piggybacking' and mainstreaming of climate change into existing structures, but increasingly has also seen specialisation and transdisciplinary 'connecting' via new structures, see Molthan-Hill and others (n 4) 1095.

26 John Flood, 'Legal Education in the Global Context: Challenges from Globalization, Technology and Changes in Government Regulation. Report for the Legal Services Board' (Research Paper No. 11-16, University of Westminster School of Law 2011) 7–8.

27 See, for instance, Michael B Gerrard and Tracy Hester (eds), *Climate Engineering and the Law: Regulation and Liability for Solar Radiation Management and Carbon Dioxide Removal* (CUP 2017); Jesse Reynolds, 'Governing Experimental Responses: Negative Emissions Technologies and Solar Climate Engineering' in Jordan and others (n 5) 285.

(eg distributed ledger technology) in carbon markets and accounting,²⁸ and the growing understanding of the negative impacts on human rights²⁹ and biodiversity³⁰ of climate change and its response measures.

2.2 Climate Law in the Curriculum

Altogether, the dynamic pace of the subject matter poses considerable challenges for curriculum planning and the provision of adequate teaching material. A cursory review of the sample of textbooks and course syllabi included in our survey reveals a recurring pattern in the way climate law is presented. General courses and teaching material frequently begin with an introduction to climate change science and occasionally the politics, ethics and economics of climate change; proceed to an overview of the international climate regime and its historical evolution; and outline the applicable climate law in a particular domestic context or in comparative perspective.³¹

Some offerings add a discussion of regulatory instruments,³² sectoral policies and strategies,³³ regional and local action³⁴ or the growing role of climate litigation.³⁵ Most courses and textbooks covered in our survey tend to feature both climate change mitigation and adaptation, although some place greater weight on one or the other dimension of climate law, with mitigation usually dominant. General principles and doctrines are rarely afforded much space,³⁶ with an applied focus on 'black letter law', possibly favoured on account of the short history and lacking maturity of the field.

28 See, for instance, Alastair Marke (ed), *Transforming Climate Finance and Green Investment with Blockchains* (Elsevier 2018).

29 See, for instance, Human Rights Council, *Resolution 7/23, Human Rights and Climate Change*, UN Doc A/HRC/RES/7/23 (28 March 2008); Human Rights Council, *Report of the Special Rapporteur on the Issue of Human Rights Obligations Relating to the Enjoyment of a Safe, Clean, Healthy and Sustainable Environment*, UN Doc A/HRC/31/52; (1 February 2016).

30 Elisa Morgera, 'Far Away, So Close: A Legal Analysis of the Increasing Interactions between the Convention on Biological Diversity and Climate Change Law' (2011) 2 *Climate Law* 85; Harro van Asselt, 'Managing the Fragmentation of International Environmental Law: Forests at the Intersection of the Climate and Biodiversity Regimes' (2012) 44 *NYU J Intl L & Pol* 1205. Impacts on biodiversity and human rights can be intertwined when indigenous peoples and local communities are concerned: see Elisa Morgera, 'No Need to Reinvent the Wheel for a Human Rights-Based Approach to Tackling Climate Change: The Contribution of International Biodiversity Law' in Erkki Hollo, Kati Kulovesi and Michael Mehling (eds), *Climate Change and the Law* (Springer 2013) 350.

31 See, for representative purposes, Hildreth and others (n 12), with nine chapters titled, in sequence, 'Introducing Climate Change', 'Climate Science', 'International Climate Change Law', 'Economic Fundamentals', 'Sustainable Energy Law', 'Mitigating Climate Change', 'Adapting to Climate Change', 'Business Law and Climate Change' and 'The Evolving Climate Law Paradigm'.

32 See, for instance, 'Putting a Price on Carbon' in Farber and others (n 12) ch 4; 'Implementing Kyoto through the Carbon Markets' in Wold and others (n 12) ch 7.

33 See, for instance, 'Sustainable Energy Law' in Hildreth and others (n 12) ch 5; 'Tools for Reducing Emissions: Energy Regulation' in Farber and others (n 11) ch 5; 'Land Use and Forestry' in Wold and others (n 12) ch 8.

34 See, eg, 'State and Local Action: Governmental Efforts and Transnational Collaboration' in Osofsky and others (n 11) ch 5; 'State and Local Responses to Climate Change' in Wold and others (n 12) ch 18.

