Transnational Environmental Law, 12:3 (2023), pp. 649–670 © The Author(s), 2023. Published by Cambridge University Press

doi:10.1017/S204710252300016X

ARTICLE

Comparing Legal Disciplines as an Approach to Understanding the Role of Law in Decarbonizing Societies

Kaisa Huhta* and Seita Romppanen**

First published online 11 October 2023

Abstract
Law plays an important role in reshaping and enforcing governance efforts in radical shifts and can function as a catalyst for transitioning governance towards sustainability. This article assesses the capacity of law to facilitate decarbonization as a radical societal shift. It argues that decarbonization demands fundamental and systemic restructuring in law and legal thinking. This should also be reflected in legal scholarship and, most importantly from the point of view of this article, in the methodological choices and approaches that legal scholarship relies on to study societal challenges. To that end, the article develops a new methodological approach (*disciplinary comparison*) through which to study law's capacities in respect of decarbonization as a radical societal shift. Disciplinary comparison can be used to gain information on both the friction and the synergies between legal disciplines. This new methodological approach will contribute to increasing insight into law's capacities for the radical, cross-sectoral change necessitated by the need to decarbonize societies.

Keywords: Legal methods, Comparative law, Critical legal thinking, Decarbonization, Energy law, Climate law

1. INTRODUCTION

Law plays an important role in reshaping and enforcing governance efforts in radical shifts and can function as a 'crucial trigger for shifting governance onto a more

* University of Eastern Finland, Faculty of Social Sciences and Business Studies/Law School, Joensuu (Finland).
Email: kaisa.huhta@uef.fi.

** Finnish Environment Institute, Helsinki (Finland).
Email: seita.romppanen@syke.fi.

This article has been co-first authored. The authors wish to thank Niko Soininen for his valuable comments. This research was supported by the Academy of Finland (340998) and the Strategic Research Council (335559).

Competing interests: The authors declare none.

sustainable pathway'.[1] This article assesses the capacity of law to facilitate decarbonization as a radical societal shift.[2] It argues that decarbonization demands fundamental and systemic restructuring in law and legal thinking. This should also be reflected in legal scholarship and, most importantly from the point of view of this article, in the methodological choices and approaches that legal scholarship relies on to study societal challenges.[3] To that end, the article develops a new methodological approach of comparing legal disciplines to study law's capacities in respect of the facilitation of decarbonization.

Changing law and legal systems to facilitate decarbonization in the most effective manner possible would be straightforward if law comprised only surface-level normative material, such as laws and decrees. This surface-level normative material could be amended and revised at any time if there was sufficient political will to do so. However, radical shifts are not linear, and no single top-down legal instrument is able to implement change of the required magnitude.[4] Furthermore, not all intended or necessary changes can always be successfully carried out. For example, the values that justify change can be internally conflicted, or the necessary changes can lack social acceptability.[5]

The article's understanding of law and its capacity to change builds on Tuori's theory of the multilayered nature of modern law as it provides for a functional framework for the methodological aims of this article. In Tuori's framework, legal systems comprise not only surface-level normative material but also subsurface levels of law, referred to as the *legal culture* and the *deep structure of the law*, which include more static elements of law such as legal principles, procedural rights, and institutional structures.[6] These layers of law interact with one another dynamically and change at different paces.[7] While the surface level of law is in a constant state of flux, the subsurface levels are

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1 T. McPhearson et al., 'Radical Changes are Needed for Transformations to a Good Anthropocene' (2021) 1(5) *Urban Sustainability*, pp. 1–13, at 8.

2 N. Soininen et al., 'A Brake or an Accelerator? The Role of Law in Sustainability Transitions' (2021) 41 *Environmental Innovation and Societal Transitions*, pp. 71–3, at 71; McPhearson et al., n. 1 above, p. 8. Decarbonization means a process by which countries, individuals or other entities aim to achieve zero fossil carbon existence (i.e., reduction of the carbon emissions associated with electricity, industry and transport): J.B.R. Matthews et al., 'Annex I: Glossary', in Intergovernmental Panel on Climate Change (IPCC) (V. Masson-Delmotte et al. (eds), *Global Warming of 1.5°C: An IPCC Special Report on the Impacts of Global Warming of 1.5°C above Pre-industrial Levels 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* (Cambridge University Press, 2018), pp. 541–60, at 17.

3 J. Skea et al. (eds), 'Summary for Policymakers', in IPCC (P.R. Shukla et al. (eds)), *Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the IPCC* (IPCC, 2022), pp. 3–48, at 46. See also, e.g., B. Cosens et al., 'Governing Complexity: Integrating Science, Governance, and Law to Manage Accelerating Change in the Globalized Commons' (2021) 118(36) *Proceedings of the National Academy of Sciences of the US* (*PNAS*), pp. 1–9, at 2.

4 McPhearson et al., n. 1 above, p. 8.

5 M. Chmieliński, 'Introduction: Legal change and Political Philosophy', in M. Chmieliński & M. Rupniewski (eds), *The Philosophy of Legal Change: Theoretical Perspectives and Practical Processes* (Routledge, 2020), pp. 1–14, at 2.

6 K. Tuori, *Critical Legal Positivism* (Routledge, 2017), p. 147.

7 Ibid., p. 197.

https://doi.org/10.1017/S204710252300016X Published online by Cambridge University Press

impossible to change or, at the very least, can only be changed very slowly.[8] These subsurface levels of law create path dependencies that play an influential and important role in legal systems, not least because they enable the processes and safeguards that are required to change the surface-level normative material. However, they can also slow down or even prevent the measures needed to decarbonize societies.

Both the surface-level normative material and the subsurface levels of law are used in legal scholarship to identify, organize, and systematize the fundamental elements and the doctrine of legal disciplines. These elements and doctrines vary between different legal disciplines and have an impact on legal thinking and legal scholarship between them. Legal disciplines are not all equally equipped in terms of their substance, doctrine, tradition, and structure to address and pursue radical societal shifts such as decarbonization. Some legal disciplines – such as climate and energy law – are inherently geared towards addressing the challenges of decarbonization, given their substantive focus, whereas criminal law, for example, is not *per se* under immediate pressure to respond to the needs of decarbonization.

Law and legal disciplines can assume various roles, for example, to steer, slow down, and accelerate societal changes.[9] To effectively execute the measures needed for decarbonization, it is necessary to identify these various functions of law and legal disciplines. However, that alone is not enough. A deeper understanding of the capacities of law and legal disciplines to facilitate change is needed, as is, consequently, a heightened awareness of their limitations in respect of the achievement of societal change. While there is a growing body of academic literature on the roles of law in governing complex societal challenges,[10] the capacities of law and legal scholarship in radical shifts such as decarbonization remain poorly understood.[11] Among other things, this body of literature has produced a general understanding that radical shifts require restructuring and reorientation of law and legal thinking in a way that goes beyond merely adopting new laws or revising old ones.[12] Yet, a comprehensive study of not only the role of law but also of the capacity of law – the ability of a legal system to respond to societal change – is missing. We know that a radical, structural, and systemic change in law and legal thinking is necessary, but what we do not yet know is *how* to bring about these changes in law and legal thinking. This article argues that the study of the role and capacities of law in radical societal change also entails questions of

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8 K. Tuori, *Ratio and Voluntas: The Tension Between Reason and Will in Law* (Ashgate, 2011), p. 190; J. Smits, 'What Is Legal Doctrine? On the Aims and Methods of Legal-Dogmatic Research', in R.V. Gestel, H.W. Micklitz & E.L. Rubin (eds), *Rethinking Legal Scholarship: A Transatlantic Dialogue* (Cambridge University Press, 2017), pp. 207–28, at 210.

9 Soininen et al., n. 2 above, p. 72.

10 For recent discussion see, e.g., J.B. Ruhl, B. Cosens & N. Soininen, 'Resilience of Legal Systems: Toward Adaptive Governance', in M. Ungar (ed.), *Multisystemic Resilience: Adaptation and Transformation in Contexts of Change* (Oxford University Press, 2021), pp. 509–29; Cosens et al., n. 3 above, p. 1.

