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SUSTAINABILITY

FOSSIL FUELS AND THE QUESTION OF JUSTICE

INSIGHTS FROM INDONESIAN ENERGY POLITICS

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CONTENT

PROLOGUE

We have to talk about justice when discussing the transformation of energy politics. The capitalist system is voraciously longing for permanent economic growth. Our society is comfortably dazzled by the false promise of infinite (fossil) resources. "Energy – and especially fossil-based energy generation – may be considered the backbone of the imperial mode of living," as the author of this analysis, Anna Fünfgeld, frames the interface between energy systems and humankind under the spell of capitalism. Not only is this crucial to our everyday practices of production and consumption but it also entails a ruthless appropriation of nature and the exploitation of labor. By choosing Indonesia's coal-fired energy sector as an example of the injustices that are imbedded in a fossil-based energy system, Fünfgeld introduces the concept of energy justice as an extension of a leftist discourse on energy politics. Energy justice is not only about providing just access to energy supplies, it can also serve as a parameter for governments' planning and enforcing their energy politics. Costs and burdens implied by the destructive nature of energy production have to be accounted for too. Costs include, for example, the destruction of livelihoods or horrific health impacts for communities at the sites. The whole society must assume responsibility for these dirty shares. In our world where energy production is intimately connected to regional and global production chains this is also a question of global justice. Energy justice is not meant to be another concept of justice that splits political struggles. It can rather be used strategically as a driver for alternatives. It should also be at the centre of any energy transition policy. Linking the demands of energy justice to existing debates around climate change, ecological devastation, capitalism and human rights may help climate justice movements to systematically connect local struggles at production sites with the demands of the global justice movements.

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INTRODUCTION: JUST ENERGY?

The latest international climate summit, the UN Climate Change Conference, held in November 2017 in Bonn, Germany, had a controversial outcome. While some – mainly governments in the Global North – perceived it as a further step towards the realisation of the Paris Agreement, critics have pointed out several principal shortcomings. These include, *inter alia,* the failure of many developed countries to expand their carbon emission reduction targets, unresolved questions concerning financing and attention not paid to problems in the field of climate-induced losses and damages. On the positive side, a vivid global climate activist movement has managed to generate attention for some of the most pressing concerns remaining in the field of international climate policy. As pointed out in several events both within some official side-events, the movement-led People's Climate Summit, as well as in several demonstrations and means of direct action, this included the demand for the consideration of justice matters in (international) climate policy and the need to phase out fossil fuels. The latter topic was highlighted, *inter alia,* by drawing attention to the contradictions in the German government's climate policy, as the summit was held in close proximity to Europe's biggest lignite mining area. Awareness of the problem of continued dependency on fossil fuels in the energy systems of many countries was further strengthened by the public commitment of a number of countries to phase out coal at the end of the conference. Initiated by Canada and the United Kingdom, 19 governments (including several US states) announced their goal to phase out coal-based power generation by 2030.[1] However, some of the biggest coal producers and consumers worldwide – Germany, Australia, China, India, the United States as a whole and Indonesia – haven't joined this so-called *powering past coal alliance.*[2] Therefore, the transformation of domestic energy systems for a low-carbon future remains one of the biggest challenges when tackling climate change impact in the decades to come. Fossil fuel-based energy generation is regarded as the mainspring of anthropogenic climate change.[3] According to the International Energy Agency (IEA), greenhouse gas (GHG) emissions from the energy sector account for around two-thirds of all anthropogenic GHG emissions, with the power sector making up the biggest share of it.[4]

Today's energy supply remains to a vast extent dependent on fossil fuels. Energy systems are deeply embedded in capitalist modes of production and provide the basis for most kinds of industrial production and transport systems. This is why securing energy supply is a strategic objective of all countries. Clearly, energy policy poses multiple challenges to

1 The original text of the declaration can be retrieved from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/660041/powering-past-coal-alliance.pdf. **2** Further critiques of this pledge include the fact that some of the members' energy systems are overwhelmingly based on nuclear power (such as France), engage in other unsustainable energy practices (for example oil sands/tar sands mining in Canada) or actually have very low or no coal reserves to be phased out (such as Fiji). **3** Davis, S. J. et.al. (2010) 'Future CO2 emissions and climate change from existing energy infrastructure', in Science 329 (5997), 2010, pp. 1330–1333. **4** International Energy Agency (IEA) (2015) Energy and Climate Change – World Energy Outlook Special Report, IEA, 2015, available at https://www.iea.org/publications/freepublications/publication/WEO2015Special-ReportonEnergyandClimateChange.pdf. Last accessed: 7 February 2018.

policy makers and many terms have been coined to describe them. The World Energy Council (WEC), a global energy network, identifies a trilemma related to the core challenges of energy security, energy equity and environmental sustainability.[5] The IEA, an intergovernmental organization founded in the wake of the 1970s oil crisis by OECD countries, was clearly established with a view to secure the energy supply of its member states. This concern remains central to its agenda, while sub-topics such as economic development, environmental awareness and worldwide engagement (primarily with emerging economies) are also playing an important role.[6] However, it is not only IEA member states that place security and economy related concerns at the centre of their approach to energy planning. Rather, most countries tend to prioritise a national perspective, for example, by orienting themselves mainly towards maintaining national autonomy and fostering economic growth.

Due to this prioritisation of 'overall' energy security, a wide range of consequences from energy-related decisions are not taken into account in national energy planning. This involves many problems related to social (in)justices from the global to the local level. For example, it has been proven that GHG emissions foster climate change, which in turn affects the lives of many people around the globe, especially in the Global South. Climate change reinforces social injustices as marginalised groups are far more vulnerable to this impact. Furthermore, direct effects of energy production and usage at the local level – both from GHG emissions and changes in land use, among others – on living conditions may be tremendous. While global and

climate change-related problems are being foregrounded, amongst others, by the climate justice movement, the latter issues have so far received less attention. But how can we relate notions of justice to the energy sector? What applicable concepts already exist? How much can they be connected to concrete local experiences? To what extent do they cover these local experiences and how may the latter further these concepts?