35 See, eg, 'Climate Change in the Courts: Jurisdiction and Common Law Litigation' in Wold and others (n 12) ch 17.

36 With the exception of the principle of 'common but differentiated responsibilities (and respective capabilities)', which is typically addressed when covering international climate policy. Other principles of general international law are also covered by 'Relevant Norms of General International Law' in Mayer (n 12) ch 5.

Although intuitive, this widely deployed structure results in significant exposure to rapidly changing legal and policy frameworks. Climate efforts continue to evolve at all levels of governance, often undergoing radical transformation, for instance, when new rules are adopted or existing rules rolled back.³⁷ Any attempt to survey and inventories the extant law is virtually condemned to be outdated within a very short period of time.³⁸ To a lesser extent, summaries of the state of knowledge in climate science and other fields also risk being superseded by new scientific insights, such as those collected in the periodic assessment reports of the Intergovernmental Panel on Climate Change.

While curricula and syllabi can be updated ahead of each new course delivery—albeit with appreciable effort, given the scope of relevant developments across multiple areas of epistemic endeavour—this option may be less viable for comprehensive textbooks. Whether this supports a greater focus on fundamentals, including general concepts and theoretical underpinnings, is therefore a valid question. Far more than a mere practicality, however, it also touches upon the fundamental question of the approach most suited to the exigencies of the subject matter and the needs of students to apply what they have learnt after graduation. Rather than impart comprehensive—and transient—knowledge of the extant rules at any given point in time, an approach to climate law instruction that aims at comprehension of broader themes and central debates³⁹ is likely to better equip students, including those majoring in the natural or social sciences, to navigate the subject matter as it evolves during in their careers.

If covering all the complexities of climate change—including its scientific and socio-economic dimensions—already poses a challenge for dedicated climate law courses, it is all the more daunting to feature the topic in other issue areas, such as environmental, trade, or energy law.⁴⁰ While classes on these topics can scarcely ignore climate change altogether, they have to accommodate it among countless other issues in their curriculum. Condensing a subject matter of the scale and complexity of climate change into one or two sessions risks overwhelming students and eroding their interest in the topic. Here, too, an approach that emphasises conceptual understanding is likely preferable over technical detail and attempts at exhaustive coverage of the topic.

Conversely, one could also raise the question whether courses and textbooks dedicated to climate law sufficiently convey how and to what extent other areas of law (such as biodiversity law, human rights law, law of the sea, trade law, energy law and so on) have begun to address climate change, including the negative impacts of climate change response measures. While this aspect exceeds the scope of our survey

37 See, for instance, the dramatic expansion in executive rulemaking on climate change during the administration of US President Barack H Obama, and the subsequent deregulation efforts by his successor, Donald J Trump, described in Michael Mehling, 'A New Direction for US Climate Policy: Assessing the First 100 Days of Donald Trump's Presidency' (2017) 11 CCLR 3. See also <<http://columbiaclimate.com/resources/climate-deregulation-tracker/>> accessed 17 June 2019.

38 Though databases such as the 'Climate Change Laws of the World' database maintained by the Grantham Research Institute at the London School of Economics and the Sabin Center for Climate Change Law at Columbia University help to at least keep track of developments in climate-related legislation. See <<http://www.lse.ac.uk/GranthamInstitute/climate-change-laws-of-the-world/>> accessed 7 March 2019.

39 In the context of environmental law, for instance, Percival (n 23) 31, suggests incorporating cross-cutting themes—such as theories of regulation—to tie together otherwise separate aspects of the topic.

40 Described as 'piggybacking', this approach of adding treatment of climate change to existing course curricula is described by Molthan-Hill and others (n 4) 1095.

in the present article, it stands to argue that future climate lawyers would benefit from understanding the rules, tools and approaches in other areas of law that can be drawn upon to more effectively realise the objectives of climate law, and, equally importantly, to reflect on the risk of climate law negatively impacting the realisation of other legally enshrined objectives and principles.

As the body of rules pertaining to climate change continues to expand, a parallel trend is taking shape. Overview or ‘survey’ courses are increasingly being joined by course offerings that single out a discrete aspect of climate law and policy, and either fashion an entire syllabus around it, such as a course on climate finance or geoenvironmental engineering, or feature that aspect in a course on another topic, such as including a discussion of climate refugees in a course on human rights.⁴¹ This trend towards more specificity avoids some of the difficulties posed by the breadth and scale of climate change, and allows venturing into selected issues in much greater depth. It may also be an inevitable consequence of the mainstreaming of climate change across the legal curriculum.