11 Soininen et al., n. 2 above, p. 71.

12 Ibid., pp. 71–2. See also, e.g., P. Kivimaa & F. Kern, 'Creative Destruction or Mere Niche Support? Innovation Policy Mixes for Sustainability Transitions' (2016) 45(1) *Research Policy*, pp. 205–17, at 210; D.L. Edmondson, F. Kern & K.S. Rogge, 'The Co-evolution of Policy Mixes and Socio-Technical Systems: Towards a Conceptual Framework of Policy Mix Feedback in Sustainability Transitions' (2019) 48(10) *Research Policy*, pp. 1–14, at 3.

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methodology. This argument is supported by an uncontroversial claim: new challenges require new methods.[13] To respond to this need, legal scholarship must develop and adopt new approaches to tackling the challenges imposed on it by radical shifts like decarbonization.

Against this background, the article addresses a gap in existing legal research by suggesting and developing comparison between legal disciplines, which we call *disciplinary comparison*, as a new approach to study and understand law's capacities in facilitating decarbonization as a societal challenge.[14] In this article, 'disciplinary comparison' refers to the study and examination of two or more disciplines, subdisciplines, or legal fields to identify similarities and differences in their respective capacities to facilitate decarbonization. To enable a focus on the development of a new methodological approach, the article illustrates the functioning of the approach by comparing *climate law* and *energy law* with each other. However, this comparison is not comprehensive but is rather exemplifying, because an exhaustive application of the methodology is beyond the scope of this article. The authors have conducted an extensive comparison of climate and energy law in a related research article, which applies disciplinary comparison to climate and energy law in practice.[15] The choice of these two legal subdisciplines for the purpose of developing a new methodology is well justified. While both subdisciplines of law are still considered by some as emergent or nascent,[16] their contribution and role in decarbonization are uncontroversially pivotal. Furthermore, the global decarbonization efforts place climate and energy law in proximity as two legal disciplines addressing two sides of the same coin: traditional energy sources have fuelled modern economies while bringing about one of this generation's greatest challenges by contributing to global warming.

It should be acknowledged from the outset that while views presented in this article are not based on any jurisdiction in particular, the authors have distinct backgrounds in European legal culture and civil rather than common law traditions. Their European and civil law orientation influences the ways in which law is understood in the article and the bodies of literature with which the article engages. For instance, the article does not engage with non-Western ways of thinking about law; nor does it delve deeply into the rich bodies of critical legal scholarship emerging from the United States (US). Awareness of the influence of any author's background is an important step in developing disciplinary comparison, as will be discussed later in the article.

This article is structured as follows. Section 2 establishes the theoretical framework through which to understand the capacities of law in decarbonizing societies and

[13] M. Siems, 'New Directions in Comparative Law', in M. Reimann & R. Zimmermann (eds), *The Oxford Handbook of Comparative Law* (Oxford University Press, 2019), pp. 852–74, at 853.

[14] Smits has noted in the context of doctrinal approach that there is a need for more intradisciplinary comparison between legal fields: Smits, n. 8 above, p. 210.

[15] S. Romppanen & K. Huhta, 'The Interface between EU Climate and Energy Law' (2023) 30(1) *Maastricht Journal of European and Comparative Law*, pp. 45–62.

[16] For energy law see, e.g., R.J. Heffron & K. Talus, 'The Development of Energy Law in the 21st Century: A Paradigm Shift?' (2016) 9(3) *The Journal of World Energy Law & Business*, pp. 189–202, at 190; and for climate law see D. Bodansky, J. Brunnée & L. Rajamani, *International Climate Change Law* (Oxford University Press, 2017), p. 11.

https://doi.org/10.1017/S204710252300016X Published online by Cambridge University Press

explains the role of legal scholarship in that context. Section 3 develops disciplinary comparison as a novel methodology by which to approach the complex capacities of law in decarbonizing societies. It explains the kinds of research question that can be answered by means of disciplinary comparison, how they contribute to achieving decarbonization, and how the method links to existing methodological traditions in legal scholarship. Section 4 explains what disciplinary comparison as a method can be used for in the context of contemporary climate and energy law and how it can contribute to decarbonization. Section 5 offers conclusions.

2. THE CAPACITIES OF LAW IN DECARBONIZING SOCIETIES

2.1. *The Paradox of Changing Legal Systems*

In 2022, the Intergovernmental Panel on Climate Change (IPCC) delivered a harsh message confirming yet again that the progress on decarbonization has not been anywhere near fast enough: our window of opportunity is closing, and more quickly than ever expected. Net anthropogenic greenhouse gas (GHG) emissions have increased globally across all major sectors since 2010.[17] To avert the worst outcomes and ensure a liveable planet, extreme action must take place to limit global warming to 1.5°C and to achieve net zero emissions around the middle of the century.[18] It is widely acknowledged that to seize the last opportunity for addressing the irreversible effects of global warming, societies must decarbonize across various scales, sectors, policy domains, and time frames.[19] Consequently, rapid decarbonization comprises a 'grand societal challenge', which cannot be addressed effectively through mere 'incremental improvement and technological fixes' but necessitates 'radical shifts to new kinds of socio-technical systems'.[20] To achieve decarbonization, changes in politics and technological solutions are paramount, but a transformative shift in societal attitudes towards sustainability and international cooperation is also essential.

Law is undoubtedly central in triggering these kinds of societal change.[21] However, when discussing the potential capacities that law can assume in radical shifts, a distinction must be made between the *desired role of law* (namely, what we would like to change and achieve by means of law and legal instruments) and *what law is actually*

[17] Skea et al., n. 3 above, p. 7; H.-O. Pörtner et al., 'Summary for Policymakers', in IPCC (H.-O. Pörtner et al. (eds)), *Climate Change 2022: Impacts, Adaptation and Vulnerability, Contribution of Working Group II to the Sixth Assessment Report of the IPCC* (IPCC, 2022), pp. 3–33, at 31; United Nations Framework Convention on Climate Change (UNFCCC) Secretariat, Decision 1/CMA.3, 'Glasgow Climate Pact', 13 Nov. 2021, UN Doc. FCCC/PA/CMA/2021/10/Add.1, pp. 2–10.

[18] J. Tollefson, 'IPCC's Starkest Message Yet: Extreme Steps Needed to Avert Climate Disaster', *Nature News*, 5 Apr. 2022, available at: https://www.nature.com/articles/d41586-022-00951-5.

[19] Skea et al., n. 3 above, p. 21.

[20] All quotes from J. Köhler et al., 'An Agenda for Sustainability Transitions Research: State of the Art and Future Directions' (2019) 31 *Environmental Innovation and Societal Transitions*, pp. 1–32, at 2. It should be noted that in scholarship radical shifts in society are conceptualized as sustainability transitions. See also, e.g., F. Geels et al., *Sustainability Transitions: Policy and Practice*, EEA Report No. 9/2019 (European Environment Agency, 2019), p. 7; D. Loorbach, 'Transition Management for Sustainable Development: A Prescriptive, Complexity-based Governance Framework' (2010) 23(1) *Governance*, pp. 161–83, at 163.

