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What can philosophy contribute?

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Perspective

Strengthening the foundations of energy justice scholarship: What can philosophy contribute?

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ABSTRACT

The tenet-based approach to energy justice has seen substantial uptake over the past decade. Despite referring to philosophical terminology, energy justice scholars rarely engage rigorously with philosophical methods or ongoing debates. We argue this absence is challenging for two implicit goals that often arise in applications of the approach: to describe and capture ethical-issues surrounding energy systems and to normatively evaluate choices, actions, and events surrounding these issues in reference to justice. In this paper, we discuss these descriptive and normative challenges within the energy justice scholarship. We outline a series of measures, methodologies, and debates in philosophy that can aid in meeting these challenges. We argue that the energy justice scholarship can be strengthened by 1) explicitly justifying normative assumptions; 2) acknowledging the breadth and interpretability of tenets by distinguishing concepts and conceptions of justice; and 3) including insights from ongoing debates in moral and political philosophy, which offer conceptual tools and theories to better capture ethical energy related issues. Combined, these suggestions form a research agenda to help energy justice scholarship better articulate, rationalise, and meet its goals.

1. Introduction

Since the early 2010s, contributions to the energy justice scholarship have grown rapidly in both quantity and diversity, as the need to rapidly reshape and transform global energy socio-technical systems becomes increasingly evident [1–5]. Central to the growth of this discourse has been the emergence of *energy justice frameworks*, which can be described as systematic approaches that draw on a range of justice concepts to analyse energy-related issues [1]. The predominant framework distinguishes between different categories or *tenets* of justice, such as distributive, procedural, and recognition justice, and sometimes also cosmopolitan and restorative justice [3,6,7]. Within this framework, distributive justice often refers to just distributions of burdens and

benefits; procedural justice is about just decision-making procedures; recognition justice is concerned with just relations of recognition through love (providing the structural conditions necessary for relations of love), law (recognition of rights, moral agency, and dignity), and status order (recognition of one's contributions to society and value of identities and group differences); restorative justice is about the just remediation of injustices; and cosmopolitan justice is about considering justice on a global scale [8]. The tenet-framework has had significant uptake within a number of disciplines, particularly in social and geographical strands of energy justice scholarship [5,9–12].

Sometimes implicitly or explicitly, energy justice scholarship seems to subscribe to two goals:

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1. A *descriptive goal*. The aim of describing and capturing energy-related conflict, resistance, or moral dilemmas, by using the different tenets of justice as analytical tools [11,13–17], and/or
2. A *normative goal*. The aim of evaluating choices, actions, behaviours, or events in terms of justice and of subsequently prescribing (policy or design) recommendations on the best course of action [18–21].

However, the tenet-framework is limited in reaching both the descriptive and normative goals, because the concepts of distributive, procedural, and recognition justice are relatively thin and open to multiple interpretations [8,19–21]. For example, ‘procedural justice’ in the energy transition might be understood by one person as a representative democracy, while another might consider this unjust and demand more inclusive local energy infrastructures. In this case, ‘procedural justice’ is understood by different stakeholders in different ways, illustrating that the concept itself is ‘thin’ and open to a multiplicity of interpretations.

As such, the tenet-framework as it is faces two challenges. First, the tenet-framework is insufficiently fine-grained and as such it has limited descriptive power to explain energy conflicts that revolve around different interpretations or *conceptions* of each tenet of justice. Second, the concept provides little guidance for normative decision-making and policy recommendations, because the tenets are open to multiple interpretations. We position these issues as two key challenges for the tenet-framework:

1. *The descriptive challenge*: the tenet-framework has limited ability to describe and articulate the dynamics that underpin energy conflicts, resistance, or moral dilemmas.
2. *The normative challenge*: the tenet-framework is insufficient to make normative-ethical evaluations of energy systems, technologies or policies, or to morally justify a certain course of action.

This perspective paper aims to critically assess the tenet-approach energy justice framework and its relevance to descriptive and normative objectives in the fast expanding environment of global energy socio-technical systems. We highlight challenges not with the intent of advocating for a dismissal of the framework but rather to emphasise its significance and strengthen it. The aim is to promote a circumspect approach in the application of the tenet energy justice framework across diverse contexts. This nuanced perspective aspires to cultivate a more profound comprehension of the inherent intricacies within the domain of energy justice, allowing for policy analysis and context-specific applications of the established framework.

Given that the key concepts of energy justice frameworks originate from moral and political philosophy, more substantial engagements with this discipline could be fruitful, especially as philosophical contributions to energy justice scholarship are rare [22]. Of the conceptual energy justice contributions that exist, many focus on making sense of the tenet-framework. For example, Pellegrini-Masini et al. [23] investigate what conceptions of equality lie at the root of the energy justice tenet-framework, whilst Gavlin [24] proposes a Wittgenstinian approach to moral claim making to extend the moral compass and sensibilities of policy and decision-makers. Other contributions have sought to insert concepts from philosophy into energy justice framings without the corresponding reasoning and underpinning methods [6,25–27], or have developed alternative perspectives on energy justice different from the predominant tenet-framing [28–31]. The absence of philosophical or normative thinking within the field suggests an opportunity for philosophy to strengthen energy justice scholarship, particularly as it begins to take a more nuanced normative and decolonial turn [18,19,21,28]. Therefore, our research question is: how can philosophy contribute to achieving the descriptive and normative goals of energy justice scholarship?

To answer this question, we first explore the descriptive and normative challenges for the tenet-based energy justice framework in-

depth (Section 2). Next, we formulate three ways in which philosophy can contribute to tackling these challenges (Section 3), which are specifically: (Section 3.1) including the philosophical method of normative argumentation; (Section 3.2) distinguishing tenets from conceptions of justice; and (Section 3.3) including key discussions and methods from relevant past and current philosophical debates. These three recommendations translate into a research agenda for energy justice that is interdisciplinary and incorporates philosophical argumentation and reasoning. In Section 4, we discuss the difficulty of balancing complexity and applicability when engaging with both energy justice and philosophy. In concluding, we call for more philosophically grounded contributions in energy justice scholarship.

2. Key challenges for energy justice scholarship

In this section, we detail the descriptive and normative challenges that the energy justice tenet-framework currently faces. Although we outline them separately, there is a strong interaction between the two. On the one hand, intuitions about what is normatively important or unjust might play a role in choosing what to research. On the other hand, recommending a ‘good’ course of action requires a robust problem description of the injustice at hand. Both challenges resonate with and may help address a recent observation made by Osička et al. (p. 14) [29]: “Too many papers make reference to concepts, sometimes even cite definitions, but fail to make a connection between the theoretical framework and the empirical work and findings”, and “...while EJ [energy justice] appears to have worked out a dominant definition, the way it can be operationalized and the analytical purpose it can serve is not clear” (p. 14).

2.1. Descriptive challenge

Van Uffelen et al. [8] show that although most scholars that apply the tenet-framework to case studies have normative aims, a minority uses the framework in a descriptive way [37–40]. Following a descriptive approach, the tenets are used predominantly as a conceptual tool to gain more insight into the reasons behind protests, resistance and controversies, or to better understand grievances in relation to energy infrastructures and policies [34]. For example, perceptions of procedural and distributive justice play a major role in the social (community) acceptance of renewable energy technologies and associated infrastructures [35–37]. The notion of justice as recognition especially seems to provide an explanation for energy controversies where mere procedural or distributive analyses fall short [38]. However, the tenet-framework has limited explanatory power, for four reasons.

