1 Urgency vs justice

A politics of energy transitions in the age of the Anthropocene

Ankit Kumar, Auke Pols, and Johanna Höffken

Introduction

As climate change becomes widely accepted as a climate crisis, calls for faster and more extensive energy transitions are growing, and rightly so. The United Nations Framework Convention on Climate Change has called for a need to go "Further, Faster, Together" for Climate Action.[1] As the discourse of crisis, urgency and emergency becomes dominant, however, we risk losing sight of political and ethical consequences of energy transitions for people's everyday lives, especially in the global South. Many actions involved in urgently ramping up energy transitions, for example, adopting more solar photovoltaics (PV), electric vehicles and batteries, or reducing cumulative energy demand, create unintended consequences for marginal communities like energy poverty, curtailment of democracy, injustices, waste and local environmental destruction. Some of these impacts are now becoming apparent, for example, the mining of conflict minerals to feed the growing demand for raw materials to make solar panels, batteries and electric vehicles.

This book argues that while urgency is crucial for energy transitions in a climate-changed world, we need to be wary of haste. We must be cautious of conflating goals and processes of sustainable development and enquire what urgency means for due process. Justice needs thought, participation and deliberation. Questions regarding where, when, why, how and for whom particular pathways of energy transitions are adopted, and what impacts these pathways have on others, are crucial for practical success as well as ethical acceptability of those transitions. Taking the space and time in which these transitions take place into account is critical in thinking through these dilemmas. This introduction draws together the chapters in this book into a narrative of how space and time matter to energy transitions to navigate the dilemma between urgency and justice. One particular aim of this book is to bring new concepts and ideas from the global South into the discussion on energy transitions to help navigate this dilemma, to flag relevant but often overlooked issues and to provide new pathways for the future. In this introduction we show how we do so: by first examining the concepts of "urgency" and "justice" and the tensions between them, and then showing how our individual book chapters address those tensions.

DOI: 10.4324/9780367486457-1

The Anthropocene: urgency at the cost of justice?

Scientists tell us that we live in a new epoch or geological age: Anthropocene, the age of humans (Chakrabarty, 2009; Davis and Todd, 2017; Tolia-Kelly, 2016; Yusoff, 2018). Noel Castree (2015: 302) explains that, no matter what actions we take now to make amends, "Homo sapiens – most especially those in the West – have already altered the planet's future through their past (post-1800) and present actions". All humans are now involved in geography – Earth-writing – by "writing themselves into Earth history" (Castree, 2015: 302).

Dipesh Chakrabarty (2012) proposes two images that describe how human beings inhabit the Anthropocene: humans as a geological force and humans as a political force. The main scientific ideas behind the Anthropocene see humans as a geological force. Humans, that is all of us together, emerge as a collective author of actions that have resulted in climate change. As a political force we seek justice. This is premised on the idea that, theoretically, all humans are equal rights-bearing citizens, even though we know that practically full justice is unachievable. Aiming to pursue the latter is what we describe as a politics for/of justice.

It is these two aspects of being human in the Anthropocene that give rise to the core of the dilemma of urgency vs justice. As geological beings, we need to set aside individual differences and work together to mitigate our uncoordinated but collective negative impact on the planet. As political beings, we seek recognition of our individual differences, challenges and ambitions. We draw the argument of urgency vs justice from these two seemingly incompatible images of human beings: one that prompts us to think of a universal human agency, and the other where we must think of difference (see also Banerjee, 2017). The Anthropocene has thrown at us a challenge of balancing urgency and justice. The problem in front of us is how to accommodate individual differences while coordinating rapid and meaningful collective action.

The two aspects of being human in the Anthropocene are mirrored in an ambiguity in the word "global". Chakrabarty (2017a) reminds us that the "globes" in globalisation and global warming, while often conflated, are different. While global warming relates to the Earth's behaviour as a planet (a planetary phenomenon), globalisation relates to networks and connections created by humans and motivated by capital and power (a human phenomenon). The politics that we commonly pursue, whether the everyday kind or the geopolitics kind, is firmly situated in the domain of the human. The problem is that, while we struggle to grapple with a planetary phenomenon, we attempt this "from within the politics of the institutions that were created to deal with the 'globe' of 'globalization' with all the assumptions of 'stable' Holocene conditions built into them" (Chakrabarty, 2017a: 168). The Anthropocene *demands* a structural redesign of our political institutions that is able to manage the "globe" of "global warming" by pushing humans to work together as "one humanity". Such an institutional reform would require a politics beyond humans, one that is zoecentric, i.e., concerned with all life on Earth (Chakrabarty, 2017b).

Castree (2015: 302) explicates that, in addition to the Anthropocene, the two interrelated ideas of planetary boundaries and tipping points have suggested that "humans are entering *terra incognita*". They have given rise to the idea of a crisis that needs an urgent response. For example, the idea of planetary boundaries proposes nine limits or boundaries inside which humans can function in a "safe operating space" created by Holocene conditions (Rockström et al., 2009). A cursory look at the planetary boundaries depicted in green and red colours, overlaid on an image of the Earth, along with the use of phrases like "safe operating space", bring a sense of alarm and evokes an idea of emergency – a red alarm flashing (see D'Souza (2018) on the question of scarcity, limits and the Anthropocene).

This sense of urgency is not misplaced. Indeed, there is enough scientific evidence that we are either very close to, or have gone beyond, various tipping points (IPCC, 2019; Lenton et al., 2019). However, Swyngedouw's (2019) warning that this narrative about the Anthropocene helps make climate change post-political is important to keep in mind. By this, Swyngedouw means that the geological/physical narrative of what the Anthropocene is and how we should manage it assumes that there are no alternatives to capital and market economy, the basic structures and conditions for social and economic order.[2] The concern here is that if we let "the naming of a geo-social epoch and a contingent 'truth' of nature decide our politics", we might disavow a persistent intra-human politics of climate change, and instead, as evidence suggests is happening in policy-making across the globe,[3] reinforce and amplify the discriminatory conditions that capitalism and colonialism have worked to entrench in society (Swyngedouw, 2019: 256). In short, such an approach will lead to the exclusion of an explicit politics of justice. In addition, we must listen carefully to the "calls to decolonize the Anthropocene that demand that we move beyond a politics of urgency to examine the slow, historical processes of erasure under colonialism and imperialism" (Gergan, 2017: 490; Davis and Todd, 2017). As Kathryn Yusoff (2018) reminds us, geology and the Anthropocene are deeply embedded with a history of racialisation, racial discrimination and colonisation (see also Saldanha, 2020; Tolia-Kelly, 2016).