[21] Skea et al, n. 3 above, p. 46.

https://doi.org/10.1017/S204710252300016X Published online by Cambridge University Press

capable of changing and achieving (the capacity of law).[22] In the governance of radical shifts, law is often perceived as a mere instrument that helps us to achieve a purpose that society deems it necessary to pursue.[23] Understood in this way, legal instruments can help to map the direction of radical shifts by setting objectives and time frames for decarbonization and by creating tools to incentivize change. There are countless examples of this kind of instrumentation, ranging from the legally binding objective of limiting global warming to 1.5°C and achieving net zero emissions by 2050 to more specific, detailed instruments, such as digital product passports developed as an innovative digital tool to promote sustainable products[24] or feed-in tariffs and other subsidies to support the uptake of renewable energy sources. Similarly, the governmental reliance on legislative tools, such as carbon taxes to control emissions and mitigate climate change, serves as an example of pursuing societally desirable objectives where law is used as an instrument. However, it is overly simplistic and lacking in nuance to understand law solely as a collection of rules codified in legal texts, in which change can be triggered simply by changing those rules. While this top-down 'legal instrumentation' is needed to drive change, taking a solely instrumental view of law disregards the complexity of legal systems.[25]

This complexity is echoed throughout legal systems, which, to exist in the first place, require input by numerous actors and institutions on multiple levels, and take decades or even centuries to emerge. Legal systems encapsulate elements that are meant to stabilize and solidify societies, and uphold certain safeguards in times of societal turbulence. As a result, legal systems do not essentially have the capacity for radical and rapid change but can, in fact, restrict change through limiting policy choices available to regulators and institutions implementing decarbonization measures. Such restrictions can emerge from the architecture of legal systems and from the more permanent elements of law, such as legal principles, procedural rights, institutional structures, constitutional traditions, and human rights regimes. For instance, the right to property enshrined in the constitutional traditions of many nations can have the effect of preventing, slowing down, or at least making the shutdown of coal-based energy production extremely costly, as it protects the owners of those facilities from legislative measures that would effectively render their property valueless.[26] These examples show that law is not always capable of change, even if there is broad agreement on a societally desired objective, such as decarbonization.

The societal need for comprehensive, swift, and radical change in order to achieve decarbonization and the limited capacity of legal systems to change create a

[22] J. Similä, 'Kestävyysmurros ja oikeus' (2021) 41(4) *Ympäristöjuridiikka*, pp. 6–24, at 7 (in Finnish).

[23] H. Stewart, 'The Place of Instrumental Reasoning in Law' (2020) 11(1) *Jurisprudence*, pp. 28–47, at 29. See also Soininen et al., n. 2 above, p. 71; Köhler et al., n. 20 above, p. 10; Skea et al., n. 3 above, p. 46.

[24] European Commission, 'On Making Sustainable Products the Norm', 30 Mar. 2022, COM(2022) 140 final.

[25] Soininen et al, n. 2 above, p. 71; J.B. Ruhl, D.M. Katz & M.J. Bommarito II, 'Harnessing Legal Complexity: Bring Tools of Complexity Science to Bear on Improving Law' (2017) 355(6332) *Science*, pp. 1377–8, at 1377.

[26] K. Huhta, 'The Contribution of Energy Law to the Energy Transition and Energy Research' (2022) 73 *Global Environmental Change*, pp. 1–5.

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fundamental paradox. How do we change something that has been designed to resist change?

This apparent paradox can be deconstructed through Tuori's understanding of law as a multilayered, multifaceted, and evolutionary system. Legal systems comprise not only surface-level norms accessible through law and legal texts but also subsurface levels, which include legal culture and the deep structure of the law.[27] Tuori's framework of law as a multilayered system can be understood through an iceberg metaphor: while the surface level consists of visible normative material, it is supported by the legal culture and deep structures of law below the surface, forming the foundation on which the surface level rests. In this framework, the surface level of law contains elements such as laws, regulations, and court decisions, as well as legal scholarship produced by legal scholars. The elements of the subsurface levels of law – such as constitutional and institutional traditions – create preconditions for and impose limitations on the material at the surface level.[28] In other words, the subsurface levels lay down both fundamental preconditions and distinct restrictions for the normative developments on the surface. For example, procedural rights, which are deeply rooted in the legal cultures of democratic societies, often require that individuals have the right to appeal against decisions that affect their rights. This means that an individual whose living environment is affected by the construction of a wind park is typically allowed to appeal against the zoning decisions and administrative permits that allow the wind park to be constructed. At the same time, however, respecting the procedural rights that emerge from the subsurface level of law inevitably causes delays to the construction of the wind park, despite it being sorely needed to achieve decarbonization.[29]

Legal systems on the surface can often be swiftly tailored and instrumentalized to promote decarbonization. However, Tuori's theory explains that the subsurface levels of law are slower to change as the 'pace of change is much more laggard' than in the case of substantive rules that are continuously adopted, revised, and repealed, which form 'the turbulent surface'.[30] The more the changes relate to the deeper layers of law, the longer it takes to realize them. The subsurface levels of law take decades or even centuries to change. They form the underlying foundation on which the surface-level normative material relies, providing consistency and permanence.[31] However, even subsurface layers of law cannot escape the requirements imposed by the need to achieve systemic decarbonization, as mere revised laws and regulations are not going to enable legal systems to bring about change of the required magnitude. In the context of radical shifts, 'law as a system requires a radical change – mere substantive changes are not

[27] K. Tuori, *Properties of Law. Modern Law and After* (Cambridge University Press, 2021), p. 138; J. Hage, 'Foundations', in J. Hage & B. Akkermans (eds), *Introduction to Law* (Springer, 2014), pp. 1–22, at 1; C.F. Wilder, 'Teaching Old Dogs New Tricks: Four Motifs of Legal Change from Early Modern Europe' (2012) 51(1) *History and Theory*, pp. 18–41, at 19.

[28] Tuori, n. 27 above, p. 147.

[29] See, e.g., I. Verhoeven et al., 'Contentious Governance of Wind Energy Planning: Strategic Dilemmas in Collaborative Resistance by Local Governments and Citizen Action Groups' (2022) 24(6) *Journal of Environmental Policy & Planning*, pp. 653–66, at 660–4.

[30] Tuori, n. 27 above, p. 142.

[31] ibid. p. 14.

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enough'.[32] This creates friction between the societal objective of decarbonization and the fundamental role of the subsurface levels of law to stabilize societies, bring permanence, and ensure the continuity of democratic values even during times of societal turbulence.

2.2. *The Role of Legal Disciplines and Legal Scholarship in Addressing the Paradox*

The knowledge possessed by legal actors, such as legal scholars, about the layering of law is fundamental in structuring these actors' understanding of law and its capacities. Legal actors' knowledge of the surface-level normative material is often conscious and active in the sense that they can easily name the rules and norms that they have applied in a legal case. In contrast, their knowledge of the subsurface level tends to be more implicit and often 'embedded' in the actions of such actors as tacit knowledge.[33] For example, legal scholars do not always actively question their understanding of legal culture, although it fundamentally informs the way in which they operate and shapes their actions. However, contributing to radical societal change in a meaningful way and resolving hard cases[34] within that change demands more of legal actors than implicit knowledge of law's capacity to change. It requires legal scholars to be actively aware of the relevant subsurface-level elements and the friction they may cause in solving legal problems. They must be able to synthesize knowledge from and justify arguments in the broader system of law to seek and find legally defensible and societally just solutions.[35] Even highly detailed knowledge of the surface-level normative material alone is insufficient to bring about radical societal change and resolve the challenging cases inevitably brought about by that change. Instead, legal scholarship 'must "open" the legal order towards its subsurface layers'[36] and expose the dynamics between the different levels.

Law, in its various layers, is not a homogeneous body of rules but consists of different legal disciplines that engage and define legal scholars and legal scholarship.[37] A discipline can generally be defined as a 'comparatively self-contained and isolated domain of human experience which possesses its own community of experts', sharing a distinctive set of 'goals, concepts, facts, tacit skills, and methodologies'.[38] Disciplines have also

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[32] Soininen et al., n. 2 above, p. 71.

[33] Tuori, n. 6 above, pp. 149, 163, 210.

[34] Hard cases are those in which the law (e.g., statute or precedent) does not provide an answer to a question; see, e.g., R. Dworkin, 'Hard Cases' (1975) 88(6) *Harvard Law Review*, pp. 1057–109, at 1057; W. Twining & D. Miers, *How To Do Things with Rules* (5th edn, Cambridge University Press, 2010), p. 188; J. Hage, 'Philosophy of Law', in Hage & Akkermans, n. 27 above, pp. 313–35, at 321.