When the word 'justice' is used in relation to the energy sector, it is mainly to point out unequal access to electricity or fuel. While this indeed affects countless people worldwide, especially with regards to the electricity sector – either because they are not connected to a power grid or because they can't afford electricity – injustices connected to the energy sector may be much more diverse. For example, in Indonesia, problems arising from centralised energy planning are manifold. When looking at the coal sector, Indonesia's most important energy source, injustices begin with the mining and firing of coal. This has a huge impact on farming and fishing communities in rural areas, who often suffer from a severe reduction of their harvests. This demonstrates that there is a whole range of important ethical considerations that go beyond the question of how much energy can be produced and how it is being distributed. It entails understanding the role of energy under neoliberal conditions, as well as demanding a socially just

5 World Energy Council (WEC) (2016) World Energy Trilemma 2016. Defining Measures to Accelerate the Energy Transition, WEC, 2016, available at https://www.worldenergy.org/wp-content/uploads/2016/05/World-Energy-Trilemma_full-report_2016_web.pdf. Last accessed: 7 February 2018.
6 See homepage of the International Energy Agency (IEA): www.iea.org.

energy future. In contrast to mainstream definitions of the terms 'energy justice' or 'energy equity' as merely improving access to energy supply, a comprehensive framework should also consider the uneven distribution of the costs of energy production and consumption from the local to the global scale. It is therefore of great importance to further think about, speak about and discuss future trajectories of energy production and supply while not only addressing economic or ecological issues, but further including ethical considerations of a socially just energy future.

It is only recently – within the last five years – that a number of scholars have started working on this issue with a view to developing a comprehensive framework for energy justice. To a large degree, this is based upon earlier approaches of environmental and climate justice. However, while the latter have been profiting from fruitful connections between academic theorising and insights grounded in empiricism and experience alike, energy justice remains an exclusively scholarly concept to date. In the following, chapter 1.1 outlines the development and characteristics of the different conceptual frameworks and discusses their strengths and weaknesses. Chapter 1.2 aims at (re-) connecting the energy justice concept to Nancy Fraser's insights into social justice. Although the environmental justice theories that are usually adopted in the energy justice approach often refer to Fraser's writings, important insights laid down in her elaboration on how to combine different justice claims seem to have been lost on the way. Chapter 1.3 situates energy politics within capitalist modes of production and consumption, thereby expanding the scope of energy justice approaches to questions of their global embeddedness. Chapter 2 then turns to the Indonesian case, which serves a twofold purpose in the context of this discussion. On the one hand, the energy justice approach will be applied to concrete examples from Indonesia in the form of two case studies in the field of coal-based power production. One is on a coal mining area, the other centres on a coal power plant site. Apart from testing the framework on these cases, the aim is also to find out what insights can be drawn from these examples in order to further it. Chapter 2.1 provides an overview of the Indonesian energy system focusing on coal, the country's major energy source. Chapter 2.2 explores local contexts and how justice and injustices are produced in the context of energy generation. Chapter 2.3 combines the insights from the theoretical and empirical discussion in order to formulate a number of concrete claims in the field of energy justice. Besides providing a summary, chapter 3 addresses the question of whether and why an energy justice framework seems useful for academic and movement approaches to energy systems and points out a number of further challenges to and prospects for energy justice.

1 CONCEPTUALISING ENERGY JUSTICE

1.1 The Framework(s) – from Environmental and Climate to Energy Justice

The attempt to combine 'green' environmental issues with 'red' materialist criticism has a long history. It was the environmental justice movement, emerging in the 1980s in the United States, that first coined the expression.[7] Initially, environmental justice approaches focused on inequalities related to the distribution of environmental ills, such as the burdens arising from pollution and other risks related to waste and industrial plants. Their major contribution was to point out how this mainly affected communities of colour and poorer neighbourhoods.[8] On a theoretical level, they contributed to a more holistic understanding of the term 'environment', moving away from earlier conceptualisations as some kind of non-human wilderness towards including everyday living conditions. Since then, concept and movement have successively expanded in scope, both topically and geographically. Moreover, the approach has undergone a high level of differentiation with respect to the understanding of justice and the impact of certain positionalities on the vulnerability of societal groups. An initially rather simplistic understanding of 'justice' as 'equity' was replaced by a more pluralist conceptualisation linking the term to multiple dimensions of and reasons for (in)justice. Besides broadening the common understanding of the core tenets of justice, – distributional, recognition and procedural justice – this development also established links, for example, to issues of economic and political rights or basic needs.[9] Further-

more, environmental justice frameworks have been applied to a broadening range of issues and expanded geographically to new locations and even the global level. It has thereby become possible to establish ties with many kinds of civil society movements, such as civil rights, indigenous and labour activist groups.[10] However, despite this geographical and conceptual broadening, quantitatively, the bulk of environmental justice research remains centred on socio-distributional aspects of environmental hazards on the local level in the United States.[11]

The emergence of the concept of climate justice is commonly traced back to the early 2000s.[12] It may be regarded