3. TEACHING METHODS AND APPROACHES

3.1 Learning from Environmental Law Education

As mentioned in the preceding sections, climate law poses particular challenges to legal education and knowledge transfer in the classroom. Perhaps unsurprisingly, many of the challenges encountered when teaching climate law are familiar from environmental law. Environmental law has traditionally been seen as presenting ‘serious pedagogic problems’ due to the ‘breadth and complexity of the field’.⁴² Contributing to these challenges are the scale and irreversibility of environmental problems, the physical and temporal distance between often diffuse causes and impacts, the attendant scientific uncertainties, and the fact that they often are perceived as ‘non-economic, nonhuman concerns’.⁴³

Consequently, environmental law has had to ‘recognize and accommodate a broader range of legally protected interests than any other field of law’, extending and softening its boundaries.⁴⁴ Given the structural similarities between climate and environmental law, insights from the extensive—although by no means conclusive—body of literature on environmental law education can help inform approaches to climate law instruction. Such insights are reflected in the following subsections on teaching methods and approaches in climate law. A useful starting point are the desired learning outcomes and capabilities that climate law teaching should impart on students, both of which are discussed next.

41 See, for instance, the courses ‘Selected Problems in International Law: Climate Change, Human Rights and the Environment’ (University of Wisconsin), ‘Climate Change and Conservation’ (Brandeis University), ‘Cities and Climate Change’ (Johns Hopkins University), ‘Biodiversity Conservation and Climate Change’ (University of Dar es Salaam), ‘Climate Litigation’ (Vermont Law School) and ‘EU Environmental Law and Climate Change’ (Maastricht University) all listed in the IUCN Academy of Environmental Law repository (n 10).

42 Percival (n 23) 30.

43 Richard J Lazarus, ‘Restoring What’s Environmental about Environmental Law in the Supreme Court’ (2000) 47 *UCLA L Rev* 703, 703.

44 Robert L Fischman, ‘The Divides of Environmental Law and the Problem of Harm in the Endangered Species Act’ (2008) 83 *Ind L J* 661, 662, citing Howard Latin.

3.2 Learning Objectives and Skillset

A landmark survey of educational needs for the legal profession identified the following essential skills of lawyers: problem solving, legal analysis and reasoning, legal research, factual investigation, communication, counselling, negotiation, litigation and dispute resolution, procedures, organisation and management of legal work, and resolution of ethical dilemmas.⁴⁵ Analytical dexterity, the ability to reason in and about the law and a capacity to integrate factual and legal knowledge are all important conditions for successful interpretation and application of the law.⁴⁶ Climate law is no exception, and its students should therefore be trained to develop an understanding of the system and structure of the law, of exegetic methods such as statutory and case law interpretation, and of the tools of legal reasoning and argument used to balance conflicting rules and mediate disputes. However, as we discuss here, these traditional objectives may not be enough given the need to understand climate change as a complex and multidisciplinary societal and scientific challenge, and the tendency of climate change law to transcend traditional boundaries of the legal discipline.

Because of the transversal nature of climate governance, a sufficient command of intersecting areas of law—each with their own conceptual and jurisprudential boundaries, histories, and methodological traditions—can greatly contribute to the understanding and application of climate law.⁴⁷ To this end, students can draw on legal principles and general doctrines to better comprehend the deeply interconnected and—at least in aspiration—internally consistent structure of the law.

At the same time, even a very basic overview of the fundamentals climate change law brings to the surface several challenges to the traditional doctrines and boundaries of public international law and national law, including the role of soft law, non-state actors, public–private partnerships, and other hybrid governance arrangements, as well as the use of a regulatory toolbox that differs considerably from traditional command-and-control approaches.

Climate law can also serve as a useful platform to study mutual influences between different jurisdictions and levels of governance, and the globalisation of the legal world more broadly. Indeed, it would seem that the way climate change law is commonly taught deviates from legal education's traditional emphasis on either public international law or municipal law. As discussed above, basic courses in climate law habitually take an in-depth look at aspects of climate change regulation

45 See the 'Statement of Fundamental Lawyering Skills and Professional Values' in ch 5 of American Bar Association Section on Legal Education and Admissions to the Bar, 'Legal Education and Professional Development: An Educational Continuum. Report of the Task Force on Law Schools and the Profession: Narrowing the Gap' (1992) 135 <https://www.americanbar.org/content/dam/aba/publications/misc/legal_education/2013_legal_education_and_professional_development_macrate_report.authcheckdam.pdf> accessed 7 March 2019.