[35] Tuori, n. 6 above, pp. 195, 215.

[36] ibid., p. 195.

[37] J. Hage, 'Basic Concepts of Law', in Hage & Akkermans, n. 27 above, pp. 37–49, at 37.

[38] M. Nissani, 'Fruits, Salads, and Smoothies: A Working Definition of Interdisciplinarity' (1995) 29(2) *Journal of Educational Thought*, pp. 121–28, at 125. See also D.W. Vick, 'Interdisciplinarity and the Discipline of Law' (2004) 31(2) *Journal of Law and Society*, pp. 163–93, at 166; J. Peel, 'Climate Change Law: The Emergence of a New Legal Discipline' (2012) 32(3) *Melbourne University Law Review*, pp. 922–79, at 925. Broader discussion of what constitutes a legal discipline is beyond the scope of this article.

https://doi.org/10.1017/S204710252300016X Published online by Cambridge University Press

been referred to as 'forms of social organization that generate, evaluate, organize and disseminate research as well as scholarship', which 'represent an institutionalized form of specialization that is inevitable in the context of the vast and rapidly growing domains of knowledge'.[39] Legal disciplines are not static but are in constant evolution, and the same surface-level normative material can belong to two or more legal disciplines. However, legal disciplines differ from one another not only in their surface-level normative material but also in the content of their subsurface levels. They differ in the ways in which, for example, they use sources of law (namely, what is the relative weight of different sources of law) or which doctrine of interpretation they value over others. Different legal disciplines gain their coherence and identity from their own general doctrines (namely, legal concepts, principles and theories) rather than from the surface-level normative material. Legal disciplines are shaped by distinct legal traditions with different histories, internal structures, and power relations.[40] For example, the history of energy law is fundamentally connected to national security interests and therefore is traditionally regulated at the national level, whereas the climate law regime inherently derives from developments in international law.[41]

Legal disciplines have their own legal-cultural specificities and general doctrines, and these fundamental premises of legal disciplines affect the way in which we see law and its properties. This also means that the capacities of legal disciplines vary as to how well equipped they are to deal with the demands imposed by radical shifts such as decarbonization. Decarbonization as a systemic challenge affects society across sectors and calls for a specific form of legal expertise; yet, the pressure to achieve it is unevenly distributed among legal disciplines. That is to say, legal subdisciplines such as climate and energy law are in the front line of governing decarbonization and may be more receptive to change (and more open to criticism). Other legal disciplines, such as family law or criminal law, are more indirectly affected by decarbonization.

In this context, the paradox represented by the mismatch between the desired role of law and its capacity clearly also holds true between legal disciplines. This means that while law's varying capacities to address radical change can emerge from the different layers of law, they can also emerge from different legal disciplines. A fundamental driver within one legal discipline can conflict with the objectives of another legal discipline. For example, energy security interests in energy law can conflict with the climate law objective of dramatically reducing GHG emissions.[42] Exposing and resolving these types of conflict is a task for legal scholars and legal scholarship.

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[39] J. Handrlica, 'Nuclear Law Revisited as an Academic Discipline' (2019) 12(1) *The Journal of World Energy Law & Business*, pp. 52–68, at 54. See also J.A. Jacobs, 'The Need for Disciplines in the Modern Research University', in R.T. Frodeman (ed.), *The Oxford Handbook of Interdisciplinarity* (2nd edn, Oxford University Press, 2017), pp. 35–9, at 35.

[40] M. Garcia-Villegas, 'Comparative Sociology of Law: Legal Fields, Legal Scholarships, and Social Sciences in Europe and the United States' (2006) 3(2) *Law & Social Inquiry*, pp. 343–82, at 345–6. See also Tuori, n. 8 above, p. 173.

[41] Romppanen & Huhta, n. 15 above.

[42] Ibid.

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The urgency of the need to address global warming is uncontroversial and accepted by modern societies. However, acknowledgement of the need to transform does not guarantee transformation itself – we require tools to bring about change. This context of transformation not only places enormous pressure on law as a system but also on legal scholarship, which moulds our understanding of law. Legal scholarship is pertinent to legal evolution and legal self-creation and is part and parcel of the dynamic and changing network of law.[43] Insight into the multilayered character of law and the heterogeneity of legal disciplines reveals new demands on legal disciplines in radical shifts. Because of the systemic nature of radical shifts, legal scholarship should respond to these demands. This should be done not only by contributing to the surface-level normative material but also by increasing understanding of the subsurface levels of law and legal disciplines and the frictions they may create.

Exposing subsurface-level knowledge to achieve an understanding of law's capacities requires legal scholarship to develop new methods and approaches for studying law and legal disciplines in the context of radical societal shifts. The following sections propose *disciplinary comparison* as a novel methodology for understanding the capacities of law in facilitating decarbonization as a societal challenge. Exploring the interrelationships between legal disciplines allows one to actively cultivate explicit knowledge of their relevant capacities for the purposes of facilitating legal responses to decarbonization. A shared understanding of the disparities and synergies between legal disciplines will increase our knowledge of law's capacities for radical, cross-sectoral change and will help legal scholarship effectively to identify legal responses that are possible at the surface level of law.

3. DISCIPLINARY COMPARISON AS A METHOD

3.1. *A Description of Disciplinary Comparison*

To address the systemic and structural changes in law and legal thinking required by the need to decarbonize societies, a reimagination of legal methods must take place. In this context, a method refers to a systematic and consciously selected process, or a tool by which legal scholars answer legal research questions and produce new legal insight. In other words, a method is a description of how one intends to enhance their knowledge of law.[44] This subsection focuses on the comparison between legal disciplines as the method to construct and enhance knowledge about law's capacities for societal challenges, such as decarbonization.

In terms of legal disciplines, it has been aptly pointed out that '[m]ethods play a crucial role in the constitution of disciplines insofar as they organize the way knowledge is produced and information for study, research and education is processed'.[45] Disciplinary comparison, in the light of this, refers to a method that can be used to

[43] Tuori, n. 27 above, pp. 96–7; Wilder, n. 27 above, p. 19.
[44] R. Cryer et al., *Research Methodologies in EU and International Law* (Bloomsbury, 2011), p. 5.
[45] G. Frankenberg, *Comparative Law as Critique* (Edward Elgar, 2019), p. 8.

https://doi.org/10.1017/S204710252300016X Published online by Cambridge University Press

identify, explore, and understand the similarities and differences between legal fields to find synergies and frictions between these fields, which aim to address radical shifts. Furthermore, disciplinary comparison aims to broaden and increase cross-disciplinary understanding to enhance mutual synergies and remove harmful friction between disciplines.

Disciplinary comparison is based partially on a simplification of disciplines and the assumption that they have discernible boundaries or identifiable edges, at least on an abstract level. However, legal disciplines in practice are much more porous than that. Fields such as climate and energy law often overlap, and practising lawyers, judges or other legal professionals do not necessarily distinguish themselves as practising either 'climate' or 'energy' law. Instead, they are likely to engage with both fields and may not necessarily recognize or give importance to the boundaries of these disciplines. The assumption of boundaries is simplifying but justified because a 'well-chosen simplification can remove the dust and smoke that obscures'[46] our thinking about law and allows us to identify clearly the capacities of law in decarbonization.

There is naturally an abundance of similarities and, especially, differences between all legal disciplines, which originate from the mere fact that the body of law adopted and applied in various fields is different. Consequently, comparison between the surface-level normative material in each legal field would not necessarily be fruitful. Instead, our approach focuses on the differences and similarities in the subsurface levels of law. In other words, the method directs our attention to the comparison of macro-level elements rather than micro-level comparison of individual legal norms, for example. Firstly, disciplinary comparison focuses on the similarities and differences between the *doctrines* of the compared legal fields. In this context, doctrine refers to key concepts, principles, and theories within each field.[47] Secondly, disciplinary comparison focuses on similarities and differences between the *fundamental objectives and drivers of each discipline*. Thirdly, disciplinary comparison focuses on differences and similarities between the *institutional set-up* and the *division of competence and decision-making power* within the legal disciplines. Finally, and to some extent separately from the focus of comparison on law itself, disciplinary comparison can be used to assess how *legal scholarship* is conducted in these legal disciplines.