The first reason signifies a general concern about the tenet framework, namely that the different tenets are not always well defined. Ideally, an energy justice framework contains concepts that capture different aspects or dimensions of justice. Different aspects of justice – or tenets – may correlate with one another in empirical contexts. However, where tenets correlate, there does not have to be an analytical or conceptual overlap. For example, many distributive concerns may pair with procedural issues even though procedure and distributive notions of justice are analytically distinct. However, confusion remains about the relation between recognition justice and procedural justice. These two tenets are often broadly defined and frequently, recognition is considered as a part of procedural justice, questioning the redundancy of that tenet, and its usefulness for understanding energy controversies [8]. In sum, due to a lack of conceptual and analytical preciseness, the tenet-framework may lack explanatory power.

Second, the tenet-framework lends itself to being used in an unproductive way. We observe that the framework is often used to label claims of injustice through qualitative analysis as either claims of distributive, procedural, recognition or restorative injustice [18]. Although some studies draw out relationships between tenets [5,39], the tenet-based analysis of a controversy based on key conceptual papers, can lead to

a list of claimed injustices per tenet. However, treating the tenets as separate entities does not capture the complex relations between different tenets of justice [22,19,48]. In the environmental and climate justice literature, the tenets are regarded as related to each other [46,47]. In many energy controversies, the voiced injustices often pertain to multiple tenets at the same time. For example, [author removed for blind review] shows that citizens above gas storage infrastructures perceive the compensation system as unjust (restorative injustice) because it leads to inequalities between households, and because the procedure is so cumbersome that it was perceived as a burden (distributive justice) [forthcoming]. It is hard to categorise such complex claims into separate tenets, and doing so does not help understand the core of the conflict. In other words, the core of energy controversies cannot always be captured by simply distinguishing between tenets such as distributive, procedural, recognition, and occasionally restorative justice.

Third, the concepts within the tenet-framework are often insufficient to analyse or fully portray energy controversies. Energy controversies have (at least) two sides, and that often includes one set of stakeholders that perceive injustices and other stakeholders that do not perceive any issues. The tenet-framework is often used to categorise experiences of *injustice*, while claims of *justice* are often unspoken and thereby easily overlooked. As such, the tenet-toolkit is not particularly apt to depict societal unrest as an energy controversy [20]. Moreover, and perhaps more fundamentally, categorising (perceived) injustices into tenets does not shed light on disagreements that might exist *within* the tenets. For example, some stakeholders may experience distributive injustices while others consider the same distributions as just. As such, the tenet-framework on its own is often insufficient for understanding what lies at the heart of the conflict.

Fourth, the tenet-framework is problematic to apply in contexts where divergent interests among stakeholders or power imbalances, rather than different perceptions of justice, are the cause of conflict. When utilised in such contexts, the tenet-framework might falsely describe underlying self-interests of stakeholders as justice concerns. We need to acknowledge that actors in the energy sector are often driven by self-interests instead of ethical concerns, although they may use the concept of justice as a discursive strategy [25].

To generalise, the current tenet-framework provides limited ability in capturing and demonstrating the dynamic context of energy conflicts. The descriptive challenge can thus be identified as a search for the best conceptual toolkit that is able to explain energy controversies in relation to justice. Following Section 2, we suggest a range of improvements for this conceptual toolkit to enhance its explanatory power.

2.2. Normative challenge

The energy justice scholarship has the normative, emancipatory aim of making energy systems, technologies, and policies more just. For example, it is often claimed that energy justice can be a conceptual, analytical, but also a decision-making tool that can “assist energy planners and consumers in making more informed energy choices” [28, p. 677]. The energy justice framework is intended to identify injustices and “provide a means of normatively judging both planned and current energy and future socio-technical regimes” [49, p. 70]. A strong claim is that “the energy justice concept evaluates (a) where injustices emerge, (b) which affected sections of society are ignored, and (c) which processes exist for their remediation in order to (i) reveal, and (ii) reduce such injustices” [2]. The energy justice framework has received praise for being “a moral compass” [50, p. 188] and for its potential for policy uptake [42]. In practice, many energy justice scholars make normative claims in their papers such as “X is unjust” or policy recommendations based on the tenet-framework [8].

However, at the same time, several authors have argued that the tenet-framework has a limited ability to make normative evaluations and recommendations. For example, Jenkins et al. [34] have argued that

energy justice has limited application outside academia due to a “lack of normative principles of just distribution” (p. 8). Because of this limited philosophical exposure, “there is little reflection on how Energy Justice becomes a deliverable policy outcome” (p. 8). Moreover, Wood and Roelich [43] illustrate the complexity within energy justice issues, as they can always be considered from multiple normative perspectives. In the same vein, Van Uffelen et al. [8] argues that the energy justice framework in itself is insufficient for justifying normative conclusions, as there is normative uncertainty about what is just. As a result, Lee and Byrne [44] call for zooming out from the tenet-based framing of energy injustice in order to see the systemic and normative conditions that (re) produce the issue at hand. Recently, Laes et al. [21] have described that the tenet-framework faces three challenges, namely the absence of philosophical explorations about when distributions and procedures are just (normative challenge); when power is justified (elite challenge); and the failure to offer guidance for decision-making beyond academia (application challenge). These concerns contradict the praise the framework has received for its applicability in policy, which raises the question: to what extent is it possible to make normative claims based on the tenet-framework of energy justice? In other words, can we deduce from the tenet-framework (a) what is (un)just and (b) the best course of action to remediate injustices?

We argue that the energy justice framework indeed faces a normative challenge: the tenet-framework is insufficient to normatively evaluate energy systems, technologies or policies, or to justify a certain course of action. The tenet-framework in itself distinguishes between different tenets of justice, *yet each tenet can be interpreted in different ways* [8,19,20,45]. There are many possible (justifiable) conceptualisations of (each tenet of) justice, and there are tremendous global differences [46]. Adopting different moral theories leads to different framings of the same energy dilemmas [43]. Depending on the conceptualisation, people can disagree on what is (un)just and on what should be done. In extreme cases, this leads to ambiguity as to whether something is unjust at all. Moreover, there can be tensions between tenets of justice, and it is unclear to what extent procedural justice should take precedence over distributive justice, for instance [47]. Therefore, the tenets themselves provide insufficient normative guidance for diagnosing and mitigating injustices. In other words, from the tenets themselves, it cannot be deduced what is (un)just and what policy should do.

Drawing substantial normative conclusions from merely the tenets of justice creates the impression that such claims are supported or justified by the framework. Yet, as we have shown, the tenet-framework lacks the means to support attaching the label *energy injustice* to a phenomenon. When conclusions about what is (un)just are drawn based on the tenets alone, they are shaped by the author's normative preferences (or own personal ethics) which are rarely made explicit. As a result, there is a core component of much energy justice research that currently cannot be subject to healthy debate or scrutiny.

3. What moral and political philosophy can contribute

This section outlines how philosophy, more specifically moral and political philosophy, can contribute in tackling both the descriptive and normative challenge, thereby strengthening energy justice scholars in reaching their descriptive and normative aims. Before beginning it is useful to make some clarifications.

First, it is a common misconception and oversimplification to equate the use of specific philosophical theories of justice with the act of the philosopher ‘deciding what is and what is not an injustice’. Indeed, philosophers formulate the question “What is justice?” and formulate arguments for and against certain positions or conceptions of justice. However, adopting a specific theory does not necessarily imply the universalisation of a specific conception of justice throughout all social contexts. Instead, theories of justice make normative assumptions explicit and help justify normative conclusions. Explicit use of theory thus enhances clarity, accountability, and debatability, enabling others

to understand theoretical assumptions and constructively question them. As we argue later, for a range of reasons, categorisations of ‘injustice’ that lack a clear reasoning or explanation would benefit from more explicit reasoning.