46 Gary L Blasi, 'What Lawyers Know: Lawyering Expertise, Cognitive Science and the Functions of Theory' (1995) 45 J Leg Ed 313, 326; Leon E Trakman, 'What's at Stake: An Educator's Perspective' in Leon E Trakman (ed), *Professional Competence and the Law* (Dalhousie University 1981) 1, 3–4.

47 Writing about environmental law, see Elizabeth Fisher and others, 'Maturity and Methodology: Starting a Debate about Environmental Law Scholarship' (2009) 21 JEL 213, 230; see also Warren G Lavey, 'Toolkit for Integrating Climate Change into Ten High-Enrollment Law School Courses' (2019) 49 *Envtl L* 513.

in international law, European Union law (where relevant), and select national legal systems, in addition to possibly considering thematic issues, such as human rights, emissions trading, renewable energy and climate change litigation, across different legal systems.⁴⁸ Looking even more broadly, climate change is inexorably linked to fundamental social scientific debates about globalisation, justice, equity, markets, consumption and so on. For teachers, this signals the need to ensure that students understand both the broader context of climate change law and its somewhat particular outlook and perspective in comparison to some other areas of law they may be studying, including the way in which the discipline's thematic focus on climate change across legal systems and levels of governance transcends traditional disciplinary boundaries of international, national, and sub-national law. To achieve this learning objective, it might even be useful to add a touch of general (legal) theory to climate law teaching—something that is admittedly a challenging task given the already complex and packed nature of the course syllabi.

Against this background, prior legal training would seem necessary to become proficient in climate law, although it might not be sufficient: climate change has been said to be 'legally disruptive' in that it 'requires lawyers and legal scholars to reconcile the legal issues raised by climate change with existing legal orders', yet simultaneously 'gives rise to disputes and problems not easily addressed by existing legal doctrines and frameworks'.⁴⁹ Students from different disciplines thus arguably all have their own useful access to the topic.

Moreover, climate law—just like environmental law—calls on its students to contend with epistemic challenges that far transcend the traditional legal skillset. Pervasive complexity and uncertainty, as well as multi-scalar, cumulative and indirect impacts with non-linear causal chains,⁵⁰ arguably underline a need for training aimed at enhancing the ability to synthesise and apply insights from related fields,⁵¹ such as climate science, economics, political science, other social sciences and the humanities. Accordingly, introductory or 'survey' courses on climate law thus tend to start out with an overview of the state of climate science, and often feature a discussion of the economics or ethical implications of climate change.⁵² Because climate law is so dependent on these other disciplines, practitioners are likely to find themselves

48 See, for instance, the cross-cutting approach—which integrates both international and domestic, and in many cases sectoral or comparative, elements—used in the courses 'Climate Change Law' (Columbia University), 'Climate Change Law' (University of Maine), 'Climate Change Law and Policy' (University of California Berkeley), 'Climate Change Law and Policy' (University of Eastern Finland), 'Global Climate Change Law and Policy' (University of South Carolina) or 'The Law and Policy of Climate Change' (Syracuse University), all listed in the IUCN Academy of Environmental Law repository (n 10).

49 See Fisher, Scotford and Barritt (n 7) 173.

50 *ibid* 178; Michael Robinson-Dorn, 'Teaching Environmental Law in the Era of Climate Change: A Few Whats, Whys, and Hows' (2007) 82 Wash L Rev 619, 628.

51 A Dan Tarlock, 'Current Trends in the Development of an Environmental Law Curriculum' in Malcolm F Baldwin and James K Page (eds), *Law and the Environment* (Walker & Co 1970) 297, 336.

52 See, for instance, the course syllabi for the classes 'Climate Change Law' (Columbia University), 'Climate Change Law' (University of Maine), 'Climate Change Law and Policy' (National Law University, Delhi), 'Climate Change Law and Policy' (University of California at Berkeley), 'Global Climate Change Law and Policy' (University of South Carolina) and 'The Law and Policy of Climate Change' (Syracuse University), all included in the IUCN Academy of Environmental Law repository (n 10).

working on cases and other assignments as members of a team, posing distinct challenges in terms of communication and collaboration⁵³ they should be prepared for.