Disciplinary comparison cannot, of course, be used to answer all types of legal research question. It can be used to identify and explore the similarities and differences between legal disciplines and to understand how these differences and similarities can facilitate, restrict or steer societal changes, which, in the case of this article, refers to decarbonization.

Comparing the foundations of two legal fields can reveal synergies and friction between disciplines that aim to achieve the same or similar objectives, but encounter difficulties in doing so. For instance, consider climate and energy law, which are both globally recognized as legal fields that aim to facilitate decarbonization.

[46] P. Milgrom, 'Auction Research Evolving: Theorems and Market Designs' (2021) 111(5) *American Economic Review* (2021), pp. 1383–405, at 1384.

[47] Tuori, n. 8 above, p. 173.

https://doi.org/10.1017/S204710252300016X Published online by Cambridge University Press

Climate law does so through legally binding objectives, while energy law is transforming the ways in which energy is produced and consumed. However, comparison of the objectives of these two fields exposes friction between the two disciplines. Climate law is fundamentally driven by the need to reduce GHG emissions[48] and, while it includes many internal objectives, the overarching purpose and goal of climate law is to tackle the single challenge of global warming. In contrast, energy law is characterized by a plurality of objectives which include sustainability more broadly, as well as competitiveness and energy security.[49] As a result, decarbonization measures in the energy sector are always balanced against the objectives of energy security and competitiveness, creating compromises between these objectives. Such compromises can partially undermine or even prevent the decarbonization measures needed in the energy sector.[50]

Disciplinary comparison can also be used to identify friction in legal *scholarship*. This kind of friction is well reflected in discourses where, for example, legal scholarship adopts a dismissive approach to energy expertise, perceiving it as 'operating within the arcane silo of energy security',[51] and lacking broader understanding of the plurality of objectives that define the discipline. Similarly, energy law scholarship has voiced trivializing and even hostile views of legal expertise that pushes for more ambitious decarbonization efforts, claiming that:

> (e)nvironmental lawyers, who mostly have no economic training or interest (and may even be hostile to economic analysis of environmental issues) and who are steeped in the prohibit–allow culture of public law and in sympathy with morally attractive – though often practically irrational – NGO campaigning are quite vulnerable to such forces, which pull them away from a realistic assessment of the cost and benefit of environmental action.[52]

Although the above quote specifically refers only to environmental lawyers, it is made in the distinct context of climate law and policy measures for decarbonization. These are alarming examples of situations where climate and energy law scholarship clash with one another because of a lack of mutual understanding of the subsurface levels between the disciplines. Considering the urgency of decarbonization, legal scholarship cannot afford such disciplinary misconceptions and juxtapositions. Disciplinary comparison, as a method, exposes the nexus between disciplines linked by societal contexts such as decarbonization, and assists in revealing scholarly blind spots or misconceptions that can cause law to act as a hindrance to decarbonization.

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48 H. van Asselt, M. Mehling & K. Kulovesi, 'The Evolving Architecture of Global Climate Law', in L. Reins & J. Verschuuren (eds), *Research Handbook on Climate Change Mitigation Law* (Edward Elgar, 2022), pp. 17–42, at 22–5.

49 Romppanen & Huhta, n. 15 above.

50 K. Huhta & S. Romppanen, 'Why is Energy Law Resistant to Changes Required by Climate Policies?' (2023) 4 *Energy and Climate Change*, pp. 1–3.

51 N. Gunningham, 'Confronting the Challenge of Energy Governance' (2012) 1(1) *Transnational Environmental Law*, pp. 119–35, at 120.

52 K. Talus, *EU Energy Law and Policy: A Critical Account* (Oxford University Press, 2013), p. 209.

https://doi.org/10.1017/S204710252300016X Published online by Cambridge University Press

3.2. *Departing from Existing Methods of Legal Inquiry*

Disciplinary comparison is a distinctly new opening in the legal-methodological sphere. Nevertheless, it echoes long-standing and frequently discussed methodological discourses in legal scholarship. Here, we identify three key existing and well-established methods of legal inquiry that not only connect to but can also be used to distinguish disciplinary comparison from the methodological traditions of legal research: doctrinal legal research, critical legal scholarship, and comparative legal research.

Doctrinal legal research, as the interpretation and systematization of existing law, is the starting point for most legal analyses.[53] In the context of this article it is used to refer to a process by which legal scholars 'identify the relevant authoritative legal sources, systematize these sources as part of the legal system in which they operate, determine the meaning of these legal sources through interpretation, justify legal decisions on grounds of argumentation and arrive at a conclusion on the basis of this process'.[54] Considered as a method, doctrinal legal research constitutes the form and the approach through which legal disciplines are created and moulded. While the interpretative task of doctrinal legal research typically focuses on surface-level normative material, its systematization is geared towards exposing and developing key concepts and principles, thus solidifying the foundations of a legal discipline. Consequently, doctrinal legal research lays the groundwork in identifying, reorganizing, and systematizing legal material to comprise concepts, principles, and theories that form the doctrine of each legal discipline and improve the coherence of law.[55] As a result, it is a necessary methodological precondition for comparing the subsurface levels of legal disciplines with one another.

However, the well-established criticisms of doctrinal legal research also explain that as a method it is insufficient by itself to achieve the desired results or address the research questions that interest us.[56] To understand these criticisms and to reach beyond the sphere of black-letter law, *critical legal approaches* are essential. Critical legal scholarship is abundant and rich. Consequently, a wealth of scholarship on critical legal approaches has been developed over the past 40 years, especially in the US.[57] Proponents of critical theory assert that law is profoundly intertwined with social issues and affected by inherent social biases. However, the roots of critical approaches to law lie in the 'deep sense of dissatisfaction with the existing state of legal

[53] See, e.g., Smits, n. 8 above, pp. 209–13; M. Van Hoecke, 'Which Method(s) for What Kind of Discipline?', in M. Van Hoecke (ed.), *Methodologies of Legal Research: Which Kind of Method for What Kind of Discipline?* (Hart, 2011), pp. 1–18, at 1–3; Cryer et al., n. 44 above, pp. 34–41.

[54] Huhta, n. 26 above, p. 2.

[55] A. Peczenik, 'A Theory of Legal Doctrine' (2001) 14(1) *Ratio Juris*, pp. 75–105, at 79–80.

[56] F.W. Munger & C. Seron, 'Critical Legal Studies versus Critical Legal Theory: A Comment on Method' (1984) 6(3) *Law & Policy*, pp. 257–97, at 259.

[57] See, e.g., R.M. Unger, 'The Critical Legal Studies Movement' (1983) 96(3) *Harvard Law Review*, pp. 561–675; D. Kennedy & K. Klare, 'A Bibliography of Critical Legal Studies' (1984) 94(2) *The Yale Law Journal*, pp. 461–90; A. Hunt, 'The Theory of Critical Legal Studies' (1986) 6(1) *Oxford Journal of Legal Studies*, pp. 1–45; M. Tushnet, 'Critical Legal Studies and the Rule of Law', in J. Meierhenrich & M. Loughlin (eds), *The Cambridge Companion to the Rule of Law* (Cambridge University Press, 2021), pp. 328–39, at 329–30.

scholarship'.[58] For us, however, the critical thought emerges as an appealing approach as it constitutes 'a framework for asking questions about legal ideologies, that moves beyond the confines of normative' legal methods.[59] Trubek has observed, in an article exploring critical legal studies and the practical application of law in our society, that conversations about methodology can obscure a more captivating question 'about the nature of and function of law in modern society and the relationship between legal ideas and social action'.[60] We accept Trubek's notion and reverse it to uncover an intriguing question regarding methodology behind the nature and function of law. Much later, Lobel describes 'conventional wisdom about the relative inefficacy of law' as 'contemporary critical legal consciousness', discussing the ways in which critical legal thinkers approach the limits of law in effecting social change and in the legal system's incapacity to achieve desired societal goals.[61] The legal consciousness is dynamic and responsive, and prescribes the ways in which legal scholars, lawyers, and legal professionals 'experience' legal issues of a given time.[62] The fundamental characteristic of critical approaches to law, which challenge the capabilities of law in a modern society, aligns well with the rationale for disciplinary comparison presented in this article, and encourages a contemporary critical examination of law's capacities in decarbonization.