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7 The beginnings of the environmental justice movement are usually associated with the 1982 protests by civil rights activists and environmentalists against the disposal of tainted soil at a new landfill in Warren County, North Carolina. However, there have been also earlier cases where exposure of poor and/or black communities towards environmental risks has been mentioned. Schlosberg, D. and Collins, L. B. (2014) 'From environmental to climate justice. Climate change and the discourse of environmental justice', in WIREs Climate Change 5(3), 2014, pp. 359–374; Bond, P. (2014) 'Justice', in Death, C. (ed.), Critical Environmental Politics, London 2014, pp. 133–145. **8** Holifield, R., Porter, M. and Walker, G. (2009) 'Introduction Spaces of Environmental Justice. Frameworks for Critical Engagement', in Antipode 41(4), 2009, pp. 591–612; Schlosberg, D. (2013) 'Theorising Environmental Justice. The Expanding Sphere of a Discourse', in Environmental Politics 22(1), 2013, pp. 37–55; Walker, G. (2009) 'Beyond Distribution and Proximity. Exploring the Multiple Spatialities of Environmental Justice', in Antipode 41(4), 2009, pp. 614–636. **9** The latter is often associated with the capabilities approach by Amartya Sen. See: Sen, A. (1985) Commodities and Capabilities, North-Holland. **10** Schlosberg, D. (2013) 'Theorising Environmental Justice. The Expanding Sphere of a Discourse', in Environmental Politics 22(1), 2013, pp. 37–55; Schlosberg, D. and Collins, L. B. (2014) 'From environmental to climate justice. Climate change and the discourse of environmental justice', in WIREs Climate Change 5(3), 2014, pp. 359–374. **11** Reed, M. G. and George, C. (2011) 'Where in the world is environmental justice?', in Progress in Human Geography 35(6), 2011, pp. 835–842. **12** While Hurricane Katrina that hit the New Orleans region in 2005 is generally regarded has having a major impact on the rise of climate change-related issues among environmental justice activists and academics, Schlosberg & Collins (2014) identify several intersections between the two approaches that already existed before and that environmental justice groups had a major impact on the conceptualization of climate justice. For example, the organization CorpWatch already used the term in 1999 and was involved in the organi-

as a follow-up concept to the environmental justice approach, as both the environmental justice discourse and the corresponding movement significantly influenced the conceptualisation of 'climate justice'.[13] For example, the Bali Principles of Climate Justice issued by a network of NGOs and movements in 2002 explicitly took over several aspects of an earlier declaration on environmental justice principles.[14] Similar to the environmental justice concept, there is a pluralist notion of justice in climate justice approaches and it is mainly meant to highlight problems rather than formulate ideal visions. However, in contrast to environmental justice claims generally focusing on the local level, climate justice approaches have been mainly (though not exclusively) targeting the international dimensions of inequality connected to climate change impact, thereby addressing global effects and connected responsibilities.[15]

Generally, both environmental and climate justice have by now become consolidated terms in academia and on the agenda of social movements.[16] In contrast, concepts of 'energy justice' have only emerged within the last couple of years in academic discussions and may therefore still be regarded primarily as a scholarly concept. In civil society discourse, it is still rarely used,[17] and the topic of energy is usually subsumed under climate or environmental justice claims. However, as described above, energy-related claims such as the demand to leave fossil fuels in the ground and initiate a transition towards more sustainable energy systems are central to the agenda of the climate justice movement.[18] Nevertheless, the academic concept of energy justice is usually located within the traditions of the earlier concepts. This is also reflected in the hitherto developed core tenets of the approach, laid down in a number of books and articles published by a rather small group of mainly UK-based academics.[19] Here, energy justice is generally understood as the 'application of rights (both social and environmental) at each component part of the energy system.'[20]

zation of the Climate Justice summit in The Hague during the UNFCCC's COP6 meeting in 2001. (Schlosberg, D. and Collins, L. B. (2014) 'From environmental to climate justice. Climate change and the discourse of environmental justice', in WIREs Climate Change 5(3), 2014, pp. 359–374.) **13** However, Schlosberg & Collins (2014) also note that initially there were tensions between the rather local environmental justice movement and the rather globally oriented climate justice approach. (Schlosberg, D. and Collins, L. B. (2014) 'From environmental to climate justice. Climate change and the discourse of environmental justice', in WIREs Climate Change 5(3), 2014, pp. 359–374.) **14** Schlosberg, D. and Collins, L. B. (2014) 'From environmental to climate justice. Climate change and the discourse of environmental justice', in WIREs Climate Change 5(3), 2014, pp. 359–374. **15** Schlosberg, D. (2013) 'Theorising Environmental Justice. The Expanding Sphere of a Discourse', in Environmental Politics 22(1), 2013, pp. 37–55. **16** Schlosberg, D. and Collins, L. B. (2014) 'From environmental to climate justice. Climate change and the discourse of environmental justice', in WIREs Climate Change 5(3), 2014, pp. 359–374. **17** The few expectations include the Energy Justice Network, an American grassroots organization advocating clean energy, zero-emissions and a zero-waste future (http://www.energyjustice.net/) and the European Energy Justice Network (https://www.energyjustice.eu/). The International Energy Justice Council is a consultancy board involving most scholars engaged in the European Energy Justice Network, http://energyjusticecouncil.org/index.html). **18** Schlosberg, D. and Collins, L. B. (2014) 'From environmental to climate justice. Climate change and the discourse of environmental justice', in WIREs Climate Change 5(3), 2014, pp. 359–374. **19** See for example: Heffron, R. J., McCauley, D. and Sovacool, B. K. (2015) 'Resolving society's energy trilemma through the Energy Justice Metric', in Energy Policy 87, 2015, pp. 168–176; Jenkins, K., McCauley, D. and Forman, A. (2017) 'Energy justice: A policy approach', in Energy Policy 105, 2017, pp. 631–634; Jenkins, K. et. al. (2016) 'Energy justice. A conceptual review', in Energy Research & Social Science 11, 2016, pp. 174–182; Sovacool, B. K. (2013) Energy & ethics. Justice and the global energy challenge, Houndmills; Sovacool, B. K. and Dworkin, M. H. (2015) 'Energy justice', in Applied Energy 142, 2015, pp. 435–444; Sovacool, B. K. et. al. (2016) 'Energy decisions reframed as justice and ethical concerns', in Nature Energy 1(5), 2016, pp. 16024. Prior publications focused on specific energy-related justice problems, albeit usually without explicitly trying to link them to social justice theories and/or with an issue-limited perspective. These includes a large body of publications on energy poverty, fuel poverty and domestic energy deprivation. **20** McCauley, D. (2018) Energy justice. Re-balancing the trilemma of security, poverty and climate change, Cham, p. 2.