In addition, the urgency debate and the need to unify under an Anthropocene narrative could "further delegitimize alternate forms of cultural knowledge and embodied practices and, in so doing, reproduce and reinforce injustices" (Schmidt et al., 2016: 194). By focusing solely on the planetary aspect, the Anthropocene narrative pushes for a redesign of political institutions in order to manage the "globe" of "global warming". Ironically, however, this narrative takes for granted, or is indifferent to, the human aspect that those institutions currently strive to safeguard. That is, from Chakrabarty's (2012) two images of humans, the dominant narrative of Anthropocene chooses the geological human and attempts to sideline the political human. Having said that, the imperative for us "to stress that the Anthropocene is a master-narrative should not detract from the suggestion that it is *a narrative*" (Jazeel, 2019: 227) (emphasis added). Indeed, conceptual approaches like postcolonial theory and *Buen Vivir* open doors for other narratives, narratives that do not view urgency and justice as incompatible by default.

Indeed, other narratives have emerged from the global North that address both urgency and justice. For example, Kate Raworth (2017) has extended the planetary boundaries model with social (lower) boundaries, below which human needs and justice are compromised. The degrowth movement (Hickel, 2020; Nirmal and Rocheleau, 2019) aims to redefine human wellbeing in a planet-friendly way. However, as postcolonial scholars have pointed out, the question of how to manage the urgency–justice dilemma itself is not debated on an equal playing field. Political, economic and scientific institutions emphasise and amplify narratives from the global North compared to those from the global South. What is important then is that we use the narrative of the Anthropocene to show the importance of decolonising political, economic and scientific institutions, not to deny urgency, but to create space for new narratives on the dilemma to be considered. Following Jazeel (2019: 227) then, rather than a recolonisation of knowledge, a closure, we could work with the idea of the Anthropocene to create an opening for decolonising our knowledge systems, and to work towards "multiepistemic literacy" (Jazeel, 2019: 227, referring to Juanita Sundberg, 2014). Sundberg (2014: 34) explains that the term multiepistemic literacy, proposed by Sami scholar Rauna Kuokkanen, indicates "learning and dialogue between epistemic worlds" and an exchange between a diversity of political, ethical and epistemological positions. It is in this spirit that we work with the idea of the Anthropocene. We look for a more political Anthropocene; one that tackles the urgency of collective action, while keeping a politics of justice at its centre.

Questions of justice in an era of urgency

Energy transitions are predominantly understood in terms of transitions from high-carbon energy sources and high quantities of energy use to low-carbon energy sources and reduced energy consumption. This is the dominant understanding that a post-political Anthropocene discourse drives. However, this is only one part of energy transitions. In most parts of the global South, energy transitions take a different form. A large part of the population in countries of the global South still depend on older/traditional forms of more polluting and hazardous energy sources like kerosene for lighting and wood or charcoal for cooking. Following from this, a fulcrum of the urgency vs justice debate for the global South is how to combine greenhouse gases emission mitigation and rapid transitions to cleaner forms of energy with the rapid upscaling of access to energy and progress in human development – poverty reduction, improvement of quality of life, gender and racial equity. The main way in which these two goals have been brought together in the last two to three decades is through the deployment of decentralised small-scale renewable energy technologies. While these have had some success in benefitting particular groups of people, they have also met with strong criticism. An analysis of dominant interventions to address both the urgency and justice problems shows that these initiatives tend to buy into the Anthropocene's one-sided narrative and proceed from a simplistic view on justice.

Scholars and practitioners argue that small-scale renewable energy slots well into this need to balance a transition from high- to low-carbon energy and from traditional to modern energy (Mahapatra and Dasappa, 2012; Yadav et al., 2019). This prominent role of small-scale renewable energy is driven by a substantial body of literature that argues that modern energy access is central to human development. Energy access extends working hours, reduces wastage of time and bodily energy, fosters livelihoods, improves education and raises human development indicators. Energy also supports information flows, entertainment, better health services and indoor air quality (Riva et al., 2018; Ryan, 2014; Schiffer, 2016). Much of the academic and policy literature on energy access gives importance to three specific development outcomes: education, livelihoods and health (Castán Broto and Kirshner, 2020; Kemmler and Spreng, 2007; Pachauri et al., 2012; Srivastava and Rehman, 2006).

And while many studies show how providing access to modern energy has improved the lives of many, scholars need to remain cautious as often these claims are based on overly simplistic and intuitive assumptions, such as: if only people had electric lights, they would be able to study in the evening when it is dark outside. Such assumptions often do not take into account the social, cultural and political conditions that affect who gets to use the technology, and for what purposes (Abi Ghanem, 2018; Kumar, 2018; see Abi Ghanem in this volume). Energy experiences are also deeply gendered (Osunmuyiwa and Ahlborg, 2019; Ryan, 2014; Standal and Winther, 2016; Govindan and Murali; Green and Schiffer in this volume). These social, cultural, political and economic conditions have received less attention from research and practice communities; instead, studies focus disproportionately on technical and financial aspects of energy access projects. Much like the Anthropocene narrative, such studies can become preoccupied with making the technology feasible, affordable and sustainable and fail to consider how its use may affect the local social order, and vice versa. Emerging critical energy research in the global South has revealed a number of aspects that complicate the idea of quick climate change and development fixes through renewable energy technologies. Drawing together literature on decentralised renewable energy, we outline four criticisms of the idea that they present a quick fix to climate change and development challenges to put things in perspective and outline some important areas of critical energy research towards balancing urgency and justice. Most chapters in this book address one or more of these criticisms.