Disciplinary comparison can also be seen to connect with critical practice, which has been aptly described as 'boundary-work'[63] and as 'demarcating borders between fields of knowledge and rescinding or transgressing them'.[64] The importance of critical approaches to addressing societal challenges such as decarbonization has already been voiced. In fact, critical methodological voices have been highlighted as methodologically important in climate law, for example.[65] In these discussions, similarities between critical approaches and disciplinary comparison can also be identified. For example, critical scholarship has been described as taking 'a step back and' questioning, but not 'necessarily opposing … the common assumptions underpinning the law'.[66] In this context, the aims of disciplinary comparison and critical legal scholarship overlap. However, unlike in critical legal scholarship, the point of departure in disciplinary comparison is the nexus between disciplines. While critical legal scholarship often bases its analysis on existing disciplinary classifications, disciplinary

[58] A. Hunt, 'The Critique of Law: What Is "Critical" about Critical Legal Theory?' (1987) 14(1) *Journal of Law and Society*, pp. 5–19, at 5.

[59] Munger & Seron, n. 56 above, p. 258.

[60] D. Trubek, 'Where the Action Is: Critical Legal Studies and Empiricism' (1984) 36(1–2) *Stanford Law Review*, pp. 575–622, at 576.

[61] O. Lobel, 'The Paradox of Extralegal Activism: Critical Legal Consciousness and Transformative Politics' (2007) 120(4) *Harvard Law Review*, pp. 937–88, at 938–9.

[62] D. Kennedy, *The Rise & Fall of Classical Legal Thought* (Beard Books, 1998 [1975]), p. 7.

[63] Frankenberg, n. 45 above, p. 23.

[64] Ibid.

[65] See, e.g., B. Mayer, 'The Critical Functions of Scholarship in Climate Law' (2018) 8 *Climate Law*, pp. 151–60, at 151. Similarly, on comparative law see, e.g., M. Mehling, 'The Comparative Law of Climate Change: A Research Agenda' (2015) 24(3) *Review of European, Comparative & International Environmental Law*, pp. 341–52, at 341.

[66] Mayer, n. 65 above, p. 153.

https://doi.org/10.1017/S204710252300016X Published online by Cambridge University Press

comparison is fundamentally interested in identifying the space between disciplines and the dynamics that emerge within this space.

In this respect, disciplinary comparison as a method draws from the language of *comparative legal methods*. While 'all scholarly research implies comparisons',[67] disciplinary comparison goes beyond that. In other words, similarly to comparative legal methods, it focuses on comparison; it explores the 'similarities and dissimilarities'[68] between legal phenomena, and is interested in both integrative and contrastive perspectives.[69] It has been aptly highlighted that comparative legal scholars hope to 'transcend a pure juxtaposition of perspectives: not just methodologically, when comparing different legal systems or cultures, but also by recognizing at the same time the (many times plural) identity of each discipline involved'.[70] Comparative legal scholars have also advocated broader approaches to comparative law when moving away from simply comparing rules. For example, comparative approaches are inclusive of contexts that promote legal discourse or legal doctrine as research objects of comparative law.[71] This contextualist approach to comparative law reminds both comparative legal scholars and legal scholars more broadly that law is a complex social process, which cannot be artificially separated from its context. Law is understood as a 'social phenomenon, with the many contradictions, cultural factors, interactions, and processes'.[72] Legal discourse can be placed at the 'core of comparative endeavour'[73] and legal doctrine (as an elemental part of the subsurface layers of law) is important for comparative law 'because it is a privileged forum where paradigmatical theories, as, for instance, a theory of legal sources, are made explicit and where proposed new (paradigmatical) theories are being discussed'.[74] These notions resonate perfectly with the ambitions of disciplinary comparison.

Comparative law scholarship has also discussed the extent to which comparison, in fact, underlines all legal research.[75] It recognizes that the scope of comparative law can be understood in a much broader sense than merely comparing jurisdictions with one another. It encompasses further aspects, such as 'legal systems of the past, subnational laws, and informal forms of dispute resolution' as 'possible units of

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67 M. Van Hoecke, 'Methodology of Comparative Legal Research' (2015) *Law and Method*, pp. 1–35, at 3.

68 N. Jansen, 'Comparative Law and Comparative Knowledge', in Reimann & Zimmermann, n. 13 above, pp. 290–319, at 292.

69 M. Siems, *Comparative Law* (Cambridge University Press, 2018), p. 47.

70 M. Adams, 'Comparative Disciplines: An Introduction', in M. Adams & M. Van Hoecke, *Comparative Methods in Law, Humanities and Social Sciences* (Edward Elgar, 2021), pp. 1–10, at 4–5.

71 M. Van Hoecke & M. Warrington, 'Legal Cultures, Legal Paradigms and Legal Doctrine: Towards a New Model for Comparative Law' (1998) 47(3) *International & Comparative Law Quarterly*, pp. 495–536, at 495–50, 522. See also V. Casado Pérez & Y.R. Lifshitz, 'Natural Transplants' (2022) 97(3) *New York University Law Review*, pp. 933–84.

72 J.E. Viñuales, 'Comparative Environmental Law: Structuring a Field', in E. Lees & J.E. Viñuales (eds), *The Oxford Handbook of Comparative Environmental Law* (Oxford University Press, 2019), pp. 3–34, at 15.

73 Van Hoecke & Warrington, n. 71 above, p. 495.

74 Ibid., p. 532.

75 M. Adams, 'Doing What Doesn't Come Naturally: On the Distinctiveness of Comparative Law', in M. Van Hoecke (ed.), *Methodologies of Legal Research* (Bloomsbury, 2011), 229–40, at 229–30.

https://doi.org/10.1017/S204710252300016X Published online by Cambridge University Press

comparative law'.[76] Comparative law scholarship has also engaged in contrasting and parallelling concepts within single legal systems (for example, tort and crime),[77] and argued that comparative law 'should move beyond the traditional requirement that the objects compared be in different legal systems' and should find 'benefits of comparative legal reasoning' within a single legal system.[78] This argument implies that comparative law should engage in comparison within legal systems and 'legal domains'.[79] In this sense, disciplinary comparison can be seen as a continuation of these claims, which promotes an advanced understanding of what comparison can be used for.

Furthermore, legal scholars engaging in disciplinary comparison must possess a skillset similar to that held by comparativists. They must be capable of understanding and accurately describing the compared jurisdictions (in the case of comparative law) or disciplines (in the case of disciplinary comparison).[80] In other words, both disciplinary comparativists and comparativists must have profound knowledge of the compared jurisdictions or disciplines, and become residents rather than tourists in the areas being compared.[81] It is vital that legal scholars engaging with disciplinary comparison recognize any potential biases, for example, towards civil law cultures or their focus on Western ways of legal thinking, to ensure that their comparative approach is not a 'tourist's' approach.