Overall, the permeable boundaries between climate law, other areas of law, and other branches of scientific enquiry and practice illustrate the particular rigours presented by studying and teaching climate law. They also beg the question of interdisciplinarity and its role in climate law teaching, an issue that is afforded its own subsection below (Section 3.4). What follows first, however, is a discussion of alternative teaching and assessment formats, and an assessment of their suitability to achieve the foregoing learning objectives in climate law.

3.3 Teaching Approaches

If a focus on general concepts and overarching themes is one way of contending with the scale and complexity of climate law, as well as its susceptibility to rapid change, a corollary question becomes how to impart the foregoing skills and prepare students for the demands of their professional careers. Different teaching formats and didactic methods are available to ensure that students acquire both conceptual understanding and the reasoning and communication skills they will require in practice. Lectures and seminars remain a primary method of teaching at law schools, offering a conventional setting for the systematic transfer of knowledge between educator and students. Differences in teaching style have a profound bearing on the way this knowledge is presented, however, including the degree of interactivity and the ability to organise the course content.

In the USA, for instance, teaching is dominated by the case method and a Socratic approach to legal education.⁵⁴ As a result, students obtain sporadic glimpses into a specific legal issue, with copious home reading assignments expected to provide a more systematic overview of the subject matter.⁵⁵ At the same time, compared to more traditional lecturing formats, the classroom experience has been described as more participatory, with students actively engaged as they practice both cognitive and verbal skills.⁵⁶ But case-based teaching has its limitations, both in terms of its practical implementation,⁵⁷ and—more importantly—the fact that it is inherently tailored to common law jurisdictions. While a class on climate litigation might thus

53 See JB Ruhl, 'Malpractice and Environmental Law: Should Environmental Law "Specialists" Be Worried?' (1996) 33 *Hous L Rev* 173, 190.

54 These methods, introduced to US law schools in the 19th century by Christopher C Langdell, presume that the law is contained in basic principles set forth in the decisions and opinions of appellate court cases; students are required to read and analyse cases and then discuss them in class using the Socratic method, see generally Russell L Weaver, 'Langdell's Legacy: Living with the Case Method' (1991) 36 *Vill L Rev* 517, 527.

55 See Arthur D Austin, 'Is the Casebook Method Obsolete?' (1965) 6 *Wm & Mary L Rev* 157, 164–65.

56 See, for instance, Gene R Shreve, 'Two Cheers for the Case Method' (1985) 30 *NY L Sch L Rev* 601; Ruta K Stropus, 'Mend It, Bend It, and Extend It: The Fate of Traditional Law School Methodology in the 21st Century' (1996) 27 *Loy U Chi L J* 449, 455, citing Edwin W Patterson, 'The Case Method in American Legal Education: Its Origins and Objectives' (1951) 4 *J Leg Ed* 1, 10–11.

57 It has been criticised for its rigid focus on appellate cases, and the fact that, given the large size of most law school classes and the emotional rigours it imposes, it fosters only limited interaction between professors and students; see Steven A Childress, 'The Baby and the Bathwater: Developing a Positive Socratic Method' (1984) 18 *L Teacher* 95, 98; more favourable, but acknowledging these practical challenges, Shreve, *ibid* 602.

usefully rely on the case method,⁵⁸ it is difficult to envision how an entire course on the legal dimensions of climate change adaptation could be taught through a discussion of judicial case law.

With a topic as sprawling and complex as the law of climate change, some degree of organisation and doctrinal focus is arguably needed to cover the sheer amount of relevant issues. This may argue against a pure case method approach to its teaching, but it does not rule out interactivity. Indeed, participatory approaches are arguably vital to foster critical and independent thinking. An interactive component has also been cited as a condition to build the competences needed to practice law effectively following graduation.⁵⁹

Experiential learning, in particular, can benefit legal instruction on a topic that is as layered and contentious as climate law. Placing students in the role of stakeholders can help not only develop doctrinal knowledge and legal reasoning skills, but also nurture correlative thinking and awareness for the opposing viewpoints and factional interests that define climate governance. In the process, it also encourages the exercise of judgment and practical wisdom, properties that are difficult to cultivate through conventional lecture-based instruction.⁶⁰

Different formats can be used to foster experiential learning and bridge the attested gap between theory and practice. Some can even be deployed in a lecture setting, although seminars and tutorials will tend to be better suited due to the more favourable student to faculty ratio. Roleplaying exercises, case studies, simulations and flipped classrooms belong in this category, and are discussed in greater detail in the next paragraph. Others, such as law clinics, require a specialised context, dedicated infrastructure, and qualified teaching staff.⁶¹ Although they can offer a powerful addition to the legal curriculum, especially for issue areas that, like climate law, require dealing with uncertainty and unstructured situations,⁶² their cost and logistical demands may make them less practical in a majority of situations.