Second, there is another important way the term ‘justice’ is used in the testimonies of those making claims of harm, disadvantage, and many other grievances. This mode of claim making which we see in a range of activist movements, is not divorced from theory. In fact, philosophers often draw on justice movements and attempt to capture the dynamics that underpin them. Popular notions of environmental justice, for example, are often derived in part from observation and theorisation of activist grievances and claims to justice [48,49]. Moreover, critical theory often draws on justice movements to understand their grievances and formulate grounds to justify their normative claims [50].

Keeping these clarifications in mind, several scholarships or branches² within philosophy are of particular interest to the energy justice scholarship:

- *Moral and political philosophy* often reflect on justice. For example, “justice is the primary subject of political philosophy” [51, p. 3]. Political philosophy is primarily concerned with justice as it relates to institutions or institutionalised norms: “When people say a rule or practice or cultural meaning is wrong and should be changed, they are usually making a claim about social justice” (p. 9).
- *Climate justice & ethics*³ studies questions of justice in relation to climate change, including questions of responsibility towards future generations, and how to conceive of and distribute risks [52,53].
- *Environmental ethics* is a discipline “that studies the moral relationship of human beings to, and also the value and moral status of, the environment and its non-human contents” [54].
- *Normative energy ethics* as the systematic philosophical study of the moral dimensions of energy related matters that analyses energy systems, policies, and actions, evaluates stakeholders’ values, judges the ethical worth and merit of energy-related actions (i.e., good/bad, right/wrong), and prescribes preferable or optimal courses of action in both general and specific situations [55].
- *Environmental justice* studies social injustices in relation to environmental issues, including the claims of injustice voiced in environmental justice movements [49].
- *Critical theory* is also helpful, as it “refers to any politically inflected form of cultural, social, or political theory that has critical, progressive, or emancipatory aims” [56]. Critical theorists aim not only to describe, but also to evaluate our social world. Debates often revolve around how to justify valid normative critique - in order words, on what grounds we can claim that a phenomenon is unjust.

3.1. The role of normative argumentation in philosophy

One task in tackling the normative challenge is introducing methods that underpin philosophical reasoning. This can help resolve two issues: 1) the lack of transparency of the source of normative claims (i.e., when normative claims are not supported by explicit argumentation) and 2) the strength of the argumentation underpinning them. Such issues tend to occur within the energy justice literature when a scholar formulates a

² These are meant as a list of scholarships that can inspire energy justice theory and practice. They are not meant as an exhaustive taxonomy of sub-fields. The relation between these bullet points is not a relation of full equality, and we acknowledge that moral and political philosophy can be seen as a larger category that can comprehend climate justice and critical theory, for example. Moreover, it can be debated whether environmental justice is a philosophical scholarship, or rather an interdisciplinary one, as it often adopts social science methods.

³ Sometimes, this field is also referred to as climate ethics.

recommendation based *only* on a ‘thin interpretation’ of a tenet of justice, without considering the possibility of multiple interpretations, or without specifying a more substantial conception of justice (see below [Section 3.2](#) for the concepts/conceptions distinction). By a *thin interpretation*, we mean a minimal, unsubstantiated definition of a tenet that gives no guidance on when a distribution, procedure, or relation of recognition is just or unjust [8]. Examples of this tendency are defining distributive justice as a just distribution of burdens and benefits, or defining procedural justice as just decision-making procedures.

Recommendations that are based *solely* on a thinly interpreted tenet pose two problems. First, such a definition is unable to evaluate whether the features of a situation or case constitutes, sustains, or compounds an injustice. A thin interpretation of a tenet provides little compelling argumentation to be able to explain why something is an ‘energy injustice’. Second, as a substantial definition of justice is lacking, we often face a situation where the author follows their own “internal” or “personal” ethical assumptions and biases. When normative conclusions are based on the ‘thin’ version and one’s own personal ethics, then the tenet framework falsely appears as ‘objectively true’. Therefore, using it in this way could be methodologically misleading. Instances of unsupported claims in energy justice scholarship abound. For example, Siciliano [57] make the following normative conclusion: “This paper teases out the energy injustice between various stakeholders such as dam builders, financiers, local dwellers and local governments in the locating a hydropower project” (p. 207), yet do not providing any theoretical support for their claim of an existing injustice. Another example can be found in Sareen and Kale [58] who state that “any discussion of a transition to renewable energy must contend with the fact of inequities in access to energy” (p. 276). Here, the conception of “inequities” is thin, remains undistinguished from inequalities, and the claim does not include further statements on why and under what conditions inequities constitute an injustice.

These two problems are all-the-more pertinent when we consider the increasing weight policy and decision-makers are placing on *just transition* agendas. The combination of the two problems with thin interpretations above risks producing analyses that neither identifies the underpinning and sustaining dynamics of what we call injustice and at worst, produces recommendations which may further conceal or fail to respond to these dynamics due to hidden normative assumptions that might be unjustified.

Problems with justification of normative conclusions can be mitigated by adopting the philosophical method of (normative) argumentation. In this, philosophy is “a craft, a practical capacity of carrying on with philosophical discussions” [65, p. 8]. Developing philosophical argumentation means formulating and scrutinising arguments for or against a certain position, that is supporting a thesis or conclusion. This, in turn, can help find better answers or a more fine-grained understanding of concepts. Let us step back and consider a couple of fundamental points related to methodology and logic, both of which are strongly related to this issue of “good reasoning”. Methodologically speaking, there are two main approaches (or “ways of reasoning”) that are utilised in different sciences - inductive and deductive:

- Following the inductive approach, a researcher begins with a set of empirical observations, seeking patterns in those observations, and then theorises about those patterns to potentially make broader claims or even establish more general laws.
- The deductive approach starts from adopting a theoretical framework (i.e., a theory), moves to developing hypotheses from that theory, and then collecting and analysing data to test those hypotheses.

Although energy social sciences could in principle adopt either inductive or deductive approaches (depending on the aims of the study and the chosen methods), most of the existing scholarship seems to have followed deductive approaches (e.g., using the three tenets framework

as an initial theory to then collect data and test it against it).

Apart from adhering to inductive or deductive approaches, empirical research conducted in the energy social sciences can be more specifically based on qualitative, quantitative or mixed methods. Above, we mentioned that although energy justice authors typically discuss empirical research descriptively (i.e., “participant ‘x’ affirmed that ‘y’”), there is evidence that many scholars also make normative claims [8]. In either case, claims can take the form of simple statements or that of proper arguments (or “inferences” in the broader sense of the term). In logic, an argument is “a group of statements, one or more of which (the premises) are claimed to provide support for, or reasons to believe, one of the others (the conclusion).” [59, p. 1]. That is, the premises constitute the claimed evidence and the conclusion what is claimed to follow from the evidence. If claims do not correspond to an argument, they may be simply statements (i.e., simple non-inferential passages, such as warnings, a piece of advice, a belief, or an opinion). These kinds of statements are usually not particularly convincing or persuasive (precisely because they do not provide much evidence).

Then, generally, logicians typically distinguish between deductive and inductive arguments. However, it is crucial to understand that here “deductive/inductive argument” means something much more specific and narrower than the “deductive/inductive approach” discussed previously [59, p. 33]:

- Deductive arguments are those that rest on necessary reasoning.
- Inductive arguments are those that rest on probabilistic reasoning.

More in general, a “good” argument is defined as a valid argument. Given that there are two types of arguments, there are also two kinds of validity, that is “deductive validity” and “inductive validity”. Now, because of the nature of the methods used in the social sciences (whether qualitative, quantitative, or mixed), it seems plausible to affirm that (energy) social scientists and energy justice scholars put forth inductive arguments. Again, an inductive argument incorporates “the claim that it is improbable that the conclusion be false given that the premises are true” [59, p. 33]. Finally, there are different types of inductive arguments (from analogy, predictions, generalisation, and causal inference). Leaving aside deductive arguments and deductive validity, let us focus on the inductive validity of inductive arguments. Consider the following example:

P1. Village “A” and Village “B” are very similar from a socio-cultural, economic, and political standpoint as well as geographically very close.