At the core of the concept is that it combines different notions of social justice mainly adopted from earlier research in the field of environmental justice.[21] Most of the authors refer to distributional justice, procedural justice and recognitional justice as the three principle tenets of energy justice. Distributional justice entails the allocation of ills and benefits. The recognitional dimension of justice points at the acceptance of the diversity of participants and those affected, their experiences and connected problems of disrespect and misrecognition. Additionally, the procedural component focuses on questions of participation in political processes, including policy formulation and management aspects.[22] The factual overlap of these justice dimensions has already been recognized by environmental justice approaches – not only in theory, but also in the claims of social movements.[23]

Another important contribution of the energy justice frameworks developed so far is the demand to take into account entire production chains when evaluating energy policies in the light of principles of justice. This fundamentally challenges the common approach of merely looking at electrification rates. Most of the authors engaged in developing an energy justice framework perceive it as a scholarly instrument, useful for policy formulation. They argue that it may serve as a 'unifying agenda for scholars and practitioners working on issues of energy security, fuel poverty and climate change.'[24] Hence, the authors have developed detailed and sophisticated concepts ready to be used as decision-making tools by policymakers.[25]

1.2 Energy Justice à la Nancy Fraser – between Redistribution and Recognition

One of the theoretical challenges arising from the threefold environmental justice approach that has been incorporated into the energy justice framework is the combination of justice conceptualisations from distinct philosophical traditions. The concepts' philosophical basis ranges from liberal (and partly also libertarian), cosmopolitan and communitarian to recognition-related approaches to social justice.[26] It is therefore not enough to just mention them as a sum total of separate elements. Rather, interlinkages and possible inconsistencies should be considered from a philosophical as well as an empirical perspective.

One of the leading scholars in the field of social justice whose work has been fundamental to the concept of environmental justice is Nancy Fraser. She has long been engaged in reconciling different conceptualisations of justice within a single concept. Responding to a broader debate on redistribution and recognition, Fraser argues that both aspects should be perceived as two ends of a continuum rather than mutually exclusive positions. She claims that

21 Reference in this respect is usually made to the work of Schlosberg, building on the writings of Iris Marion Young and Nancy Fraser. See for ex.: Schlosberg, D. (2004) 'Reconceiving Environmental Justice. Global Movements and Political Theories', in Environmental Politics 13(3), 2004, pp. 517–540. **22** Schlosberg, D. (2004) 'Reconceiving Environmental Justice. Global Movements and Political Theories', in Environmental Politics 13(3), 2004, pp. 517–540. **23** Ibid. **24** McCauley, D. (2018) Energy justice. Re-balancing the trilemma of security, poverty and climate change, Cham, p. v. **25** See for example: Sovacool, B. K. and Dworkin, M. H. (2015) 'Energy justice: Conceptual insights and practical applications', in Applied Energy 142, 2015, pp. 435–444. **26** McCauley, D. (2018) Energy justice. Re-balancing the trilemma of security, poverty and climate change, Cham; Schlosberg, D. (2004) 'Reconceiving Environmental Justice. Global Movements and Political Theories', in Environmental Politics 13(3), 2004, pp. 517–540.

while there might be political struggles located clearly at one end (such as class struggles, where the remedy would be redistribution or status according to sexuality, where the remedy would be recognition), both dimensions are relevant to all kinds of struggles to a certain extent. Therefore, many of them in fact may best be located somewhere in the middle. This results in what Fraser calls a *bivalent* conception of justice, where redistribution and recognition (related to societal status as opposed to 'mere' identity politics) are two inter-related remedies for addressing social injustices. Consequently, 'parity of participation' is at the normative core of her concept.[27] According to this objective, 'justice requires social arrangements that permit all (adult) members of society to interact with one another as peers.'[28] This certainly requires standards of legal equality, a distribution of resources that ensures peoples' independence ('redistribution') and institutionalised cultural patterns that express equal respect for everyone ('recognition'). This integrative way therefore transcends a merely cumulative understanding of different justice dimensions.[29]

1.3 Fossil Fuels and the Capitalist Mode of Production

While the demand to look at the whole production and consumption chain of energy systems when assessing issues of social justice has been raised in the context of energy justice scholarship, it requires a more comprehensive understanding of their contemporary political-economic context. On a global scale, energy systems are generally marked by an over-reliance on fossil fuels, which is partly due to historical trajectories and infrastructure-related path dependencies. For example, oil, coal and gas amounted to around 86% of worldwide energy supply in 2016,[30] and despite a growth in the share of non-fossil fuel sources, fossil fuels are still projected to account for 77% of energy use in 2040.[31] Energy consumption is usually subdivided into industrial, commercial, transport and residential consumption. It is a highly international affair. Around one fifth of energy is being exported through complex trading schemes and nearly the same amount is being lost due to processes of conversion. McCauley notes that at least two thirds of the world's energy is consumed in the industrial and commercial sectors, hence, stating, 'our fossil fuel, highly carbonized, systems of energy production are designed to meet the requirements of industry, commerce and the global economy rather than securing basic energy-based human needs.'[32]

It is widely recognized that today's fossil fuel-based energy systems are situated in the context of an internationalised capitalist market economy. Moreover, as Huber emphasises, 'capitalist social life is profoundly dependent on the abundant provision of fossil fuel energy, for example, coal powered electric power plants, oil powered transportation systems and gas-fired furnaces.'[33] Due to the important role fossil fuels played