The first is the question of *carbon colonialism*. The Earth's atmosphere has a limited carbon budget or carbon space. This refers to the maximum emissions of greenhouse gases that can be allowed before we hit the tipping point of irreversible climate change. Carbon colonialism embodies the idea that global North countries, in the name of supporting development and ecological restoration projects to benefit humanity, use their money and power to colonise the discursive and physical spaces in the global South, in order to mask and remedy their historic emissions and to prevent future emissions from global South countries (Lyons and Westoby, 2014). Burnham et al. (2013: 229) bring up the idea of *carbon colonialism* and explain that "forms of neocolonialism" may emerge from market

mechanisms that curtail "the Global South's use of their natural resources so that the North may rectify past emissions and continue current ones". Putting a price on and commodifying emission responsibilities means that historical injustices of extraction and colonisation, which have led to inequalities of wealth between (as well as within) the global North and South, can continue in new forms. This commodification of responsibilities allows richer countries and companies to hegemonise and govern markets for low-carbon energy and emissions credits, sidelining weaker actors who may not be able to afford these. This has the potential to foreclose future development pathways for many global South countries. Global North actors, meanwhile, may feel justified in continuing to emit greenhouse gases, as such projects remove incentives for them to reduce or end their use of fossil fuels (Burnham et al., 2013).

Second, Balls and Fischer (2019: 473) raise the issue of *democracy and distributional justice* in access to energy. They persuasively demonstrate that even though many energy transition interventions are normatively framed as more just and inclusive, because they are market-based and not embedded in national party-politics, this does not mean that they actually are more just and inclusive. This is because those technologies, by being embedded in market mechanisms, discriminate based on payment capacities (Balls and Fischer, 2019; Kumar, 2019b). In addition, while many citizens do try to organise themselves to further their interests in affordable and sustainable energy, they bump against a lack of concrete mechanisms to ensure accountability and effective energy delivery (Balls and Fischer, 2019). Boamah (2020: 7) attests to this with evidence from three sub-Saharan African countries. Boamah explains that, while self-organised, small-scale energy projects provide avenues of reduced state dependence, self-control and democratised energy generation and consumption, such projects require citizens to, on their own, fund energy systems or negotiate rentals[4] with private companies (Boamah, 2020). Therefore, while these energy systems might promise to navigate the delay from the state in extending energy access, and the high infrastructure costs of state-sponsored energy systems, they also perpetuate a neoliberal system where citizens do not have recourse of traditional mechanisms of claim making, at the same time letting the state off the hook for its responsibilities towards citizens. When the state is responsible for such provisions, citizens are able to organise themselves politically in various ways,[5] which is not possible within the realm of the market (see also Kumar, 2021). In addition, even when these projects claim to work with "the community", they often imagine a liberal, individualistic notion of the community, one that is compatible with the market, rather than local socio-cultural relationships (Kumar and Taylor Aiken, 2020). The chapters by Abi Ghanem, Sareen and Theiventhran address some of these questions of democracy and distribution in the contexts of Lebanon, Portugal and Sri Lanka, respectively.

Why then, given these challenges, do many multi-lateral and bi-lateral organisations and Northern states promote market-based small-scale renewable energy "solutions" in the global South (Cross, 2019a; Davies, 2018; Gent and Tomei, 2017)? Monyei et al. (2018: 68) explain that a possible cause for this might be the

"influence of 'Western reality' on the energy narrative" of developing countries. By "Western narrative", they mean particular imaginaries of what "appropriate" and "adequate" energy have come to mean for researchers and practitioners in the global North and how these imaginaries and meanings permeate (often through advocacy from countries in the North) energy policy and discourse in the global South. They argue that many global North countries continue emitting greenhouse gases while indulging in "the wholesale promotion of renewables", which can be "a perverse approach and an act of 'energy bullying', without consciousness of what it means to have energy sufficiency and energy mobility"[6] (Monyei et al., 2018: 68). This brings us back to the questions of democracy, participation and distributional justice. These have been inadequately understood and conceptualised from a global South perspective.

A third issue is that of the prominent place that non-state actors have taken in the provision of energy, especially electricity, in the last decade(Kumar, 2021). Most of these actors promote a market-based approach that puts energy, historically a public good, into the realm of *private resource* or *private commodity*. The rationale for this is that market actors, unlike state actors, will be pressured by free competition to develop cost-effective energy technologies tailored to local demand. This market mantra, Cross (2013, 2019b: 16) reminds us through Bill Gates' words, is built around the idea of "doing well by doing good", that sets in motion "a politics of hope, founded in the promise of" market-based small-scale low-carbon energy. It assumes that both urgency (to address the climate crisis) and justice (conceptualised as addressing human needs) manifest themselves as market demands that private parties can, will and should address.

However, the market-based idea puts a lot of focus on selling more, urgently – to make wider impact – and often ignores the longer-term sustainability of the energy transition interventions, as Turner (2019) has shown through her work in Sri Lanka. Once high-tech Western energy technologies break down, they often cannot be repaired or replaced locally and people go back to the high-carbon, polluting and dangerous sources of energy they had been using (Kumar et al., 2019) and the promises of both urgency and justice remain unfulfilled. Indeed, we need to ask which actors, interests and timescales "neoliberal market-based interventions and entrepreneurialism" privilege and with what implications, especially for disadvantaged groups (Ockwell et al., 2018: 123; see also Byrne and Mbeva, 2017). More recently, the question of energy products that conform to particular quality standards, and the need to distinguish them from low-quality products, based on the idea that "customers pay for quality", has emerged (Balls, 2020; Groenewoudt et al., 2020). However, what quality means, whether quality standards are a way to include and exclude particular actors, and whether especially poor customers are willing and able to make significant long-term investments in energy technologies are questions that need to be explored.