P2. Village “B” stands strongly united against the proposed wind farm.

C Therefore, village “A” is probably also against the proposed wind farm.

Of course, there are a myriad of reasons why the inhabitants of village “A” may disagree with those of village “B” and actually approve of the wind farm project. However, the inductive argument presented suggests that, given the premises offered, it is probable that both villages agree and they both oppose the energy project. An argument is “inductively valid when the premises provide some reasonable ground for the conclusion, though not necessarily a conclusive one.” [61, p. 112]. Validity in inductive arguments is sometimes put in terms of strength/weakness. These are not exclusive but rather come in degrees. Moreover, an inductive argument can be cogent or not. A cogent argument is a valid (strong) inductive argument with all true premises.

All the above can be applied to both descriptive and normative arguments. However, the latter present an ulterior requirement: the normative conclusion must be supported by at least one normative premise. That normative premise should be justified by further normative theories or ideas, such as human rights, capabilities, and so on. Moral and political philosophy and specific theories of justice become

useful here, providing accounts and argumentation which can support a claim of injustice, or more broadly a normative premise. A range of political-philosophical theories exist that provide argumentation to support the importance of specific values or conceptions of justice, such as the capability approach [62,63] or theories of human dignity [65]. These can be drawn on to both explicate or critically engage with normative claims surrounding energy systems. What we propose is similar to the ‘good practice’ employed by a researcher when reflecting on any other potential objections or limitations of their research, e.g., generalisation, modes of data collection, biases, and so forth, and it involves making explicit one’s own ethical perspective or potentially even theory. Within mainstream energy justice discourse, the theories and the methods underpinning normative conclusions are rarely discussed explicitly. This is despite earlier three-dimensional understandings of environmental justice clearly being embedded within a breadth of political and philosophical theory [19,49]. The inclusion of the philosophical method of argumentation would reduce the lack of transparency behind energy justice recommendations and open the door to greater debate and scrutiny about when something is unjust.

In conclusion, whether (energy social science and justice) researchers adopt inductive or deductive approaches, and implement their study according to qualitative, quantitative or mixed methods, they should ideally build inductive arguments that are valid (or strong) and cogent, which are preferable because they represent “good reasoning”. Paying attention to these aspects in constructing argumentation within energy justice scholarship could concretely tackle the transparency issue surrounding labelling phenomena as ‘energy injustices’.

3.2. Distinguishing concepts and conceptions

One means of addressing both descriptive and normative challenges is to make explicit the distinction between *concepts* and *conceptions* of justice. This distinction follows Rawls [66] and Hart [67] (1961) who point out that people can agree on the (importance of) the concept of justice, yet disagree on its conceptions, i.e. the interpretation or meaning of what a just state is, e.g. principles that need to be met for a certain distribution to be considered just. In Rawls’ words, “The concept of justice I take to be defined, then, by the role of its principles in assigning rights and duties and in defining the appropriate division of social advantages. A conception of justice is an interpretation of this role” [71, p. 9]. In other words, *concepts of justice* include justice in general, but also for example general concepts such as ‘distributive justice’, ‘procedural justice’, and ‘recognition justice’; and *conceptions of justice* include a more detailed notion of the principles, rules, or conditions under which something is (un)just.

Discussing justice at the level of conceptions is important from both descriptive and normative perspectives. From a descriptive perspective, to understand energy controversies, it is often insufficient to simply categorise claims of injustice into tenets. An understanding of different *conceptions* of distributive justice, i.e., the different underlying principles that are adopted by stakeholder groups, is often needed to untangle controversies. From a normative perspective, conceptions of justice can help justify normative conclusions. This is essential if we want to make evaluations or judgements about whether something is (un)just and subsequently produce policy recommendations. Currently, most iterations of the tenet approach include broad and widely interpretable *concepts* of justice, i.e., distribution, recognition, and procedure. However, there is little normative debate on what *conceptions* of justice might be most appropriate for different energy dilemmas.

Discussions within moral and political philosophy reveal a variety of different theoretical conceptions of each tenet. For example, Rawls defines two principles of justice, including the maximin principle (a principle seeking to maximise the position of those worst off) [68,69]; Nozick holds the principle of respect for individual rights as yardstick for just state action; Dworkin [70] posits the principle of equal concern and respect for persons; Walzer argues for complex equality as criterion for

justice [80]; Honneth [71] defends the principle of an undistorted relation-to-self; Fraser argues for participatory parity in social life [72,73]; Young [51] states that justice is the “elimination of institutionalised domination and oppression” (p. 15); Nussbaum [63] and Sen [62] propose capabilities as criteria through which to assess societies; critical race philosophers argue that justice is the absence of discrimination and subordination (e.g. [74]); Ubuntu philosophers consider justice as relational, which implies flourishing communities that foster “harmony, goodwill and neighborliness” [75, p. 261]; Maori philosophy underscores justice for humans and non-humans through the concepts of “*mauri* (life force), *tapu* (potential to be) and *mana* (respect, worthiness)” [76, p. 11]; care ethicists consider justice as intertwined with the particular, care, and relationality [77]; and East Asian perceptions of social justice (which are based collectively on philosophies like Buddhism, Confucianism, and Taoism) emphasise the moral values of harmony and oneness among people as well as with nature [78,79]. Energy justice scholars can draw inspiration from these debates to justify normative conclusions in energy contexts. Contrary to what many philosophers seem to argue, the most appropriate or defensible principle of justice might be context-dependent. Michael Walzer, for example, argues that each ‘sphere’ in society requires a different principle of justice: in short, justice is plural [80]. Similarly, Boltanski and Thévenot put forward the notion of commonwealths - multiple coherent shared justifications of what is just in certain circumstances [21]. Distributing energy, for example, should not happen in the same way that political offices are distributed, or money [82]. As such, there is an important task for energy justice scholars, as each case requires a genuine reflection on what conceptions of justice are most appropriate. For example, different principles might apply to local case studies than to global energy distribution issues.

When applied to a given energy dilemma, different theories can lead to different normative conclusions or solutions. For example, Rawls might view energy poverty as a barrier to the attainment of basic primary goods, to which, he argues, all people should have the opportunity to attain. As such, a response to such an injustice may call for a redistribution of resources to ameliorate the effects of energy poverty. Conversely, Nozick [83] may argue that such a redistribution of resources is itself unjust. Similar conflicts arise in how we should theorise (mal)recognition, with a variety of scholars presenting differing views [71,73]. These conflicts are not necessarily an issue; on the contrary, they are something that should be embraced and highlighted. Each conception provides a means of articulating and defending a position on what is and what is not unjust. In adopting and acknowledging this moral diversity, scholars are presented with a plethora of ways to frame and analyse energy dilemmas as well as substantive arguments to underpin policy and decision-making recommendations.

So far, without paying attention to the granularity and diversity of conception hidden within each tenet, policy recommendations within energy justice scholarship can lack an important facet – that is an explicitness about the principles that underpin the conclusion that something is unjust. If a scholar or a decision-maker approves or rejects an energy development, under the banner of ‘justice’, it would be reasonable to ask: *what conception of justice?* Theories and conceptions of justice provide a means of substantiating and scrutinising such claims.

3.3. Developments in moral and political philosophy

Potentially resulting from the rationalisation and differentiation of energy justice from prior grounded trajectories [19], there have been many developments in moral and political philosophy that remain understudied in energy justice. As such, the siloing and rationalisation of energy justice frameworks as distinct from other trajectories misses opportunities for meaningful cross pollination and debate. Although an overview of all conceptual developments is way beyond this paper and practically impossible, six debates are too significant to overlook. These debates provide concepts or tools which may help in understanding the

descriptive nature of energy controversies as well as the process of providing normative guidance or analysis.