27 Fraser, N. (1996) Social Justice in the Age of Identity Politics: Redistribution, Recognition, and Participation, Stanford. **28** Ibid., p. 30. **29** Ibid. **30** McCauley, D. (2018) Energy justice. Re-balancing the trilemma of security, poverty and climate change, Cham. **31** U.S. Energy Information Administration (EIA) (2017) International Energy Outlook 2017, EIA, 2017, available at https://www.eia.gov/outlooks/ieo/. Last accessed: 7 February 2018. **32** McCauley, D. (2018) Energy justice. Re-balancing the trilemma of security, poverty and climate change, Cham, p. 5. **33** Huber, M. T. (2009) 'Energizing historical materialism. Fossil fuels, space and the capitalist mode of production', in Geoforum 40 (1), 2009, p. 105.

in the historical transformation towards capitalist patterns of production and consumption, it has to be perceived not only as a resource, but rather as a 'social relation.'[34] The centrality of fossil fuels for capitalist industrial development rests on a number of major comparative advantages of fossil fuels (as compared to biological sources): it is a 'thick' energy source, i.e. the energy needed for its production is much lower than the energy gained with it. It is a mobile energy source, thereby making industrial production independent of the local availability of energy sources. Moreover, it can be used constantly and – in contrast to renewable energy sources where storage problems persist – its availability and intensity is not restricted by certain natural rhythms.[35] This in turn enables mass production that eventually yields consumption.[36]

However, capitalism as a mode of production rests on a 'logic of reversibility and circularity',[37] whereas fossil fuel reserves are limited. This is why the centrality of fossil fuels for capitalist production also poses a challenge to further economic growth. Negative 'side effects' of fossil fuel usage are threatening existing ways of life. Therefore, capitalist crisis and climate crisis are closely connected aspects. Moreover, fossil capitalism is based on highly uneven power relations. As laid down in the concept of the 'imperial mode of living',[38] describing global patterns of production and consumption, it is characterised by an uneven distribution of costs and benefits between and within societies based on spatial and temporal patterns of outsourcing. The unjust distribution of resources is based on the exploitation of labour and nature alike.

It is deeply anchored in and enforced through the everyday practices, aspirations and knowledge structures of a transnational consumerist class. It is furthermore stabilised by established physical and material infrastructures and political-economic institutions aiming to extend their basic functioning by advocating neoliberal policies. Originally the structural basis of political-economic arrangements in the Global North, the imperial mode of living has been rapidly spreading to countries of the Global South.[39] Energy – and especially fossil fuel-based energy generation – may be considered the backbone of the imperial mode of living. As the major basis of production and consumption, it ensures their steady operation. Dominant modes of fossil fuel-based energy production require the exploitation of labour and nature. They thereby intensify the unequal appropriation of nature on the local and domestic, as well as on the global, scale. Obviously, this is the case not only for the local impact of production sites, but also for the global impact of energy production and consumption.

34 Ibid, p. 106. **35** Altvater, E. (2007) 'The Social and Natural Environment of Fossil Capitalism', in The Socialist Register 43, 2007, pp. 37–59. **36** Huber, M. T. (2009) 'Energizing historical materialism. Fossil fuels, space and the capitalist mode of production', in Geoforum 40 (1), 2009, pp. 105–115. **37** Altvater, E. (2007) 'The Social and Natural Environment of Fossil Capitalism', in The Socialist Register 43, 2007, p. 44. **38** Brand, U. and Wissen, M. (2013) 'Crisis and continuity of capitalist society-nature relationships. The imperial mode of living and the limits to environmental governance', in Review of International Political Economy 20 (4), 2013, pp. 687–711; I.L.A. Kollektiv (2017) Auf Kosten Anderer. Wie die imperiale Lebensweise ein gutes Leben für alle verhindert, München. **39** Ibid.

2 FOSSIL FUEL-BASED ENERGY POLITICS AND RELATED INJUSTICES IN INDONESIA[40]

2.1 Coal-Based Energy Politics in Indonesia

Indonesia is one of the largest GHG emitters worldwide.[41] At the same time, being a densely populated country with great biodiversity and a coastline of staggering length, Indonesia is one of the countries most vulnerable to the impact of climate change.[42] While the Indonesian government has initiated a number of measures in order to reduce emissions resulting from deforestation and forest degradation (for example, through a forest moratorium in force since 2011), emissions in other sectors – especially in the energy, industry and transportation sector – are rapidly increasing. The World Resource Institute estimates that while the land-use sector is currently still dominating emission rates, energy-related emissions are going to increase up to over 50 percent of total emissions in Indonesia by 2026–2027, then becoming the largest source of GHG emissions.[43] This development is underpinned by fossil fuel-based energy production, to a large extent coal, which accounts for more than half of the electricity generated in the country.[44] On the economic plane, Indonesia remains the world's second largest coal exporter (after Australia), providing almost 28% of global coal exports.[45]

Major coal producers began serious exploration work in Indonesia only in the early 1980s, with commercial production commencing in 1988. Large-scale extraction had been pushed significantly by the Suharto regime through the implementation of new mining and foreign investment laws since the end

of the 1960s. However, due to low oil prices and limited foreign investments in the sector the take-off period of the Indonesian coal mining industry didn't commence before the late 1980s.[46] Coal production was expanded significantly in Indonesia when international coal prices were on the rise in the early 2000s. As this pointed to good investment opportunities, many international and national businesses jumped on the bandwagon. This development was favoured by weak law enforcement and widespread practices of bribery and self-enrichment by local elites. Following the democra-