A fourth question relates to *gender and racial justice*. Working with Silvia Wynter's arguments, Yusoff (2018) has very persuasively shown how racialisation and racial injustices are central to the idea of the Anthropocene. Yusoff (2018) argues that the historical uses and abuses of energy, whether physical

energy or fossil energy, have been premised on colonisation and racial exploitation, whether of black and indigenous amarican slaves or indentured South Asians. Cross (2019a: 463) reminds us that energy transition interventions do not only change technologies, but also the social relationships in a community, and how people experience the world around them. It is therefore important to consider those effects as well when designing interventions. Standal and Winther (2016: 43) show that while energy access helps women's empowerment, it can also dent "women's agency, by upholding and perhaps even strengthening subversive structures such as patriarchy and dowry", for example access to electricity resulting in demands for electronic goods as dowry. They explain that this is a result of women being imagined only as "end users" in energy policy and a lack of women's involvement in designing and development of appropriate policies and measures. Baruah (2015: 71) argues that "in addition to creating opportunities for women in technology installation, repair, dissemination, awareness generation, and marketing, there is a growing need within the energy sector to involve women in the formal engineering aspects of technology design and innovation". There is a growing recognition that gender and racial diversity are key to designing technologies and projects right from the onset. Baruah (2015) questions whether having all-male energy teams has resulted in a lack of focus on cooking solutions. Similarly, Balls and Fischer (2019: 472) report how microgrid operators in India choose people with the "right caste and social position" to manage and maintain microgrids in the villages (see also Sharma, 2020; Singh et al., 2017). Kumar (2018, 2019a) and Kumar and Shaw (2020) have discussed in detail how gender- and caste-based socio-cultural factors mediate access to energy and the benefits of energy transition projects in Indian villages. Govindan and Murali and Greene and Schiffer address these concerns in their chapters from India and The Gambia respectively.

There are a number of other important issues around the question of just transitions, like land (McEwan, 2017; Yenneti and Day, 2015), electronic and other waste (Cross and Murray, 2018; Dustin Mulvaney et al., 2009; Kumar and Turner, 2020), labour (Mulvaney, 2013, 2014) and environmental impacts (Lakhanpal, 2019; Mulvaney, 2013) that sit at the fulcrum of the urgency and justice debate that we have picked up. It is not possible to go into all of them in this introduction, but by flagging them here we hope that others will pick them up for detailed discussions elsewhere.

Pathways for (re)thinking energy justice in an era of urgency

After having raised the issue of urgency vs justice and outlined some justice pitfalls of urgent energy transitions in the global South, the question in front of us is: how do we bring together these two ideas – one that calls for abstract universal unity and the other for the recognition of individual needs and differences? As the climate emergency begins to dominate the energy transitions discourse, there are growing calls for urgent decarbonisation and energy transitions. More emphasis is being put on new technological solutions like solar PV, digitalisation

of electricity infrastructure and electric vehicles (Healy and Barry, 2017; Kern and Rogge, 2016; Sovacool and Geels, 2016). If not thought through carefully, such technological interventions will have unintended consequences for energy poverty, justice and democracy, especially in the global South (Healy and Barry, 2017).

In agreement with Donna Haraway (2015: 160) we could say that "our job is to make the Anthropocene as short/thin as possible and to cultivate with each other in every way imaginable epochs to come that can replenish refuge". To further this endeavour, we need to progress anti- and de-colonial thought within a somewhat colonising discourse of energy transitions (as flagged in the earlier section). How to do this? Chapters of this book illustrate the risks of a universal hegemonic energy transitions idea. By bringing them together we can identify some pathways developed in the global South that can bring urgency and justice together.

Abi Ghanem, in her chapter "Insights from an assemblage perspective for a (better) understanding of energy transitions: facing the challenge of sustainability in Lebanon's energy crisis" shows how post-structural theories could help bring into analysis a range of actors and issues that structural theories are often not able to accommodate. As Abi Ghanem argues, such theoretical deployments are "not only helpful in establishing the grounding for context-based approaches by tracing the spatiality and temporality of informality, but can also orient us in the direction of inclusive energy futures that are more achievable in the short term". Driven by an assemblage approach, Abi Ghanem brings together the understanding of the historical structuring of Lebanon's electricity system with that of its contemporary everyday operations and upkeep. Seeing the electricity system as an open-whole (Bennett, 2010) helps put focus on a range of actors that enter, inhabit and exit the electricity assemblages, in a way that never stabilises. This dynamic perspective illustrates how some injustices remain stable throughout the changes, but also shows how people navigate them in their everyday life.

Melnyk and Singh question the idea of "sustainability" in energy transitions in their chapter "Constructing an inclusive vision of sustainable transition to decentralised energy: local practices, knowledge, values and narratives in the case of community-managed grids in rural India". They critique the idea of high-tech low-carbon energy solutions as an embodiment of the hegemonised idea of sustainability and energy transitions emanating from the global North. Indeed, a wide and unquestioning trust in techno-economic solutions backed by capitalism is a reminder that a political opportunity to drastically change the world, driven by the idea of Anthropocene, could easily be hijacked by neoliberal utopian visions that depoliticise the Anthropocene (Swyngedouw, 2019; Swyngedouw and Ernstson, 2018). Driven by the idea of "hidden histories", Melnyk and Singh urge us to focus on "local narratives and socio-material networks" that will excavate the positions of marginal actors like labour, community and the non-human within the sustainability discourse. Drawing on cases of decentralised electricity grids in India, they propose a more in-depth and honest engagement with local knowledge and improvisational responses (Kumar, 2019a). This pathway is not only for

material justice for many, but also for discursive justice through the decolonisation of our knowledge systems.

With their chapter on "Bolivia's energy transition in harmony with nature: reality or delusion?" Villavicencio-Calzadilla and Mauger bring us a more ecocentric chapter, compared to our mostly anthropocentric volume. Taking a critical legal perspective, they ask if Bolivia's idea of giving legal rights to Mother Earth helps develop an energy transition that is in harmony with nature. Their chapter is critical from the outset, as it departs from and questions the normative assumption that transitioning to cleaner forms of energy automatically means being more harmonious with nature. Indeed, a point that we raised earlier comes back here, as Villavicencio Calzadilla and Mauger argue that "an energy transition in harmony with nature will require not only technological transformations, but also major structural changes (economic, social, legal and political)". *Buen Vivir* or *Vivir Bien*, as a new way of thinking about the relationship between humans and nature, can drive an "epochal thinking" of the Anthropocene, which Dipesh Chakrabarty (2018) asks for, clearing paths for justice for humans and non-humans, perhaps progressing an ecocentric justice agenda. But Villavicencio Calzadilla and Mauger remind us that, although discursively present in the legal system, these agendas are not being materially practised in Bolivia for the moment.