First, although the energy justice tenet approach was inspired by Schlosberg's writings in *environmental justice* [49], more recent developments have not yet been integrated.⁴ More specifically, decolonial ethics and multispecies justice (ecological justice was also a substantial component of Schlosberg's understanding of environmental justice) have seen growing debate over the past decade [28,88,89]. Multispecies justice implies taking animals, nature, and ecosystems seriously as subjects of justice, instead of only considering justice for humans [49,90,91]. In other words, it questions a set of normative assumptions (e.g., human exceptionalism) in western philosophies, and points towards alternative conceptions of justice that are often found among peoples in the Global South [91]. Moreover, environmental justice shows that theory can be informed and challenged by the grievances of social and activist movements – repeated application of energy justice tenets does not leave room for such a reflexive process to occur [19]. For example, within the North American context, environmental anti-racist movements seeking freedom from the ‘the effluents of affluence’ inspired environmental justice theory and energy justice frameworks [48,92,93]. The point here is not that energy justice research should specifically include multispecies justice or North-American conceptions of justice within their work, but that these debates could influence energy justice analyses and conclusions [19].

Second, the notion of *cosmopolitan justice* has been adopted by several energy justice scholars as a fourth or fifth ‘tenet’ or category of justice [6,94], yet in moral and political philosophy this term signifies a specific normative position towards the appropriate scale of justice, which has strong implications for global redistribution [95]. There is a lively debate about what cosmopolitanism is, and how to balance demands for global justice with national self-determination and collective responsibility of different groups and peoples [46,96,97]. By reducing cosmopolitanism to a ‘tenet’ of justice, this whole debate – which has many implications for determining what is unjust and what appropriate redistribution is – goes unnoticed. Energy justice would benefit from reflections on to what extent inequalities among countries are ethically justified or not, and what this would mean for energy policies and global redistribution.

Third, the notion of *recognition justice* has had substantial uptake in energy justice, largely due to David Schlosberg's efforts of framing it as a third tenet. Yet, the concept is often reduced to a mere focus on ‘vulnerable people’ or to procedural justice [45]. Moreover, Nancy Fraser's conception of recognition as a status injury is dominant in energy justice, while other conceptualisations of justice as recognition, such as those developed by Axel Honneth, have been notably absent in the scholarship [71,98]. Also, the concept of recognition justice has been scrutinised in-depth by many scholars, mostly from feminist perspectives, which has led to various important reconceptualisations and nuances that have not yet reached energy justice (e.g. [99]). The lack of communication between critical theory and energy justice is a missed opportunity for both fields, as critical theory would benefit from empirical richness, and energy justice from richer conceptualisations.

Fourth, philosophical debates can shed more light on the interconnections among tenets of justice. Grievances are rarely exclusively distributive, recognition-based or procedural injustice claims. Rather,

⁴ One prominent illustration of this can be seen in earlier understandings of environmental justice which consisted of distributive, recognition-based, and procedural dimensions but which also included capability as a means connecting and articulating these relationships between these dimensions and people's lives (we use ‘dimension’ here because this earlier three-part notion of environmental justice highlights both the breadth and depth of philosophical debate which underpinned this trio) [49]. Capability was omitted when the tenet-approach was introduced to energy studies in 2013, only to be introduced as a distinct approach to energy justice several years later [84–87].

these claims often represent a combination of the three. Understanding the relations among the tenets is vital to understand the nature of injustice claims [19,48], and what causes or constitutes specific injustices. According to some conceptions of procedural justice, the outcome of a procedure is just whatever it may be as long as the procedure is just, which conflicts with common theories of distributive justice [100]. As for the concepts of distributive justice and recognition, some philosophers regard them as two equally fundamental concepts, while others insist that recognition should be regarded as more fundamental and distributive justice as derivative from it [98]. As these debates are largely absent in core literature on the tenet approach to energy justice, so too are the valuable explanatory interconnections between these tenets.⁵

Fifth, within the climate justice scholarship, there are rich debates about to what extent future generations should be taken into account when making decisions on climate policies. There are many different normative positions being defended and attacked, and scrutinising such discussions can help shed light on the assumptions held by energy justice scholars, and their justifications [23,110,111].

Finally, it is worth noting that although ‘energy justice’ as a scholarly discourse is relatively new, scholarly contributions connecting energy systems to ethical framings are not. A range of disparate contributions have been made over the past decade and beyond, drawing on a range of ethical framings to problematised many aspects of energy systems [102–107].

Energy justice can benefit from the concepts and scholarships discussed in this section in two ways. On the one hand, they provide conceptual tools to help understand grievances and energy conflicts. For example, a more nuanced understanding of recognition justice can describe the grievances of people who perceive energy injustices in more detail [45]. On the other hand, within these scholarships, arguments and justifications can be found to better justify normative conclusions in relation to energy infrastructures and policies. For example, with theories of multispecies justice, arguments can be found why it is important to include animals and ecosystems in our sphere of justice.

4. Complexity or simplicity, a trade-off?

So far, we have discussed what philosophy can contribute to strengthen the energy justice scholarship. However, there is also a pitfall here. We identify a possible trade-off between the aim to produce policy recommendations and the aim to achieve a nuanced understanding of energy (in)justice. This trade-off, we argue, requires a balance between philosophical complexity and empirical applicability.

On the one hand, we have shown that the current tenet-framework is insufficient to explain most energy controversies and guide policy-making. Jenkins et al. [2] assume that the tenets can be put together without friction and applied in sequential manner, thereby neglecting the potential conflicts among them. However, the tenet-approach does not incorporate the existence of multiple conceptions of distributive, recognition and procedural justice. Given the normative and descriptive challenges, it can be concluded that merely distinguishing between different tenets of justice is too simple, and as a result, the framework is incapable of being the analytical, conceptual and decision-guiding tool it was meant to be.

On the other hand, however, discussions within philosophy can turn the framework into something too complex. Philosophy is known for its fundamental critical thinking, and everything can be - and often is - questioned and unhinged. There is no consensus on when a distribution is just, or what a right decision-making procedure is; there is only a large

variety of theories and principles that often contradict each other. Moreover, philosophical reflections are often very abstract, while energy justice dilemmas are situational and involve many contextual elements and factual assumptions about, for example, the environmental impacts of different energy technologies. As such, moral and political philosophy as a discipline can hardly provide clear-cut action-guiding support for policy-makers. Instead, it might increase complexity and uncertainty about what to do, leaving us with questions or even with a feeling that ‘all is relative’. In sum, philosophical critical thinking can be constructive or deconstructive, and a balance ought to be struck when aiming to contribute to energy policy-making.

We believe that it is possible to balance applicability and conceptual nuance. The current tenet-framework leans too much towards applicability, sacrificing conceptual depth - and thereby its descriptive and normative capabilities. However, it is possible to adopt a more philosophically informed approach to energy-related issues of justice by considering different conceptions of justice. Making explicit and justifying one's conception of justice contributes to the legitimacy of normative conclusions and can better establish their role as action-guiding. Taking such a normative stance and making it explicit allows others - including other scholars, policymakers and citizens - to engage in a discussion on what is just in a specific context. Although such discussions may result in feelings of uncertainty, we consider fundamental debates on energy justice both ethically important and epistemologically valuable. After all, scholars cannot provide policy-makers and decision-makers with a simple manual to dealing with energy justice dilemmas. Decisions on energy justice remain ethical decisions that require democratic deliberation on what justice means in specific situations, and energy justice scholarship can be a platform for these discussions.