40 The majority of the information on Indonesia used in this article draws from empirical field work in Indonesia (East Kalimantan, Jakarta and West Java) in 2011, 2016 and 2017 as well as from earlier publications by the author, namely: Fünfgeld, A. (2016a) Staatlichkeit als lokale Praxis: Kohleabbau und Widerstand in Indonesien, LIT Berlin; Fünfgeld, A. (2016b) 'The State of Coal Mining in East Kalimantan: Towards a Political Ecology of Local Stateness', in ASEAS, 9(1), 2016, pp. 147–162; Fünfgeld, A. (2017) '"Wenn sich nicht mal mehr der Teufel heimisch fühlt" – Widerstand gegen die Energiepolitik in Indonesien', in Asien im Windschatten des Wachstums, Köln 2017, Stiftung Asienhaus, pp. 35–37. **41** In late 2015 when escalating forest and peat fires in Indonesia led to a haze crisis all over Southeast Asia, the country was temporarily recorded as the world's third largest GHG emitter. For further information on forest fires in Indonesia and its connection to patronage politics, see: Varkkey, H. (2013) 'Patronage politics, plantation fires and transboundary haze', in Environmental Hazards 12(3–4), 2013, pp. 200–217. **42** Such impacts include reduced rainfall patterns (and, in general, shifting weather patterns), rising sea levels, higher risk of drought, extreme floods and tropical cyclones. This in turn especially affects economic activities such as farming and fishing and leads to displacement. **43** Wijaya, A. et.al. (2017) How can Indonesia achieve its climate change mitigation goal?, World Resources Institute, Working Paper, 2017. **44** Cornot-Gandolphe, S. (2017) Indonesia's electricity demand and the coal sector, Oxford, OIES Paper CL, 5, 2017. **45** International Energy Agency (IEA) (2017) Coal Information: Overview (2017 edition). IEA, available at https://www.iea.org/publications/freepublications/publication/coal-information---2017-edition---overview.html. Last accessed: 7 February 2018. **46** Lucarelli, B. (2010) The History and Future of Indonesia's Coal Industry. Impacts of Politics and Regulatory Framework on Industry Structure and Performance, Stanford Program on Energy and Sustainable Development, Working Paper (93), 2010, available at https://pesd.fsi.stanford.edu/sites/default/files/WP_93_Lucarelli_revised_Oct_2010.pdf. Last accessed: 7 February 2018.

tisation and decentralisation reforms after Suharto's fall in 1998, it was the local heads of districts and municipalities who were responsible for issuing mining concessions. Meanwhile, the new Local Government Law No. 23/2014 has shifted all competencies from district and municipal authorities to the central and provincial governments.

When international coal prices began to decline and several small mines stopped their production, the Indonesian government under current president Joko Widodo (since 2014) partly reoriented its coal policy. In 2015, the government issued a new energy policy plan targeting the expansion of domestic coal-based power production. Within this so-called '35 Gigawatt Program' it expressed its intention to produce an additional 35 gigawatts of electricity by 2019, including 20 gigawatts from coal-fired power plants. Even though government representatives have acknowledged meanwhile that this target might not be met,[47] several new power plants are being erected. For Indonesia, these infrastructure investments indicate a lock-in to fossil fuel-based power generation for the decades to come,[48] while it is assumed that Indonesian coal reserves might be depleted within the next 20 years (providing existing rates of production continue).[49] Both the prolonged production of high quantities of coal and the construction of a vast number of new coal power plants not only call into question the country's emission reduction targets, but also pose new and reinforce old social injustices and environmental destruction in and around production sites.

2.2 Coal and Local Experiences of Injustice

On a general level, the Indonesian government argues that the increase in energy production is important to ensure and enhance economic growth rates, as well as to improve energy access for the vast number of households that haven't been connected to an electricity grid yet. It is being argued that this increase has to be based on coal due to its low price currently and the availability within the country.[50] However, when looking at the entire production chain, the costs and burdens arising from coal-based energy production seem to outweigh the proposed benefits for a significant share of the Indonesian population. For example, the costs of coal-based energy production in Indonesia are mainly shouldered by local communities around the mining and power plant sites. They suffer from reduced income opportunities, restricted access to farm land and fishing grounds, general environmental destruction and specific problems such as floods, air pollution and related health impacts. Protest against these developments is often criminalised. Threats by private and public security forces occur on a regular basis and human and citizens' rights are often not respected. Moreover, it is these rural areas which suffer from error-prone electricity supply

47 Sundaryani, F. S. (2016) 'Indonesia braces for defeat in 35 GW program', in The Jakarta Post, 17 November 2016. **48** Chung, Y. (2017) Overpaid and Underutilized: How Capacity Payments to Coal-Fired Power Plants Could Lock Indonesia into a High-Cost Electricity Future, Institute for Energy Economics and Financial Analysis, 2017. **49** PwC Indonesia (2016) Supplying and Financing Coal-Fired Power Plants in the 35 GW Programme, PwC Indonesia Advisory, 2016. **50** These arguments have been mentioned in several interviews with Indonesian stakeholders in 2016 and 2017.

and regular blackouts.[51] Generally, there are severe spatial disparities with regards to the country's electrification rate. A large share of households in Indonesia – mainly those in rural and rather remote areas located on the Eastern islands – is not connected to a power grid yet.[52] These conditions point to the multiple aspects that have to be considered when arguing for a more socially just arrangement of energy systems.

It is specific to energy production and consumption that it connects various locations and people in multiple and complex ways difficult to track exactly. In the case of coal-based energy production, this may for example range from a mining site in rural East Kalimantan via the ship transportation of coal to West Java, where it is burned for electricity generation, up to the usage of electricity at an industrial site that produces a product for the end-user – wherever he or she may be located. Along this line injustices may be experienced in very different ways by various segments of a society. However, when assessing some of the rather concrete local experiences of people who are either living in close proximity to a major mining site or nearby one of the coal power plants, experiences are strikingly similar in terms of the tremendous impact energy production has on their livelihoods as the following two exemplary stories show:

Ms. S. is a local farmer living in the rural outskirts of East Kalimantan's provincial capital Samarinda. Originally from Java, she and her husband moved to East Kalimantan under a transmigration program sponsored by the Indonesian government several decades ago. For many years they have been farming their land with rice paddies and fruit trees. Their income was just enough to maintain a simple house and pay for the education of their thirteen kids. However, at the peak of the Indonesian coal rush in 2010/11, many mines opened in their surrounding area and ecological impacts such as erosion and flooding led to a severe reduction in harvest thereby sharply reducing their income. Together with her husband, S. started to become engaged in protests to demand the closure of the nearby mine or at least receive some kind of compensation for the losses that she and her family have endured. While the protesting community received support from various sides and managed to gain nationwide media recognition, most of its members express some resignation. They had been intimidated by private and public security personnel and generally felt that they, as some kind of 'small citizens', won't be able to receive enough attention from state representatives in order to improve their situation.