Continuing this quest for alternative knowledge systems and politics, Sareen, in a chapter titled "Scalar biases in solar photovoltaic uptake: socio-materiality, regulatory inertia and politics", demonstrates how learnings from the global South could be effectively deployed to understand justice issues in the global North. This is politically subversive as it flips the "usual" flow of theoretical knowledge: using a "methodological approach from a study" on scalar biases in energy transitions in India to understand the case of "solar rollout governance in Portugal". Sareen persuasively argues that "the socio-materiality of energy infrastructure, regulatory inertia and path dependence, and political influence on energy development" drives a bias towards large-scale solar developments (for example solar parks), and away from small- and micro-scale interventions like solar home systems. This bias, although accelerating climate mitigation, has crucial justice impacts – land grabbing, displacement, and maintaining unequal power structures embedded in centralised energy systems. In Sareen's words, the dilemma between urgency and justice is "premised on entrenched modalities of governance and energy infrastructure". These need to be shaken up in order to facilitate more just energy transitions.

Theiventhran poses the novel question of justice in post-war settings, where a transition to peace and racial equity needs to be embedded into any plans for transitions to low-carbon energy. His chapter, "Energy transitions in a post-war setting: questions of equity, justice and democracy in Sri Lanka", poses another challenge to the normative understanding of energy transitions as "good". Theiventhran asks: "why [do] renewable energy projects in the post-war societies encounter resistance even though they are clean and green?" He argues that in a context like Sri Lanka, where wounds of racial conflict and injustices are not yet healed, "equity and justice need to take centre stage". Indeed, not just in conflict

settings, we need be alert to the fact that "energy injustice is produced historically, geographically and materially" and that these injustices are "more than matters of prices and income and involve structural differences that have evolved over time and space".

Staying in South Asia and raising another critical justice agenda, which we discussed earlier, Govindan and Murali provide insights into how gender and caste intersect with each other to problematise participative energy projects. Their chapter "Energising change: clean cooking and the changing social position of women" demonstrates that while organisations in India are working to mainstream "gender" in energy access projects by supporting women entrepreneurs and salespersons, caste bias often gets in their way. This connects to wider discourses on gender–race intersectionality. Govindan and Murali demonstrate that while women entrepreneurs from lower castes in India have to deal with moral judgements on "working women", owing to their caste identities, they are also often not allowed to enter the homes and kitchens of higher caste families. The urgency of energy transitions here is directly hampered by caste injustices faced by women who build clean cook stoves.

In another chapter focused on gender, Greene and Schiffer traverse the North–South split to comparatively analyse historical energy practices in The Gambia and Ireland. Their chapter, "'Women don't ride bicycle[s], only men ride bicycles': gender and justice in energy transitions", argues that research on transport energy practices and equity has not given much focus on "power, capability … patterns of social differentiation" that have led to "sidelining of equity within energy focused practice-based research". Through their comparative work, Greene and Schiffer find that "mobility careers trajectories … are both shaped by and shape gendered norms and social roles, embodied and performed in private and public space". They conclude by "calling for greater consideration of gendered patterns of inclusion and exclusion in daily dynamics of energy systems as imperative for achieving just transitions".

Driven by a postcolonial sensibility, one that "provincialises Europe" (Chakrabarty, 2008) and forces us to think through heterogeneity, this book frames the challenge in front of us as follows: how do we work with the disjunctive images of humans together? This is because, while the Anthropocene calls us to unite, as the chapters in the book illustrate, its impacts are, and will be, felt differently (Jazeel, 2019). If we need to politically, or even discursively, understand, experience and respond as a geological force, such a response needs to be built through alliances that are ethically structured with those marginal groups at the centre who are most vulnerable to geo-political and global policy changes, as well as to the impacts of environmental change (Jazeel, 2019). As Madden (2019) reflects, all spaces on Earth increasingly reflect a concern for, and impacts of, the climate crisis. This is being overlaid on other socio-cultural and economic crises, so that "the climate crisis is also itself constitutively shaped by other … problems, processes, and hierarchies" (Madden, 2019: 2). Evidence of these hierarchies is manifesting in new neoliberal projects around smart grids and cities and eco-gentrification that exclude the more vulnerable citizens (Rice et al., 2019). Indeed,

focusing on techno-fixes that exacerbate existing socio-cultural and economic crisis risks tipping the political Anthropocene, as Swyngedouw (2019) warns, into the apolitical or post-political "anthropo(Obs)cene". To recentre the voices of the marginal groups, we raise this question of justice in the era of urgency. While building a wider alliance of responsibility, one that a politics of the Anthropocene demands, we keep a firm footing in the politics of intra-human justice, one that a politics of the Anthropocene cannot (and cannot be allowed to) avoid.

Notes

1 https://unfccc.int/news/time-to-go-further-faster-together. Accessed 1 Oct 2020.
2 See Kalmbach et al. (2020: 279) on the "allure of technological fix" for crises like the Anthropocene and their calls for a more historical and cultural analysis of this allure.
3 Some dominant proposed solutions for the climate crisis are large alternative energy farms and electric vehicles developed by private capital. These have already exacerbated processes of mineral extraction and land grabbing, evicting and polluting local pastoral and aboriginal communities (Mulvaney, 2013, 2014; Yenneti and Day, 2015).
4 The electricity rentals for these systems are often many times higher than state provisions of energy.
5 See, for example, Chatterjee's (2004) discussion on the politics of claim through civil and political societies.
6 This has led to a productive debate around the concept of energy bullying. See Boamah (2020), Monyei et al. (2018, 2019) and Todd et al. (2019).

References

Abi Ghanem D. (2018) Energy, the city and everyday life: Living with power outages in post-war Lebanon. *Energy Research and Social Science* 36(April 2017). Elsevier: 36–43. DOI: 10.1016/j.erss.2017.11.012.

Balls J.N. (2020) Low-cost, adaptable solutions sell: Re-thinking off-grid solar diffusion at the bottom of the pyramid in India. *Energy Research & Social Science* 70(September). Elsevier Ltd: 101811. DOI: 10.1016/j.erss.2020.101811.

Balls J.N. and Fischer H.W. (2019) Electricity-centered clientelism and the contradictions of private solar microgrids in India. *Annals of the American Association of Geographers* 109(2). Routledge: 465–475. DOI: 10.1080/24694452.2018.1535312.