5. Conclusions

Within the energy justice literature, we have observed that the tenet-based framework is often presented as a descriptive, conceptual and normative decision-guiding tool. We illustrated two challenges for the tenet-framework, namely 1) the descriptive challenge: the limited ability to describe and articulate the dynamics that underpin energy controversies and 2) the normative challenge: the limited ability to evaluate energy systems, technologies or policies, or to justify a certain course of action. To avoid undermining the ambitions of energy justice scholarship, it is crucial to tackle these challenges.

To summarise, there are three ways to mobilise moral and political philosophy to strengthen the energy justice tenet-framework, namely by 1) strengthening and increasing the transparency of normative claims by using rigorous argumentation and clarifying normative assumptions; 2) distinguishing the tenets (or “concepts”) from conceptions of justice; 3) being receptive to insights from existing philosophical debates. The descriptive challenge benefits from these crossovers, because it provides a richer conceptual toolkit to understand energy conflicts. For instance, distinguishing between tenets and conceptions enables analysing energy conflicts as a clash between competing conceptions of justice. Integrating moral and political philosophy also provides many resources and arguments that help substantiate normative claims and policy recommendations, which mitigates the normative challenge. Further combining philosophical thinking with energy justice discourse can enhance the latter in its aim to address both descriptive and normative dimensions.

We propose that these three suggestions be considered by energy justice scholars and we advocate for more collaborations with (moral and political) philosophers. On the one hand, this is a call for philosophers who do not (yet) engage with concrete energy dilemmas and innovations to engage with energy social scientists and STEM scholars. If philosophers are discouraged from engaging in concrete energy debates, and discussions become further siloed, “justice” becomes a panacea, rationalising or justifying a range of recommendations without explicit

⁵ An exception is Astola et al. [47] who consider trade-offs between the tenets of justice, suggesting that a lack of procedural justice can be compensated with distributive justice and vice versa - such trains of thought deserve more engagement.

reasoning. On the other hand, we call for an energy research and social science platform that welcomes more conceptual, philosophical contributions on what, for example, a just distribution of energy is, what decision-making procedures on energy are just, or indeed, what we take a ‘just transition for all’ to mean – in other words, a space to discuss the validity of using certain conceptions of justice in certain contexts. Jenkins et al. [34] have argued that “Energy Justice research has focused more on establishing what the benefits and harms are that need to be distributed rather than how to distribute them in situations of scarcity” (p. 8). Such discussions are often refused in energy and social science journals because they are too conceptual – unfortunately, the method of rigorous argumentation is rarely considered as valuable in itself.

Despite attempts to measure (energy) justice (e.g. [108,109]), it is not something that can be easily done [112]. Researchers can listen to testimonies or perspectives that may indicate the presence of an injustice, and reason about what is and is not (in)justice. Energy justice scholars often aim to provide normative guidance to policy-makers and engineers. Making such decisions requires arguments and deliberations about what justice means in specific situations, and therefore, moral and political philosophy strengthens energy justice research.

CRedit authorship contribution statement

Nathan Wood: Writing – review & editing, Writing – original draft, Project administration, Methodology, Investigation, Conceptualization. **Nynke van Uffelen:** Writing – review & editing, Writing – original draft, Visualization, Methodology, Investigation, Conceptualization. **Giovanni Frigo:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Conceptualization. **Anders Melin:** Writing – review & editing, Writing – original draft, Investigation, Conceptualization. **Christine Milchram:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Conceptualization. **Joohee Lee:** Writing – review & editing, Writing – original draft, Investigation, Conceptualization. **Salomé Bessa:** Writing – review & editing, Writing – original draft, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

No data was used for the research described in the article.