At a simpler level, however, experiential learning can be introduced in climate law instruction through the aforementioned types of case studies, roleplaying exercises, and simulations. Widely used in other fields, these offer an effective method to

58 Particularly given the continued growth in judicial proceedings involving a climate dimension; see the database of climate change litigation maintained by the Sabin Center for Climate Change Law and Arnold & Porter, which listed 1,009 US cases and 279 non-US cases as of March 2019: 'Climate Change Litigation Databases' <<http://climatecasechart.com>> accessed 7 March 2019. Climate change litigation has, in fact, also featured in a specialist course syllabus included in the IUCN Academy of Environmental Law repository (n 10), 'Climate Litigation' (Vermont Law School), which shows heavy reliance on the case method.

59 See William M Sullivan and others, *Educating Lawyers: Preparation for the Profession of Law* (Carnegie Foundation for the Advancement of Teaching 2007) 6, observing that 'law schools give only casual attention to teaching students how to use legal thinking in the complexity of actual law practice'.

60 Roy Stuckey and others, *Best Practices for Legal Education: A Vision and a Roadmap* (Clinical Legal Education Association 2007) 12–14.

61 Law clinics allow students to participate in real cases on behalf of clients under the supervision of law school faculty, see generally Margaret M Barry and others, 'Clinical Education for this Millennium: The Third Wave' (2000) 7 Clin L Rev 1. Variations include externship programmes through which students can receive course credits for working on real-life environmental law cases supervised by attorneys in law firms, environmental organisations or government agencies; see Percival (n 23) 34.

62 Robinson-Dorn (n 50) 640; see also Adrian Evans, 'Greenprint for a Climate Justice Clinic: Law Schools' Most Significant Access to Justice Challenge' (2018) 25 Int'l J Clin Legal Educ 7.

integrate doctrinal learning with more practical skills through controlled, scalable interactions, and experiences.⁶³ Unlike clinical education, they allow instructors to define the facts and the parameters of interaction in ways that are closely aligned with desired learning objectives.⁶⁴ In the context of climate law, relevant activities can include several different assignments for students, ranging from simulated litigation or structuring a transaction to drafting or negotiating new climate rules.⁶⁵

Such exercises can also offer an engaging way to evaluate student performance, complementing or replacing more traditional assessment formats, such as essay examinations, seminar papers, and final dissertations.⁶⁶ And finally, for a subset of students—typically chosen on the basis of academic merit—regional, national and international moot courts and similar competitions offer an unparalleled opportunity to advance brief writing and oral advocacy skills, although currently no such events are held specifically for the subject of climate law.⁶⁷

3.4 Interdisciplinarity: Promise and Perils

If engaging with fields other than law is an inevitable feature of climate law education (see Section 3.2), it stands to reason that teachers should adopt an interdisciplinary perspective in their curriculum.⁶⁸ With interdisciplinarity, we mean the ‘integration of concepts and methods between disciplines’⁶⁹ and hence—in the case of climate law education—teaching that ‘will draw substantially on the methodologies and knowledge of other academic disciplines, rather than being grounded solely in textual

63 For a detailed discussion, see Paul Maharg, *Transforming Legal Education: Learning and Teaching the Law in the Early Twenty-first Century* (Ashgate 2007) 153, ch 6.

64 Robinson-Dorn (n 50) 638.

65 Specifically, students could be asked to eg draft applicant or respondent memorials for a real or fictitious climate litigation case; craft a legal opinion interpreting vague terms in a statute, regulation or international treaty; draft a memorandum on the legality of certain state (or private) behaviour under specified international or national rules; negotiate and structure a contract for climate finance or technology transfer, a renewable energy project or the transfer of emission units in the carbon market; offer an expert opinion on the legal risks and implications of a specified mitigation or adaptation policy; or negotiate specific text of an international agreement (eg a decision by the Conference of the Parties to the United Nations Framework Convention on Climate Change) that embodies several key characteristics of international climate change law, such as contestations between developed and developing countries. For an example described in the literature, see Don C Smith, Catherine Banet & Beatriz Martinez Romera, ‘Teaching the Law of Energy Transition in the Era of Internationalisation and Digitalisation of Legal University Education: The Transatlantic University Collaboration in Climate Change and Energy Law (TUCCCEL) Programme’ (2019) 37 *J Energy Nat Resources L*, 37:4, 443, 456–458.