Banerjee S. (2017) Beyond the intimations of mortality: Chakrabarty, Anthropocene, and the politics of the (im)possible. *Mediations* 2(Summer): 1–14. Available at: http://www.mediationsjournal.org/articles/Chakrabarty_Anthropocene.

Baruah B. (2015) Creating opportunities for women in the renewable energy sector: Findings from India. *Feminist Economics* 21(2): 53–76. DOI: 10.1080/13545701.2014.990912.

Bennett J. (2010) The agency of assemblages. In: Bennett, J. (ed.), *Vibrant Matter: A Political Ecology of Things*. Durham, NC: Duke University Press, p. 200.

Boamah F. (2020) Desirable or debatable? Putting Africa's decentralised solar energy futures in context. *Energy Research and Social Science* 62(December 2019). Elsevier: 101390. DOI: 10.1016/j.erss.2019.101390.

Burnham M., Radel C., Ma Z., and Laudati, A. (2013) Extending a geographic lens towards climate justice, part 2: Climate action. *Geography Compass* 7(3): 228–238. DOI: 10.1111/gec3.12033.

Byrne R. and Mbeva K. (2017) *The political economy of state-led transformations in pro-poor low carbon energy: A case study of solar PV in Kenya*. Transformations Energy—Kenya. 91. Brighton. Available at: https://opendocs.ids.ac.uk/opendocs/bitstream/handle/123456789/12968/EnergytranslKenya.pdf?sequence=1&isAllowed=y.

Castán Broto V. and Kirshner J. (2020) Energy access is needed to maintain health during pandemics. *Nature Energy*. DOI: 10.1038/s41560-020-0625-6.

Castree N. (2015) Changing the Anthropo(s)cene: Geographers, global environmental change and the politics of knowledge. *Dialogues in Human Geography* 5(3): 301–316. DOI: 10.1177/2043820615613216.

Chakrabarty D. (2008) *Provincializing Europe: Postcolonial Thought and Historical Difference*. *Postcolonial Thought and Historical Difference*. Princeton: Princeton University Press. DOI: 10.1525/ae.2002.29.1.214.

Chakrabarty D (2009) The climate of history: Four theses. *Critical Inquiry* 35(2): 197–222.

Chakrabarty D. (2012) Postcolonial studies and the challenge of climate change. *New Literary History* 43(1): 1–18. DOI: 10.1353/nlh.2012.0007.

Chakrabarty D. (2017a) Afterword. *South Atlantic Quarterly* 116(1): 163–168. DOI: 10.1215/00382876-3749403.

Chakrabarty D. (2017b) The politics of climate change is more than the politics of capitalism. *Theory, Culture & Society* 34(2–3): 25–37. DOI: 10.1177/0263276417690236.

Chakrabarty D. (2018) *The Crisis of Civilisation: Exploring Global and Planetary Histories*. New Delhi: Oxford University Press.

Chatterjee P. (2004) *The Politics of the Governed*. New York: Columbia University Press.

Cross J. (2013) The 100th object: Solar lighting technology and humanitarian goods. *Journal of Material Culture* 18(August): 367–387. DOI: 10.1177/1359183513498959.

Cross J. (2019a) Selling with prejudice: Social enterprise and caste at the bottom of the pyramid in India. *Ethnos* 84(3): 458–479. DOI: 10.1080/00141844.2018.1561487.

Cross J. (2019b) The solar good: Energy ethics in poor markets. *Journal of the Royal Anthropological Institute* 25(S1): 47–66. DOI: 10.1111/1467-9655.13014.

Cross J. and Murray D. (2018) The afterlives of solar power: Waste and repair off the grid in Kenya. *Energy Research & Social Science* 44(August 2017). Elsevier: 100–109. DOI: 10.1016/j.erss.2018.04.034.

D'Souza R. (2018) Environmentalism and the politics of pre-emption: Reconsidering South Asia's environmental history in the epoch of the Anthropocene. *Geoforum* (January). Elsevier: 0–1. DOI: 10.1016/j.geoforum.2018.09.033.

Davies G. (2018) Clean energy product markets in sub-Saharan Africa: Complex market devices and power asymmetries. *Energy Research & Social Science* 42: 80–89. DOI: 10.1016/j.erss.2018.03.009.

Davis H. and Todd Z. (2017) On the Importance of a date, or decolonizing. *Acme: An International Journal for Critical Geographers* 16(4): 761–780. Available at: https://www.acme-journal.org/index.php/acme/article/view/1539.

Dustin M., Vicki B., Monica C., Sheila D., Lauren O., Simon K., Serena M., William R., Esperanza S., Peter S. and Ananth Sridhar D.Y. (2009) Silicon Valley Toxics Coalition: Toward a just and sustainable solar energy industry. *San Jose: Silicon Valley Toxics Coalition*. Available at: http://www.vermontfuel.com/2012_Files_files/Silicon_Valley_Toxics_Coalition_-_Toward_a_Just_and_Sust.pdf.

Gent D. and Tomei J. (2017) Electricity in Central America: Paradigms, reforms and the energy trilemma. *Progress in Development Studies* 17(2): 116–130. DOI: 10.1177/1464993416688826.

Gergan M.D. (2017) Living with earthquakes and angry deities at the Himalayan Borderlands. *Annals of the American Association of Geographers* 107(2): 490–498. DOI: 10.1080/24694452.2016.1209103.

Groenewoudt A.C., Romijn H.A. and Alkemade F. (2020) From fake solar to full service: An empirical analysis of the solar home systems market in Uganda. *Energy for Sustainable Development* 58. The Authors: 100–111. DOI: 10.1016/j.esd.2020.07.004.

Haraway D. (2015) Anthropocene, Capitalocene, Plantationocene, Chthulucene: Making kin. *Environmental Humanities* 6: 159–165.

Healy N. and Barry J. (2017) Politicizing energy justice and energy system transitions: Fossil fuel divestment and a "just transition". *Energy Policy* 108(June). Elsevier Ltd: 451–459. DOI: 10.1016/j.enpol.2017.06.014.