References

- [1] K. Iwińska, A. Lis, K. Mączka, From framework to boundary object? Reviewing gaps and critical trends in global energy justice research 79 (2021) 102191.
- [2] K. Jenkins, D. McCauley, R. Heffron, H. Stephan, R. Rehner, Energy justice: a conceptual review, *Energy Res. Soc. Sci.* 11 (2016) 174–182.
- [3] D.A. McCauley, R.J. Heffron, H. Stephan, K. Jenkins, Advancing energy justice: the triumvirate of tenets, *International Energy Law Review*. 32 (3) (2013) 107–110.
- [4] K. Bickerstaff, G. Walker, H. Bulkeley, *Energy Justice in a Changing Climate: Social Equity and Low-carbon Energy*, Zed Books Ltd., 2013.
- [5] G. Walker, R. Day, Fuel poverty as injustice: integrating distribution, recognition and procedure in the struggle for affordable warmth, *Energy Policy* 49 (Oct 1 2012) 69–75.
- [6] R.J. Heffron, D. McCauley, What is the ‘just transition’? *Geoforum* 88 (Jan 1 2018) 74–77.
- [7] R.J. Heffron, Applying energy justice into the energy transition, *Renew. Sust. Energ. Rev.* 156 (Mar 1 2022) 111936.
- [8] N. Van Uffelen, B. Taebi, U. Pesch, Revisiting the energy justice framework: doing justice to normative uncertainties, *Renew. Sust. Energ. Rev.* 189 (Jan 2024) 113974.
- [9] L. Middlemiss, P. Ambrosio-Albalá, N. Emmel, R. Gillard, J. Gilbertson, T. Hargreaves, et al., Energy poverty and social relations: a capabilities approach, *Energy Res. Soc. Sci.* 55 (Sep 1 2019) 227–235.
- [10] C. Snell, M. Bevan, H. Thomson, Justice, fuel poverty and disabled people in England, *Energy Res. Soc. Sci.* 10 (Nov 1 2015) 123–132.
- [11] R. Gillard, C. Snell, M. Bevan, Advancing an energy justice perspective of fuel poverty: household vulnerability and domestic retrofit policy in the United Kingdom, *Energy Res. Soc. Sci.* 29 (Jul 1 2017) 53–61.
- [12] S. Bouzarovski, N. Simcock, Spatializing energy justice, *Energy Policy* 107 (Aug 1 2017) 640–648.
- [13] P. Roddis, S. Carver, M. Dallimer, P. Norman, G. Ziv, The role of community acceptance in planning outcomes for onshore wind and solar farms: an energy justice analysis, *Appl. Energy* 226 (2018) 353–364.
- [14] K.E. Jenkins, M. Martiskainen, A Normative Approach to Transitions in Energy Demand: An Energy Justice and Fuel Poverty Case Study, 2018.
- [15] D. McCauley, R. Heffron, M. Pavlenko, R. Rehner, R. Holmes, Energy justice in the Arctic: implications for energy infrastructural development in the Arctic, *Energy Res. Soc. Sci.* 16 (Jun 1 2016) 141–146.
- [16] N. Healy, J.C. Stephens, S.A. Malin, Embodied energy injustices: unveiling and politicizing the transboundary harms of fossil fuel extractivism and fossil fuel supply chains, *Energy Res. Soc. Sci.* 48 (Feb 1 2019) 219–234.
- [17] R.J. Heffron, The role of justice in developing critical minerals, *The Extractive Industries and Society*. 7 (3) (Jul 1 2020) 855–863.
- [18] N. Van Uffelen, B. Taebi, U. Pesch, Revisiting the energy justice framework: Doing justice to normative uncertainties, *Renewable and Sustainable Energy Reviews* 189 (2024) 113974.
- [19] N. Wood, Problematising energy justice: towards conceptual and normative alignment, *Energy Res. Soc. Sci.* 97 (2023) 102993.
- [20] G. Bombaerts, A. Spahn, E. Laes, Structuring values and normative frameworks using Schwartz’s value theory to map the three tenets of energy justice, *Energy Res. Soc. Sci.* 104 (Oct 1 2023) 103244.
- [21] E. Laes, G. Bombaerts, A. Spahn, Towards a pragmatic and pluralist framework for energy justice, *Philos Technol.* 36 (3) (Jul 31 2023) 53.
- [22] K. Jenkins, B.K. Sovacool, N. Mouter, N. Hacking, M.K. Burns, D. McCauley, The methodologies, geographies, and technologies of energy justice: a systematic and comprehensive review, *Environ. Res. Lett.* 16 (4) (Mar 2021) 043009.
- [23] G. Pellegrini-Masini, A. Pigni, S. Maran, Energy justice revisited: a critical review on the philosophical and political origins of equality, *Energy Res. Soc. Sci.* 59 (2020) 101310.
- [24] R. Galvin, What does it mean to make a moral claim? A Wittgensteinian approach to energy justice, *Energy Res. Soc. Sci.* 54 (2019) 176–184.
- [25] B.K. Sovacool, M. Burke, L. Baker, C.K. Kotikalapudi, H. Wlokas, New frontiers and conceptual frameworks for energy justice, *Energy Policy* 105 (2017) 677–691.
- [26] M.C. LaBelle, In pursuit of energy justice, *Energy Policy* 107 (Aug 1 2017) 615–620.
- [27] M.C. LaBelle, R. Bucată, A. Stojilovska, Radical energy justice: a Green Deal for Romanian coal miners? *J. Environ. Policy Plan.* (2021) 1–13.
- [28] B.K. Sovacool, S.E. Bell, C. Daggett, C. Labuski, M. Lennon, L. Naylor, et al., Pluralizing energy justice: incorporating feminist, anti-racist, Indigenous, and postcolonial perspectives, *Energy Res. Soc. Sci.* 97 (Mar 1 2023) 102996.
- [29] J. Osicka, K. Szulecki, K.E.H. Jenkins, Energy justice and energy democracy: separated twins, rival concepts or just buzzwords? *Energy Res. Soc. Sci.* 104 (Oct 1 2023) 103266.
- [30] A. Mayer, More than just jobs: understanding what drives support for a declining coal industry, *The Extractive Industries and Society*. 9 (Mar 2022) 101038.
- [31] K.E.H. Jenkins, B. Taebi, Multinational energy justice for managing multinational risks: a case study of nuclear waste repositories, *Risk Hazards Crisis Public Policy* 10 (2) (2019) 176–196.
- [32] K.E. Jenkins, S. Spruit, C. Milchram, J. Höfken, B. Taebi, Synthesizing value sensitive design, responsible research and innovation, and energy justice: a conceptual review, *Energy Res. Soc. Sci.* 69 (2020) 101727.
- [33] S. Batel, Research on the social acceptance of renewable energy technologies: past, present and future, *Energy Res. Soc. Sci.* 68 (Oct 2020) 101544.
- [34] E. Cuppen, U. Pesch, S. Remmerswaal, M. Taanman, Normative diversity, conflict and transition: shale gas in the Netherlands, *Technol. Forecast. Soc. Chang.* 145 (Aug 2019) 165–175.
- [35] E. Cuppen, O. Ejderyan, U. Pesch, S. Spruit, E. van de Grift, A. Correljé, et al., When controversies cascade: Analysing the dynamics of public engagement and conflict in the Netherlands and Switzerland through “controversy spillover”, *Energy Res. Soc. Sci.* 68 (Oct 2020) 101593.
- [36] U. Pesch, A. Correljé, E. Cuppen, B. Taebi, Energy justice and controversies: formal and informal assessment in energy projects, *Energy Policy* 109 (Oct 2017) 825–834.
- [37] P. Velasco Herrejon, T. Bauwens, Energy Justice from the Bottom Up: A Capability Approach to Community Acceptance of Wind Energy in Mexico, 2020.
- [38] K. Jenkins, B.K. Sovacool, D. McCauley, Humanizing sociotechnical transitions through energy justice: an ethical framework for global transformative change, *Energy Policy* 117 (2018) 66–74.
- [39] K. Jenkins, Setting energy justice apart from the crowd: lessons from environmental and climate justice, *Energy Res. Soc. Sci.* 39 (2018) 117–121.
- [40] N. Wood, K. Roelich, Substantiating energy justice: creating a space to understand energy dilemmas, *Sustainability* 12 (5) (2020) 1917.
- [41] J. Lee, J. Byrne, Expanding the conceptual and analytical basis of energy justice: beyond the three-tenet framework, *Front. Energy Res.* 7 (2019) 99.
- [42] N. Van Uffelen, Revisiting recognition in energy justice, *Energy Res. Soc. Sci.* 92 (2022) 102764.
- [43] G. Bombaerts, K. Jenkins, Y.A. Sanusi, W. Guoyu, *Energy Justice Across Borders*, Springer Nature, 2020.