On Java, Ms. K. is in a similar situation. For decades she and her husband have been fishing and collecting seafood on the shores close to their home in the rural outskirts of Cirebon, a city in West Java. As they cannot access the place anymore since a coal power plant was erected there and access has been practically closed, they have to travel to another spot by public bus, paying

51 Fünfgeld, A. (2016a) Staatlichkeit als lokale Praxis: Kohleabbau und Widerstand in Indonesien, Berlin; Fünfgeld, A. (2016b) 'The State of Coal Mining in East Kalimantan: Towards a Political Ecology of Local Stateness', in Austrian Journal of South-East Asian Studies (ASEAS), 9(1), 2016, pp. 147–161. **52** Gokkon, B. (2017) 'Indonesia coal power push neglects rural households, chokes urban ones', in Mongabay, 14 November 2017, available at https://news.mongabay.com/2017/11/indonesia-coal-power-push-neglects-rural-households-chokes-urban-ones/. Last accessed: 7 February 2018.

a large share of their income in travel costs. As part of the current Indonesian government's plan to build many more new coal power plants in order to secure power supply for the upcoming decades, the inhabitants of the region expect the erection of another power plant right next to the first one soon. Just like in Samarinda, they experienced threats and harassments from security personal when engaging in protests. On top of this, despite living in sight of a power plant, they keep experiencing regular blackouts at home.

These are just two of many examples of how fossil fuel-based energy production in Indonesia is threatening local livelihoods. Hence, justice considerations related to energy go far beyond questions of having or not having access to electricity and transportation. Regarding both examples – coal mining and coal power plants in Indonesia – we may well find injustices connected to both ends, (re)distribution and recognition. However, in interviews and conversations people directly affected by either coal extraction or coal-based power production, far more often they directly point to problems on the distributional side. Socio-economic problems (or the distribution of costs and benefits) are the primary concerns and claims people state when being asked about the consequences of closely located coal mining sites or power plants. The most severe changes affecting their lives are due to environmental degradation and pollution, as well as restricted access to land and coastal areas, which minimises their harvest (of rice, fruit, salt and fish) and leads to reduced income. Other costs include environmental destruction and pollution-induced health problems.

Moreover, they generally do not benefit from improved electricity supply (in fact both localities still suffer from regular blackouts) and new income opportunities, for example through direct employment at the mines or the power plant, remain limited.

Recognitional aspects seem to be far more subtle. This for example includes the criminalisation of protest activities and related threats. We may perceive this as a matter of misrecognition or non-application of basic human and citizen rights. Another more concrete aspect of legal recognition relates to compensation payments for local fishermen living close to a coal-power plant in Java: only those owning boats received compensations, as shore fishers were not recognised as fishermen. A related dimension connected to the recognition paradigm is a self-perception as 'small people' who do not have access to political channels and representation of their needs. This self-perception may also be part of the reason why affected communities do not directly demand some kind of recognition or point the misrecognition of their community as a rural farming and/or fishing community, although it seems obvious that their needs tend to be disregarded due to their class. However, misrecognition in this case may also be related to the preservation of local culture and customs. Many of the members of the affected communities state that they do not seek compensation payments, but would prefer to be able to live and work like they have done in the decades before their livelihoods had started to change. This is also often connected to the cultural ties to the land they work or their fishing practices at sea or as salt-makers.

Together, both dimensions, misrecognition and maldistribution, lead to a lack of parity of participation. For example, very often, those people most affected by coal mining or power plants not only lack adequate information on what is going to happen in their area, but are also excluded from decision-making processes. Informational events, although formally required, either do not take place at all, the people affected are not invited or they are framed in incomprehensible technical jargon. Environmental impact assessments, which are also part of the prerequisites for both mining activities and power plant construction, are often not conducted thoroughly, are sometimes issued far too late (for example, after construction has already begun) and are often not publicly accessible.[53]

2.3 Lessons from Energy-Related Injustices in Indonesia

Drawing on the theoretical insights on social justice, the experiences from the Indonesian case and the existing frameworks mentioned above, I propose the following core tenets for further discussions on domestic energy policies. They are far from complete, nor are they perfectly applicable to other circumstances. However, I hope for fruitful future discussions on general approaches, as well as elaboration on specific cases. Moreover, I perceive these demands as another step towards raising awareness on the topic and hope it may provide a useful start for a basis for argumentation in favour of streamlining social justice issues in the debates on energy and climate policies.

In general, a socio-ecological transition towards non-fossil and non-nuclear energy resources that ensures social and environmental sustainability should be the primary target of energy policies on all political levels (a), everyone should be able to access sufficient energy to live a dignified life (good life instead of equality) (b) and efforts to reduce energy consumption should be encouraged and supported by all political and social entities (c).