Hickel J. (2020) What does degrowth mean? A few points of clarification. *Globalizations* 0(0). Taylor & Francis: 1–7. DOI: 10.1080/14747731.2020.1812222.

IPCC (2019) *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 sustainable dev*. Ipcc—Sr15. Available at: https://www.ipcc.ch/sr15/download/#full.

Jazeel T. (2019) *Postcolonialism*. Oxon/New York: Routledge.

Kalmbach K., Marklund A. and Åberg A. (2020) Crises and technological futures: Experiences, emotion, and action. *Technology and Culture* 61(1): 272–281. DOI: 10.1353/tech.2020.0001.

Kemmler A. and Spreng D. (2007) Energy indicators for tracking sustainability in developing countries. *Energy Policy* 35(4): 2466–2480. DOI: 10.1016/j.enpol.2006.09.006.

Kern F. and Rogge K.S. (2016) The pace of governed energy transitions: Agency, international dynamics and the global Paris agreement accelerating decarbonisation processes? *Energy Research and Social Science* 22. Elsevier Ltd: 13–17. DOI: 10.1016/j.erss.2016.08.016.

Kumar, A. (2021) Expertise, legitimacy and subjectivity: Three techniques for a will to govern low carbon energy projects in India. *Environment and Planning C: Politics and Space* 0(0): 1–19. DOI: 10.1177/2399654420965565.

Kumar A. (2018) Justice and politics in energy access for education, livelihoods and health: How socio-cultural processes mediate the winners and losers. *Energy Research and Social Science* 40(January 2017). Elsevier: 3–13. DOI: 10.1016/j.erss.2017.11.029.

Kumar A. (2019a) Between metis and techne: Politics , possibilities and limits of improvisation. *Social & Cultural Geography* 00(00). Routledge: 1–24. DOI: 10.1080/14649365.2019.1645201.

Kumar A. (2019b) Beyond technical smartness: Rethinking the development and implementation of sociotechnical smart grids in India. *Energy Research and Social Science* 49. Elsevier Ltd: 158–168. DOI: 10.1016/j.erss.2018.10.026.

Kumar A. and Shaw R. (2020) Transforming rural light and dark under planetary urbanisation: Comparing ordinary countrysides in India and the UK. *Transactions of the Institute of British Geographers* 45(1): 155–167. DOI: 10.1111/tran.12342.

Kumar A. and Taylor Aiken G. (2020) A postcolonial critique of community energy: Searching for community as solidarity in India and Scotland. *Antipode* 0(0): 1–22. DOI: 10.1111/anti.12683.

Kumar, A. and Turner, B. (2019) Sociomaterial solar waste: Afterlives and lives after of small solar. In: Bombaerts G, Jenkins K, Sanusi YA, et al. (eds) *Energy Justice*

Across Borders. Switzerland: Springer International Publishing, pp. 155–173. DOI: 10.1007/978-3-030-24021-9_8.

Kumar A., Ferdous R., Luque-Ayala A., et al. (2019) Solar energy for all? understanding the successes and shortfalls through a critical comparative assessment of Bangladesh, Brazil, India, Mozambique, Sri Lanka and South Africa. *Energy Research & Social Science* 48(March 2018). Elsevier: 166–176. DOI: 10.1016/j.erss.2018.10.005.

Lakhanpal S. (2019) Contesting renewable energy in the global south: A case-study of local opposition to a wind power project in the Western Ghats of. *Environmental Development* 30(February). Elsevier Ltd: 51–60. DOI: 10.1016/j.envdev.2019.02.002.

Lenton T.M., Rockström J., Gaffney O., et al. (2019) Climate tipping points—too risky to bet against. *Nature* 575: 592–595.

Lyons K. and Westoby P. (2014) Carbon colonialism and the new land grab: Plantation forestry in Uganda and its livelihood impacts. *Journal of Rural Studies* 36. Elsevier Ltd: 13–21. DOI: 10.1016/j.jrurstud.2014.06.002.

Madden D. (2019) Editorial: City of emergency. *City* 0(0). Taylor & Francis: 1–4. DOI: 10.1080/13604813.2019.1648734.

Mahapatra S. and Dasappa S. (2012) Rural electrification: Optimising the choice between decentralised renewable energy sources and grid extension. *Energy for Sustainable Development* 16(2). Elsevier Ltd: 146–154. DOI: 10.1016/j.esd.2012.01.006.

McEwan C. (2017) Spatial processes and politics of renewable energy transition: Land, zones and frictions in South Africa. *Political Geography* 56. Elsevier Ltd: 1–12. DOI: 10.1016/j.polgeo.2016.10.001.

Monyei C.G., Jenkins K., Serestina V., et al. (2018) Examining energy sufficiency and energy mobility in the global south through the energy justice framework. *Energy Policy* 119(November 2017). Elsevier Ltd: 68–76. DOI: 10.1016/j.enpol.2018.04.026.

Monyei Chukwuka G., Jenkins K.E.H, Monyei Chukwuemeka G., et al. (2019) Response to Todd, De Groot, Mose, McCauley and Heffron's critique of "Examining energy sufficiency and energy mobility in the global south through the energy justice framework". *Energy Policy* 133(August): 1–5. DOI: 10.1016/j.enpol.2019.110917.

Mulvaney D. (2013) Opening the black box of solar energy technologies: Exploring tensions between innovation and environmental justice. *Science as Culture* 22(2). Routledge: 230–237. DOI: 10.1080/09505431.2013.786995.

Mulvaney D. (2014) Are green jobs just jobs? Cadmium narratives in the life cycle of Photovoltaics. *Geoforum* 54. Pergamon: 178–186. DOI: 10.1016/J.GEOFORUM.2014.01.014.

Nirmal P. and Rocheleau D. (2019) Decolonizing degrowth in the post-development convergence: Questions, experiences, and proposals from two Indigenous territories. *Environment and Planning E: Nature and Space* 0(0): 251484861881947. DOI: 10.1177/2514848618819478.

Ockwell D., Byrne R., Hansen U.E., et al. (2018) The uptake and diffusion of solar power in Africa: Socio-cultural and political insights on a rapidly emerging socio-technical transition. *Energy Research and Social Science* 44(May). Elsevier: 122–129. DOI: 10.1016/j.erss.2018.04.033.