- [47] M. Astola, E. Laes, G. Bombaerts, B. Ryszawska, M. Rozwadowska, P. Szymanski, et al., Community heroes and sleeping members: interdependency of the tenets of energy justice, *Sci. Eng. Ethics* 28 (5) (Oct 2022) 45.
- [48] G. Walker, *Environmental Justice: Concepts, Evidence and Politics*, Routledge, 2012.
- [49] D. Schlosberg, *Defining Environmental Justice: Theories, Movements, and Nature*, OUP Oxford, 2007.
- [50] James B. Zalta EN. Critical theory. In: *The Stanford Encyclopedia of Philosophy*. Spring 2021 Edition. Available from: <https://plato.stanford.edu/archives/spr2021/entries/critical-theory/> (Published 2005, Internet, cited 2023 Oct 19).
- [51] I.M. Young, *Justice and the Politics of Difference*, Princeton University Press, Princeton, New Jersey, 1990.
- [52] Caney S. Climate justice. In: Edward NZ, editor. *The Stanford Encyclopedia of Philosophy*. Winter 2021 Edition. Available from: <https://plato.stanford.edu/archives/win2021/entries/justice-climate/> (Published 2020, Internet, cited 2023 Oct 17).
- [53] S.M. Gardiner, Ethics and climate change: an introduction, *WIREs Climate Change*. 1 (1) (2010) 54–66.
- [54] A. Brennan, N.Y.S. Lo, Environmental ethics. In: E.N. Zalta, editor. *The Stanford Encyclopedia of Philosophy*. Summer 2022 Edition. Available from: <https://plato.stanford.edu/archives/sum2022/entries/ethics-environmental/> (Published 2002, Internet, cited 2023 Oct 17).
- [55] G. Frigo, R. Hillerbrand, *Energy Ethics, Justice and SDG7*, 2022.
- [56] A. Allen, *The End of Progress: Decolonizing the Normative Foundations of Critical Theory*, Columbia University Press, 2016.
- [57] G. Siciliano, F. Urban, M. Tan-Mullins, G. Mohan, Large dams, energy justice and the divergence between international, national and local developmental needs and priorities in the global South, *Energy Res. Soc. Sci.* 41 (Jul 2018) 199–209.
- [58] S. Sareen, S.S. Kale, Solar 'power': socio-political dynamics of infrastructural development in two Western Indian states, *Energy Res. Soc. Sci.* 41 (Jul 2018) 270–278.
- [59] N. Hämmäläinen, *Descriptive Ethics*, Palgrave Macmillan US, New York, 2016, <https://doi.org/10.1057/978-1-137-58617-9> (Internet, cited 2023 Oct 5).
- [61] G. Priest, *Logic: A Very Short Introduction*, Oxford University Press, 2017 (185 p.).
- [62] A. Sen, *Development as Freedom*, Oxford Paperbacks, 2001.
- [63] M.C. Nussbaum, *Women and Human Development: The Capabilities Approach* vol. 3, Cambridge University Press, 2001.
- [65] L. Doyal, I. Gough, A theory of human needs, *Crit. Soc. Policy* 4 (10) (1984) 6–38.
- [66] J. Rawls, *A Theory of Justice*, Revised edition, The Belknap Press of Harvard University Press, Cambridge, 1999.
- [67] H.L.A. Hart, *The Concept of Law*, Oxford University Press, Oxford, 1961.
- [68] J. Rawls, *A Theory of Justice*, Harvard University Press, 1971.
- [69] J. Rawls, *Justice as Fairness: A Restatement*, Harvard University Press, 2001.
- [70] R. Dworkin, *Sovereign Virtue: The Theory and Practice of Equality*, Harvard University Press, Cambridge, MA, 2000.
- [71] A. Honneth, *The Struggle for Recognition: The Moral Grammar of Social Conflicts*, MIT Press, Cambridge, Massachusetts, 1995.
- [72] N. Fraser, Rethinking recognition. *New left review*. 3 (2000) 107.
- [73] N. Fraser, Social justice in the age of identity politics: redistribution, recognition, and participation, in: *The Tanner Lectures on Human Values*, 1996.
- [74] B.R. Boxill, *Blacks and Social Justice*, Revised edition, Rowman & Littlefield Publishers, Inc., United States of America, 1992.
- [75] N.S. Jecker, C.A. Atuire, N. Kenworthy, Realizing *Ubuntu* in global health: an African approach to global health justice, *Public Health Ethics*. 15 (3) (Dec 31 2021) 256–267.
- [76] D. Celermajor, D. Schlosberg, L. Rickards, M. Stewart-Harawira, M. Thaler, P. Tschakert, et al., Multispecies justice: theories, challenges, and a research agenda for environmental politics, *Environmental Politics*. 30 (1–2) (Feb 23 2021) 119–140.
- [77] C.M. Koggel, *Perspectives on Equality: Constructing a Relational Theory*, Rowman & Littlefield Publishers, Inc., Lanham, 1998.
- [78] H. El Kholi, J.H. Kwak (Eds.), *Global Justice in East Asia*, Routledge, 2020.
- [79] H. Abe, M. Fritsch, M. Wenning (Eds.), *Environmental Philosophy and East Asia: Nature, Time, Responsibility*, Routledge, 2023.
- [80] M. Walzer, *Spheres of Justice: A Defense of Pluralism and Equality*, Basic Books, Inc., United States of America, 1983.
- [82] N. Wood, R. Lawlor, J. Freear, Rationing and climate change mitigation, *Ethics, Policy & Environment*. (2023) 1–29.
- [83] R. Nozick, *Anarchy, State, and Utopia*, Blackwell Publishing, Oxford and Cambridge, 1974.
- [84] R. Day, G. Walker, N. Simcock, Conceptualising energy use and energy poverty using a capabilities framework, *Energy Policy* 93 (2016) 255–264.
- [85] N. Wood, K. Roelich, Tensions, capabilities, and justice in climate change mitigation of fossil fuels, *Energy Res. Soc. Sci.* 52 (Jun 1 2019) 114–122.
- [86] G. Frigo, M. Baumann, R. Hillerbrand, Energy and the good life: capabilities as the foundation of the right to access energy services, *Journal of Human Development and Capabilities*. (2021) 1–31.
- [87] J. Lee, H. Kim, J. Byrne, Operationalising capability thinking in the assessment of energy poverty relief policies: moving from compensation-based to empowerment-focused policy strategies, *Journal of Human Development and Capabilities*. (2021) 1–24.
- [88] C. Tornel, Decolonizing energy justice from the ground up: Political ecology, ontology, and energy landscapes, *Progress in Human Geography* 47 (1) (2023) 43–65.
- [89] A. Dunlap, C. Tornel, Pluralizing energy justice? Towards cultivating an unruly, autonomous and insurrectionary research agenda, *Energy Research & Social Science* 103 (2023) 103217.
- [90] S. Chao, D. Celermajor, Introduction: multispecies justice, *Cultural Politics* 19 (1) (2023) 1–17.
- [91] P. Tschakert, D. Schlosberg, D. Celermajor, L. Rickards, C. Winter, M. Thaler, et al., Multispecies justice: Climate-just futures with, for and beyond humans, *Wiley Interdiscip. Rev. Clim. Chang.* 12 (2) (2021) e699.
- [92] R.D. Bullard, *Confronting Environmental Racism: Voices From the Grassroots*, South End Press, 1993 (274 p.).
- [93] W. San Martín, N. Wood, Pluralising planetary justice beyond the North-South divide: recentring procedural, epistemic, and recognition-based justice in earth-systems governance, *Environ. Sci. Pol.* 128 (2022) 256–263.
- [94] B.K. Sovacool, M.H. Dworkin, Energy justice: conceptual insights and practical applications, *Appl. Energy* 142 (Mar 15 2015) 435–444.
- [95] Kleingeld P, Brown E. Cosmopolitanism. In: Zalta EN, editor. *The Stanford Encyclopedia of Philosophy* (Winter 2019 Edition). Available from: <https://plato.stanford.edu/archives/win2019/entries/cosmopolitanism/> (Published 2002, Internet, cited 2023 Oct 17).
- [96] D. Miller, *National Responsibility and Global Justice*, Oxford University Press, Oxford, 2007.
- [97] G. Brock, *Global Justice: A Cosmopolitan Account*, Oxford University Press, New York, 2009.
- [98] N. Fraser, A. Honneth, *Redistribution or Recognition?: A Political-Philosophical Exchange*, Verso, 2003 (292 p.).
- [99] J. Butler, A. Honneth, A. Allen, R. Celikates, J.P. Deranty, H. Ikkaheimo, et al., *Recognition and Ambivalence*, Columbia University Press, New York, 2021.
- [100] C. Lafont, Procedural justice? Implications of the Rawls-Habermas debate for discourse ethics, *Phil. Soc. Criticism* 29 (2) (2003) 163–181.
- [102] E. Boyle, Rethinking energy studies: equity, energy and Ivan Illich (1926–2002), *Energy Res. Soc. Sci.* 95 (Jan 1 2023) 102903.
- [103] I. Illich, *Energy and Equity*, Calder & Boyars, 1974 (96 p.).
- [104] D. Evensen, Ethics and 'fracking': a review of (the limited) moral thought on shale gas development, *Wiley Interdiscip. Rev. Water* 3 (4) (2016) 575–586.
- [105] M. Messing, H.P. Friesema, D. Morell, *Centralized Power: The Politics of Scale in Electricity Generation*, Gunn & Hain, 1979 (246 p.).
- [106] J. Byrne, N. Toly, L. Glover (Eds.), *Transforming Power: Energy, Environment, and Society in Conflict*, Routledge, 2006.
- [107] J. Bethem, G. Frigo, S. Biswas, C.T. DesRoches, M. Pasqualetti, Energy decisions within an applied ethics framework: an analysis of five recent controversies, *Energy Sustain. Soc.* 10 (1) (2020) 1–6.
- [108] R.J. Heffron, D. McCauley, B.K. Sovacool, Resolving society's energy trilemma through the Energy Justice Metric, *Energy Policy* 87 (2015) 168–176.
- [109] R.J. Heffron, D. McCauley, G.Z. de Rubens, Balancing the energy trilemma through the Energy Justice Metric, *Appl. Energy* 229 (2018) 1191–1201.
- [110] M. David, The role of organized publics in articulating the exnovation of fossil-fuel technologies for intra- and intergenerational energy justice in energy transitions, *Appl. Energy* 228 (Oct 15 2018) 339–350.
- [111] B. Taebi, S. Roeser, I. van de Poel, The ethics of nuclear power: social experiments, intergenerational justice, and emotions, *Energy Policy* (51) (Dec 1 2012) 202–206.
- [112] H. Brighouse, I. Robeyns, *Measuring Justice: Primary Goods and Capabilities*, Cambridge University Press, 2010.