66 For a discussion of the strengths and weaknesses of traditional examination formats, see the still pertinent Philip C Kissam, ‘Law School Examinations’ (1989) 42 *Vand L Rev* 433.

67 Climate-related topics have featured in environmental law moot courts, however, such as the Jeffrey G Miller National Environmental Law Moot Court Competition (NELMCC) hosted annually at the Elisabeth Haub School of Law at Pace University, White Plains, NY (<<https://law.pace.edu/nelmcc>> accessed 7 March 2019) and the International Environmental Moot Court Competition organised by Stetson University College of Law, Gulfport, FL (<<https://www.stetson.edu/law/international/iemcc>> accessed 7 March 2019).

68 See, for instance, Cinnamon P Carlarne, ‘Exploring Methodological Challenges within the Context of Climate Change Law and Policy’ (2011) 105 *ASIL Proc* 255, 255, arguing that climate change ‘transcends not only national boundaries, but also boundaries within and among legal and non-legal disciplines’.

69 Organisation for Economic Cooperation and Development, *Interdisciplinarity: Problems of Teaching and Research in Universities* (OECD 1972) 1.

research of primary and secondary legal sources'.⁷⁰ Importantly, interdisciplinarity thus understood is distinct from mere assimilation of factual insights from other disciplines, a practical reality of climate law described earlier in Section 3.2; rather, it requires learning, contextualising and applying the concepts and tools of more than one field, and gaining at least basic familiarity with the theoretical premises, historical evolution and seminal debates in those disciplines.

Commenting on the role of interdisciplinarity in environmental law, a group of scholars has suggested a need for 'interactional expertise' in other disciplines so that environmental law is grounded in a solid understanding of the underlying physical and socioeconomic challenges.⁷¹ Beyond mere interdisciplinarity, they propose a 'transdisciplinary' approach, described as a new intellectual paradigm characterised by a 'meta-language in which the terms of all the participants' languages are, or can be, expressed'.⁷²

Such calls for greater interdisciplinarity at law schools are not new,⁷³ yet they face considerable institutional and cultural barriers. True interdisciplinarity takes time and effort,⁷⁴ something densely filled academic calendars rarely afford. Many law schools are physically detached from other relevant departments, and administrative rules do not always give credit to faculty and students for activities outside their home department.⁷⁵ Crossing the boundaries of their discipline is also a task that lawyers, habitually preoccupied with the formal distinction between law and other social institutions, may not be accustomed to.⁷⁶

Attesting to these difficulties, legal curricula tend to offer few opportunities for meaningful participation in interdisciplinary coursework, and where such opportunities exist, law students have been known to show only limited interest.⁷⁷ Various suggestions have been made to overcome these barriers, from extending credit for participation in natural and social science courses,⁷⁸ to offering seminars that bring together participants from various disciplines around a defined problem. In environmental law education, seminars have been described as a useful way for legal instructors to involve colleagues from other disciplines, and for law students to gain an appreciation of the important connections between legal issues and their social, political and ecological context.⁷⁹

Our experience also points towards a growing interest from students without a legal background to study climate law. Indeed, a basic understanding of the legal

70 Dave Owen and Caroline Noblet, 'Interdisciplinary Research and Environmental Law' (2015) 41 *Ecology L Q* 887, 892.

71 See Fisher and others (n 47) 232.

72 *ibid* 234, citing Gavan J McDonnell, 'Disciplines as Cultures: Towards Reflection and Understanding' in Margaret A Somerville and David J Rapport (eds), *Transdisciplinarity: Recreating Integrated Knowledge* (EOLSS Publishers Co Ltd 2000) 25, 27.

73 See, for instance, Kim D Connolly, 'Elucidating the Elephant: Interdisciplinary Law School Classes' (2003) 11 *Wash U J L & Pol'y* 11.

74 J Thompson Klein, *Interdisciplinarity: History, Theory and Practice* (Wayne State University Press 1990) ch 8.

75 Percival (n 23) 36.

76 Fisher and others (n 47) 231.

77 Affirming that for environmental law: Percival (n 23) 36.

78 *ibid*.