Osunmuyiwa O. and Ahlborg H. (2019) Inclusiveness by design? Reviewing sustainable electricity access and entrepreneurship from a gender perspective. *Energy Research & Social Science* 53(October 2018). Elsevier: 145–158. DOI: 10.1016/j.erss.2019.03.010.

Pachauri S., Brew-Hammond A., Barnes D.F., et al. (2012) Energy access for development. *Global Energy Assessment (GEA)*: 1401–1458. DOI: 10.1017/cbo9780511793677.025.

Raworth K. (2017) Why it's time for Doughnut economics. *IPPR Progressive Review* 24(3): 216–222. DOI: 10.1111/newe.12058.

Rice J.L., Cohen D.A., Long J., Jurjevich J.R. (2019) Contradictions of the climate-friendly city: New perspectives on eco-gentrification and housing justice. *International Journal of Urban and Regional Research*. DOI: 10.1111/1468-2427.12740.

Riva F., Ahlborg H., Hartvigsson E., Pachauri S., Colombo, E. (2018) Electricity access and rural development: Review of complex socio-economic dynamics and casual diagrams for more appropriate energy modelling. *Energy for Sustainable Development* 43. International Energy Initiative: 203–223. DOI: https://doi.org/10.1016/j.esd.2018.02.003.

Rockström J., Steffen W., Noone K., Persson, A., Stuart Chapin, F., Lambin, E. F., Lenton, T. M., Scheffer, M., Folke, C., Schellnhuber, H. J., Nykvist, B., de Wit, C. A., Hughes, T., van der Leeuw, S., Rodhe, H., Sörlin, S., Snyder, P. K., Costanza, R., Svedin, U., Falkenmark, M., Karlberg, L., Corell, R. W., Fabry, V. J., Hansen, J, Walker, B., Liverman, D., Richardson, K., Crutzen, P., and Foley, J. A. (2009) A safe operation space for humanity. *Nature* 461(September): 472–475.

Ryan S.E. (2014) Rethinking gender and identity in energy studies. *Energy Research & Social Science* 1. Elsevier Ltd.: 96–105. DOI: 10.1016/j.erss.2014.02.008.

Saldanha A. (2020) A date with destiny: Racial capitalism and the beginnings of the Anthropocene. *Environment and Planning D: Society and Space* 38(1): 12–34. DOI: 10.1177/0263775819871964.

Schiffer A. (2016) Empowered, excited, or disenfranchised? Unveiling issues of energy access inequality and resource dependency in The Gambia. *Energy Research & Social Science* 18. Elsevier Ltd: 50–61. DOI: 10.1016/j.erss.2016.04.011.

Schmidt J.J., Brown P.G. and Orr C.J. (2016) Ethics in the Anthropocene: A research agenda. *Anthropocene Review* 3(3): 188–200. DOI: 10.1177/2053019616662052.

Sharma A. (2020) 'We do not want fake energy': The social shaping of a solar micro-grid in rural India. *Science, Technology and Society* (April 2018): 1–17. DOI: 10.1177/0971721820903006.

Singh A., Strating A.T., Romero Herrera N.A., van Dijk H.W., Keyson D.V. (2017) Towards an ethnography of electrification in rural India: Social relations and values in household energy exchanges. *Energy Research & Social Science* 30(November 2016). Elsevier: 103–115. DOI: 10.1016/j.erss.2017.06.031.

Sovacool B.K. and Geels F.W. (2016) Further reflections on the temporality of energy transitions: A response to critics. *Energy Research & Social Science* 22. Elsevier Ltd: 232–237. DOI: 10.1016/j.erss.2016.08.013.

Srivastava L. and Rehman I. (2006) Energy for sustainable development in India: Linkages and strategic direction. *Energy Policy* 34(5): 643–654. DOI: 10.1016/j.enpol.2005.11.016.

Standal K. and Winther T. (2016) Empowerment through energy? impact of electricity on care work practices and gender relations. *Forum for Development Studies* 43(1). Taylor & Francis: 27–45. DOI: 10.1080/08039410.2015.1134642.

Sundberg J (2014) Decolonizing posthumanist geographies. *Cultural Geographies* 21(1): 33–47. DOI: 10.1177/1474474013486067.

Swyngedouw E. (2019) The Anthropo (Obs) cene. In: Antipode Editorial Collective (ed.) *Keywords in Radical Geography: Antipode at 50*. John Wiley & Sons Ltd, pp. 253–258.

Swyngedouw E. and Ernstson H. (2018) Interrupting the anthropo-obscene: Immuno-biopolitics and depoliticizing ontologies in the Anthropocene. *Theory, Culture and Society* 35(6): 3–30. DOI: 10.1177/0263276418757314.

Todd I., De Groot J., Mose T., McCauley D., Heffron R.J. (2019) Response to "Monyei, Jenkins, Serestina and Adewumi examining energy sufficiency and energy mobility in the global south through the energy justice framework". *Energy Policy* 132(May): 44–46. DOI: 10.1016/j.enpol.2019.05.012.

Tolia-Kelly D.P. (2016) Anthropocenic culturecide: An epitaph. *Social and Cultural Geography* 17(6). Routledge: 786–792. DOI: 10.1080/14649365.2016.1193623.

Turner B. (2019) Diffusion on the ground: Rethinking the logic of scale and access in off-grid solar. *Energy Research and Social Science* 50(November 2018): 1–6. DOI: 10.1016/j.erss.2018.11.005.

Yadav P., Malakar Y. and Davies P.J. (2019) Multi-scalar energy transitions in rural households: Distributed photovoltaics as a circuit breaker to the energy poverty cycle in India. *Energy Research and Social Science* 48(January 2018). Elsevier: 1–12. DOI: 10.1016/j.erss.2018.09.013.

Yenneti K. and Day R. (2015) Procedural (in)justice in the implementation of solar energy: The case of Charanaka solar park, Gujarat, India. *Energy Policy* 86(2015). Elsevier: 664–673. DOI: 10.1016/j.enpol.2015.08.019.

Yusoff K. (2018) *A Billion Black Anthropocenes or None*. Forerunners. Minneapolis: University of Minnesota Press. DOI: 10.5749/9781452962054.010236200