To become a resident rather than a tourist is particularly challenging in the context of disciplinary comparison because legal expertise and research are traditionally organized in relation to specific disciplines. While new types of interdisciplinary approach to law are becoming more mainstream, journals, professorial chairs, and educational paths often still focus on specific fields of law and not necessarily on resolving societal challenges. As a result, climate and energy law scholars, for example, may tend to argue past one other when trying to capture the essence of each other's discipline. We tend to follow different journals, emphasize different elements of the same legal instruments in our teaching, and our scholarly perceptions of climate and energy law are distinctly divergent.[82] In the context of explaining this kind of scholarly specialization within environmental law, Carlarne notes that, although (environmental law) scholars are more interested in looking at cross-issue linkages, the disciplines of domestic and international environmental law continue to inhabit relatively distinct scholarly domains, resulting in a situation where there

[76] M. Siems, 'The Power of Comparative Law: What Types of Units Can Comparative Law Compare?' (2019) 67(4) *The American Journal of Comparative Law*, pp. 861–88, at 862.

[77] M. Dyson, *Comparing Tort and Crime: Learning from Across and Within Legal Systems* (Cambridge University Press, 2015).

[78] M. Dyson, 'Litigations Divide and Conquer: Using Legal Domains in Comparative Legal Studies', in G. Helleringer & K. Purnhagen (eds), *Towards a European Legal Culture* (Nomos, 2014), pp. 131–54, at 131.

[79] Ibid.

[80] Jansen, n. 68 above, p. 292.

[81] Van Hoecke, n. 67 above, p. 8.

[82] Romppanen & Huhta, n. 15 above.

https://doi.org/10.1017/S204710252300016X Published online by Cambridge University Press

is 'no obvious way' to negotiate legal relationships.[83] Her thinking matches well with the argument raised in this article as she also argues that to address this patchy understanding, there is a growing need to 'expand comparative legal analysis' to achieve a broader analytical perspective.

However, there are also clear reasons as to why disciplinary comparison departs from comparative legal methods such as functionalism.[84] The most important and most obvious of these reasons is that comparative law is traditionally interested in the laws of countries.[85] By contrast, disciplinary comparison does not focus on the laws of countries but instead is interested in how legal disciplines, which transcend jurisdictional boundaries, are organized *in relation to one another*. This approach naturally raises questions of how to select the specific disciplines that are compared with one another. This issue is discussed next.

3.3. *How to Select Disciplines for Comparison?*

As with any systematic form of scholarly inquiry, the choices underpinning a selected methodological framework should be discussed transparently. In the context of disciplinary comparison, this means that the criteria for selecting the disciplines to be compared must be carefully identified and thoroughly justified. The first task of disciplinary comparison is to recognize the common comparative denominator that connects the compared disciplines. In comparative law scholarship, comparability – namely, *tertium comparationis* – has been referred to as 'the third unit besides the two legal *comparanda*, that is, the elements to be compared, the *comparatum* and the *comparandum*'.[86]

In comparative law scholarship, it is traditionally thought that the compared legal systems should be 'neither too similar nor too different'.[87] Functionalism, as a traditional methodological orientation in comparative legal scholarship, for instance, is geared towards comparing segments of legal systems that fulfil the same function.[88] In other words, functionalism identifies the relevant rules for comparison on the basis of their *similar functions*. The *tertium comparationis* could also be found in a common problem, goal or societal challenge which they are created to resolve or address.[89] It is in this context that the selection of disciplines to be compared takes place in disciplinary comparison.

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[83] C.P. Carlarne, 'Exploring Methodological Challenges within the Context of Climate Change Law and Policy' (2011) 105 *Proceedings of the Annual Meeting of the American Society of International Law*, pp. 255–7, at 255–6. See also D. French & L. Rajamani, 'Climate Change and International Environmental Law: Musings on a Journey to Somewhere' (2013) 25(3) *Journal of Environmental Law*, pp. 437–61, at 457.

[84] P.G. Monateri, *Advanced Introduction to Comparative Legal Methods* (Edward Elgar, 2021).

[85] Siems, n. 69 above, p. 17.

[86] E. Örücü, 'Methodological Aspects of Comparative Law' (2006) 8(1) *European Journal of Law Reform*, pp. 29–42, at 36.

[87] Siems, n. 69 above, p. 18.

[88] Ibid., p. 33.

[89] Örücü, n. 86 above, p. 36.

https://doi.org/10.1017/S204710252300016X Published online by Cambridge University Press

To provide context for the methodological discussion, this article illustrates the functioning and application of disciplinary comparison in energy and climate law. The comparability, or the *tertium comparationis*, of these two legal disciplines emerges from the context of decarbonization. It is neither a function nor a problem, but a shared and almost universal societal goal that jurisdictions around the globe aim to achieve and a societal challenge to be resolved. It is decarbonization that exposes the nexus and the comparability between climate and energy law.

Having said that, it is also important to acknowledge that climate and energy law are not by a long chalk the only legal disciplines that could be selected as compared disciplines in the context of decarbonization. As stressed in the introduction, it is widely acknowledged that societies must decarbonize across scales, sectors, policy domains, and time frames,[90] which extends the scope of the low-carbon transition far beyond climate and energy law alone. Disciplinary comparison in the context of decarbonization could be similarly applied and justified, for example, between climate law and food law and might, in fact, provide fruitful comparisons through which to understand the challenges to decarbonization. Furthermore, energy and climate law would be less relevant if the societal challenge studied was not decarbonization. In this case, the comparability or the *tertium comparationis* would emerge from an entirely different context. For example, if the societal challenge that we studied was global pandemics, then the legal fields selected for comparison would be distinctly different.

Finally, the choice of compared disciplines is strongly affected by the wording and orientation of the research question.[91] This directs our inquiry towards the kinds of research question that can be answered by means of a methodological approach such as disciplinary comparison, and what the new information thus acquired can be used for in the context of decarbonization. This is the focus of the next section.

4. THE VALUE OF APPLYING DISCIPLINARY COMPARISON TO DECARBONIZATION

While much has been achieved through the decarbonization efforts made to date (for example, climate governance, legal approaches included) in terms of reducing emissions, rapid decarbonization still requires effective upscaling.[92] Proposing disciplinary comparison as a new method of legal inquiry is an attempt at something entirely new to approach decarbonization in a legal setting. Because disciplinary comparison builds on existing legal methods, as explained in the previous section, it is reasonable to ask what kind of new knowledge can be gained by means of this new method that could not be obtained using traditional legal approaches. Moreover, how can this

[90] Skea et al., n. 3 above, p. 21.

[91] Similarly in Van Hoecke, n. 67 above, p. 5.

[92] Skea et al., n. 3 above, p. 46. See also e.g. D. Etzion et al., 'Unleashing Sustainability Transformations Through Robust Action' (2017) 140(1) *Journal of Cleaner Production*, pp. 167–78, at 176; Van Asselt, Mehling & Kulovesi, n. 48 above, p. 17.

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new understanding be applied to achieve the structural and radical societal changes required by decarbonization?

Efforts to decarbonize have been on the global agenda for decades, yet carbon dioxide (CO_2) and other GHG levels in the atmosphere have continued to rise steadily, causing continuous global warming. The insufficiency of efforts to bring about large-scale decarbonization is often attributed to failures in traditional approaches governing decarbonization. There is general consensus that our existing governance systems have been inadequate in addressing the challenge.[93] The failures stem from such issues as the transversal and complex nature of climate change as a global challenge and the persistent lack of political will to agree on a strict regulatory framework, as well as challenges concerning effective implementation.[94] Setting these failures aside, scientists say that the now-or-never point in respect of global warming has been reached. Policies, practices, and legal instruments to drive decarbonization increase at every level of governance, 'yet simultaneously they are grossly inadequate to the task'.[95]

In this setting, the article's methodological focus is motivated by the need for systemic restructuring in law and legal thinking. In the context of climate law, it has been appropriately argued not only that climate change 'highlights the need to develop rigorous techniques for analyzing the interrelationship between local, national, regional, and international environmental laws', but also that '[t]hese interrelationships remain underexplored, and scholarly debate on the proper methodology for undertaking such analyses deserves more attention'.[96] Disciplinary comparison, as discussed in the preceding sections, focuses on interrelationships from the perspective of similarities and differences found in the subsurface levels of law: doctrine, fundamental drivers, institutional set-up, competences and decision-making powers, as well as legal scholarship. The purpose of comparison is to advance our knowledge of the ways in which we can approach, understand, and conceptualize the paradox that exists in the conflict between the need for radical change and the resistant nature of legal systems.