79 Robison-Dorn (n 50) 636.

aspects of climate change would seem highly useful for students from various other scientific backgrounds, both in the natural and the social sciences. Catering to their needs can therefore be seen as an important additional task for climate law education. Allowing students from other departments to take the same climate law course as law students can also be useful both in terms of enriching classroom discussions and making the need for—and value of—a multidisciplinary perspective to climate change more concrete. The ensuing challenge, then, is to ensure that the course is accessible to students without a legal background without compromising the learning objectives and outcomes of law students. Possible strategies to mitigate such challenges include requiring non-law students to first acquire at least rudimentary familiarity with legal methods and vocabulary either through compulsory preparatory coursework or independent study.

Overall, collaborating in a multidisciplinary setting can raise challenges of its own, such as ensuring equal weight and communication across disciplines.⁸⁰ For lawyers, this may entail having to straddle a fine line between ‘not taking law seriously enough or taking it too seriously’.⁸¹ In purely practical terms, the dearth of common reference points in their professional vernacular can stifle interaction between lawyers and representatives of other disciplines.⁸²

To be truly interdisciplinary, moreover, instruction should seek to integrate the epistemic approaches and insights of different fields, rather than merely enable their simultaneous, but separate application. Because each discipline has its own theoretical and methodological debates and heterogeneous schools of thought, perfunctory attempts at interdisciplinarity can, at worst, risk becoming amateurish.⁸³ On a more fundamental level, interdisciplinarity can also introduce the subtle value judgments, ideological orientations and ontological assumptions underlying other disciplines, adding an extraneous layer through which the interpretation and understanding of the law can become distorted.⁸⁴ But it can also support lawyers in identifying their own implicit value judgments, ideological orientations and ontological assumptions, or any blind spots and limitations in approaching an issue purely from a legal perspective.⁸⁵

Interdisciplinarity, in short, comes both with considerable promise and also some peril for climate law teaching. For students, the ability to gauge the law from the perspective of another discipline is vital to understand how it operates in the real world, and also to critically assess its potential and shortfalls.⁸⁶ At the same

80 Heidi Ledford, ‘Team Science’ (2015) 525 *Nature* 308, 310–11; in greater depth, Veronica Strang, ‘Integrating the Social and Natural Sciences in Environmental Research’ (2009) 11 *J. Env’t, Dev Environ & Sustain* 1, 6.

81 Denis J Galligan, *Law in Modern Society* (Clarendon Press 2007) 4.

82 Connolly (n 73) 14.

83 Johannes AM Klabbers, ‘The Relative Autonomy of International Law or the Forgotten Politics of Interdisciplinarity’ (2005) 1 *J. Int’l L & Int’l Relations* 35, 37.

84 On this point, see Michael Mehling, ‘The Comparative Law of Climate Change: A Research Agenda’ (2015) 24 *RECIEL* 341, 348.

85 Louisa Parks and Elisa Morgera, ‘Research Note: Reflections on Methods from an Interdisciplinary Research Project in Global Environmental Law’ (2019) 8 *Transnat’l Env’t L* 489.

86 Hazel Genn, Martin Partington and Sally Wheeler, *Law in the Real World: Improving Our Understanding of How Law Works* (Nuffield Foundation 2006) 1–3.

time, instructors who embrace interdisciplinary approaches in climate law education should equally instil sensibility in their students for the unique identity of law, and the important distinction between an internal and external perspective on legal norms.

4. CONCLUSIONS

As the exploratory survey presented in this article has shown, climate change presents unique challenges for legal education. It is technically complex and normatively contested, evolves at a dynamic pace and freely crosses established boundaries between academic disciplines, branches of law and levels of jurisdiction. Academic instructors therefore face difficult choices when designing a climate law curriculum. As climate law moves closer to maturity, its academic instruction is displaying a tendency towards specialisation and consolidation, just as climate change becomes increasingly mainstream across the legal curriculum.

The breadth, scale and variability of climate law caution against exhaustive coverage of legal doctrine and technical detail in climate law teaching. Engagement with central concepts and debates, instead, appears more apt to support students in developing skills for the continuous understanding of evolving climate law and its mutual interactions with other areas of law. Equally, experiential learning methods hold greater promise as ways to prepare students for the demands of climate law practice. Priorities in climate law education will change over time as policy responses progress and climate impacts grow; by contrast, the ability to integrate evolving sets of facts and rules, a capacity for critical reasoning and systemic legal thinking, and sound judgment will remain decisive skills for future climate lawyers. Going forward, further study—including, ideally, empirical research using structured interviews and questionnaires—will be warranted to refine our understanding of how climate law is being taught at universities, and how learning can be further improved to reflect evolving needs and circumstances.