Legal scholars must have an active and comprehensive understanding of the subsurface-level elements of law and their impact on legal problem solving at the surface level. Legal scholars should also be able to integrate knowledge of law and legal disciplines to defend their arguments in achieving legally sound and socially just solutions. Surface-level knowledge alone does not suffice to promote societal change and resolve the complex and challenging cases that arise in the context of decarbonization. Hence, to accomplish changes of the required magnitude in the surface-level

[93] See, e.g., C.P. Carlarne, K.R. Gray & R. Tarasofsky, 'International Climate Change Law: Mapping the Field', in C.P. Carlarne, K.R. Gray & R. Tarasofsky (eds), *The Oxford Handbook of International Climate Change Law* (Oxford University Press, 2016), pp. 3–25, at 23; P.G. Harris, *Pathologies of Climate Governance: International Relations, National Politics and Human Nature* (Cambridge University Press, 2021), pp. 3–4, 10; I. Alogna, C. Bakker & J.P. Gauci, 'Climate Change Litigation: Global Perspectives – An Introduction', in I. Alogna, C. Bakker & J.P. Gauci (eds), *Climate Change Litigation: Global Perspectives* (Brill, 2021), pp. 1–30, at 3; Van Asselt, Mehling & Kulovesi, n. 48 above, p. 42.

[94] See, e.g., Van Asselt, Mehling & Kulovesi, n. 48 above, p. 20.

[95] Harris, n. 93 above, p. 3.

[96] Carlarne, n. 83 above, p. 256.

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normative material, legal scholarship must be able to expose the frictions, capacities, and potential at the subsurface level. Furthermore, because changes at subsurface level occur much more slowly than changes on the surface, legal scholarship should be able to expose the interfaces that have – or lack – the required aptitude to change. In other words, disciplinary comparison helps us to trace points of intervention in a legal system. Identifying and tracking such points of intervention will provide us with insights into the magnitude of or capacity for change; it helps us to understand what is changing or needs to change in law. Identification of these points of intervention is also fundamental for restructuring as it provides opportunities to 'intervene in and disrupt systemic outcomes'.[97] However, 'leveraging change in one part will lead to the desired outcome *only* if concurrent shifts happen in the relational and compositional elements of the system'.[98]

Disciplinary comparison can provide information on both the desired and the conceivable capacities of law in decarbonization. The identified points of intervention allow access to the internal perspective on law and reveal the potential for change in the legal system. Following the logic of leveraging change, to trigger the necessary changes in the surface level normative material (namely, rules for decarbonization), such changes need to be promoted and supported by the deeper layers of law.

The use of disciplinary comparison to compare climate and energy law scholarship offers a means of finding an illustrative example. While climate scholarship has gradually matured and been shaped through active scholarly debate, energy law has not 'evaluated itself' or 'grown theoretically'.[99] Energy law as a discipline is perceived as immature in comparison with climate law: it has no shared understanding of the key concepts, principles, and theories that underpin the discipline.[100] Using disciplinary comparison to identify the diffuse nature of energy law scholarship affords such scholarship the possibility to develop the subsurface-level structures of energy law in a direction that supports rather than restricts decarbonization.

Similarly, comparison between the fundamental objectives of energy law and climate law explains why energy law often seems restrictive and resistant to the changes required in order to meet climate objectives.[101] Energy law is characterized by a plurality of objectives, of which climate mitigation is only one.[102] This plurality is deeply rooted in the subsurface levels of energy law as a legal discipline and unavoidably leads to compromises concerning the objectives fundamentally embedded in climate law. Exposing these kinds of friction between legal disciplines through disciplinary

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97 T. Pierson-Brown, '(Systems) Thinking Like a Lawyer' (2020) 515(26) *Clinical Law Review*, pp. 515–62, at 530.

98 P.G. Foster-Fishman, B. Nowell & H. Yang, 'Putting the System Back into Systems Change: A Framework for Understanding and Changing Organizational and Community Systems' (2007) 39(3–4) *American Journal of Community Psychology*, pp. 197–215, at 199.

99 R. Heffron et al., 'A Treatise for Energy Law' (2018) 11(1) *Journal of World Energy Law & Business*, pp. 34–48, at 35.

100 Romppanen & Huhta, n. 15 above.

101 Huhta & Romppanen, n. 50 above.

102 Ibid.

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comparison is key to understanding where – at what leverage points – decarbonization measures can or cannot succeed. Climate and energy law scholars, among others, should work to understand the increasing interdependence between climate and energy law as legal fields, their joint role in relation to decarbonization, as well as the possible catalyst effects or deficiencies that might accelerate or hinder change.

5. CONCLUSIONS

The undeniable realities of global warming require fundamental societal decarbonization across scales, sectors, policy domains, and time frames. The societal need for radical change conflicts with the role of legal systems in stabilizing societies in fundamental ways. This article has argued that fundamental and systemic restructuring in law and legal thinking is needed to achieve understanding of the capacities of law and legal disciplines within this conflict. This extends to legal scholarship and to the *methodological choices* that legal scholarship uses to approach societal challenges such as decarbonization.

To respond to this need for new methodological approaches, this article has suggested and elaborated on the use of *disciplinary comparison* as a new approach to understanding the capacities of law to facilitate decarbonization. Disciplinary comparison is a novel legal methodological approach, which can be used to explore and expose the interrelationships between legal disciplines to establish shared understanding of both the disparities and the synergies between the disciplines. It focuses on the similarities and differences to be found in law's deeper layers, including doctrine, institutional set-up, competences, and decision-making powers. The approach rests on the well-established legal methodological traditions of doctrinal legal research, as well as critical legal scholarship and comparative legal research. However, disciplinary comparison departs from these traditional approaches in its interest in new knowledge concerning intervention in law and legal thinking for the purposes of radical shifts that are both substantive and structural in nature (namely, covering institutional aspects, including foundational concepts and principles, as well as organizations). Disciplinary comparison selects the relevant comparable legal disciplines on the basis of the societal challenge they aim to address, which, in the case of this article, is decarbonization.

The article offers comparative examples of climate and energy law to illustrate the areas of new knowledge that can be revealed through disciplinary comparison. The analysis ascertained that comparison between legal disciplines such as climate and energy law can be used to obtain information on the capacities of law to facilitate decarbonization by identifying and understanding the points of intervention where these disciplines can – or cannot – change. In other words, disciplinary comparison is a tool that helps us to trace crucial points of intervention in a legal system. Identifying and understanding these points of intervention will provide an insight into law's capacity to change and tackle societal challenges such as decarbonization.

The need for disciplinary convergence between fields such as climate and energy law has increased in tandem with the deepening interdependence between the two legal fields. In the context of decarbonization, the selection of climate and energy law as fields

through which to explain and evaluate disciplinary comparison seemed appropriate because those two disciplines are in the frontlines of achieving effective decarbonization. However, disciplinary comparison could well be similarly justified and assessed in the context of other legal disciplines that contribute to or prevent decarbonization or other societal challenges. To ascertain whether disciplinary comparison is a useful approach for broader analyses on societal challenges, the method needs to be further applied and tested in various contexts with a diversity of research questions, with this article serving as the starting point for approaching disciplinary comparison. Disciplinary comparison is also not the *only* conceivable method that could be used to understand the roles and capacities of law in relation to societal challenges such as decarbonization. This article can also serve as a point of departure for inviting legal scholars to contribute to developing new tools to meet such challenges.

https://doi.org/10.1017/S204710252300016X Published online by Cambridge University Press