Concrete demands for energy justice include: costs and burdens arising from energy production should be shared between different parts of society and take global responsibility into account (a). It is thereby important that people already socio-economically marginalised shall not be further disadvantaged by energy production (compensatory sharing of burdens). Costs and burdens must be assessed with a view to the entire production chain. In addition, benefits from energy production shall be for the common good, that is, no individual should be able to extract significant income from energy production, as it as a basic commodity that everyone needs. If surplus through energy production is generated, it shall be for the common good, especially for countering negative impacts related to production (b). Also, affected communities must have full access to information (including about cost and benefit distributions) and meaningful decision-making procedures (c). This includes that local peoples' needs and perspectives be prioritised in decision-making processes up to the level where decisions over energy production and supply shall be made by communities on the local level through

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53 Fünfgeld, A. (2016a) Staatlichkeit als lokale Praxis: Kohleabbau und Widerstand in Indonesien, Berlin.

democratic procedures (for example, a local referendum or other forms of decision-making accepted by the local community). Divergent perspectives and needs have to be acknowledged (and given the possibility to be raised). Marginalised parts of society shall be empowered to access information and take part in decision-making procedures. Decisions shall always be made in democratic, non-discriminatory ways (respecting different needs related to class, gender, race, abilities, etc.). This furthermore requires that communities have access to multi-level legal systems. When basic rights are not being granted and local needs are not being respected, this often leads to civil society protests. As activists are employing these protests in order to raise their voice and point out the shortcomings in energy planning, the severe impact this has on their livelihoods as well as to their exclusion from decision-making, they shall not face intimidation and criminalization. Rather, these protests shall be taken as an indicator for social injustices in the field and of how decision-making in the energy sector has to be improved.

However, as these recommendations only encompass the nation-state and local political levels while the energy sector is a highly regionalized or sometimes even globalized sphere, this poses some limits to the above-mentioned demands. As described above, energy politics is a fundamental basis of overall, worldwide production and consumption patterns based on an uneven distribution of costs and benefits that go beyond national borders and which are maintained through everyday practices of a transnational consumerist class as well as through political-economic institutions and established infrastructures. While this has to be recognised in energy-related demands, due to the lack of an international energy regime, it is still the nation-state that constitutes the most significant entity of policy-planning and implementation, which therefore also remains the central addressee for energy-related claims.

3 JUST ENERGY – AND THE CHALLENGES BEYOND

Energy supply is a necessity for all modern societies, impacting everyone's daily life. While the term 'energy' encompasses sources as diverse as nuclear material, solar power, wind, water and a broad range of fossil fuels like coal, gas and oil, all of them have in common that their production serves to meet human needs. Still, the reasons why people need energy and the demands it is meant to fulfil vary widely, as do the forms of production and the impact they have on various societal groups and the environment.

For governments, just like the Indonesian government, energy-related challenges mainly revolve around how to secure and finance energy supply in the long run. They usually focus on the 'big picture', namely securing energy sovereignty and supply in order to maintain or foster economic growth while disregarding local impacts on individual people's lives, notably those living in the areas where energy sources are being exploited or energy is being produced. The protests resulting from the multiple injustices people experience in localities like East Kalimantan and West Java go far beyond mere NIMBYism ('not in my backyard'). It is their means of subsistence as well as the continuation of their culture of living and working that is at stake due to the impact coal mining and power plant sites have on their livelihoods. These shortcomings that may well be regarded as the effects stemming from maldistribution and misrecognition, together with other constraints related to the negative impact on health and intimidation by security personnel further limit their possibilities of partici-

pation and self-determination. Despite these circumstances many people in the affected communities engage in lengthy and often frustrating struggles in order to prevent a further worsening of their living conditions. Their struggles are especially difficult as it is actually not the one mining or power plant they are struggling against, but in fact the whole strategic orientation of the Indonesian energy system, which in turn essentially rests on capitalist market logic. National energy policies are based on centralised decisions such as the '35 Gigawatt Programme' and backed by an internal political-economic structure where entanglements between the political and the economic sphere work in favour of the coal mining business.

This centralised decision-making structure and the challenges that come along with it as well as the multiple and complex connections between various stages of energy systems constitute the central specifics of energy matters. As this cannot be tackled by environmental or climate justice approaches, it is worthwhile to rather speak of issues of energy justice and injustices in this context. However, the already existing frameworks described in chapter 1.1 significantly benefit from an empirical grounding, the reconnection with Nancy Fraser's bivalent conception of justice and from further elaboration on the political-economic context structures of energy production and consumption.

While the suggestions developed on this basis and laid down in chapter 2.3 might hopefully serve as another starting point for enforcing the consideration of justice claims in dealing with future trajectories

of energy production and supply, many challenges remain. The example of coal mining and coal-based power production in Indonesia sheds light on justice-relevant aspects that are too often disregarded by policy-makers, regardless of its tremendous negative impact on local livelihoods. However, the transportation sector, which is equally important for fossil-fuel based energy systems, is not covered in this paper, nor are many other energy sources that might differ in their impacts from the coal example. Nevertheless, the list of justice-related claims presented above can serve as a starting point for discussions and elaboration on the issue, possibly relevant to several sectors. It is especially important that these future discussions are grounded in concrete experiences of people negatively affected by energy decisions.

So, is 'yet another' concept of justice actually needed for the realm of energy or could this be covered by existing approaches to environmental and climate justice? Critics may also argue that this may perhaps lead to further divisions in – actually closely connected – political struggles by inventing a new terminology or by generally diluting the importance of the claim. However, an energy justice approach may also be considered a potential bridge between environmental and climate justice as it connects the different spatial entities, such as local and global struggles, connected to the issue. It may serve as a strategic term in order to enforce a stronger focus on energy-related injustices and future visions to tackle them in international as well as domestic struggles. Moreover, by focusing on energy it also shifts the discussions from seemingly 'soft' policy issues such as

environmental and climate concerns to core interests of states. In terms of research, this allows considering the specifics of energy policy as a central concern for nation-states and simultaneously the particular set of characteristics connected to the material basis of energy systems. One of those is, for example, the multiple links and connections it establishes between sites of production, transport and consumption that very often involve various localities and even different countries.

Some scholars engaged in energy justice perceive the concept's 'lack of anti-establishment past'[54] as a strength, arguing that it enhances its connectivity to mainstream policy-making.[55] They stress that the close connections to social movements that are characteristic of environmental and climate justice approaches may be one reason why they haven't really gained ground in policy formulation so far.[56] Yet, this notion may be challenged by the fact that we actually observe certain applications of the slogans and concepts of the respective movements in policy-making and discourse.[57] Moreover, I would argue that this lack of involvement of social movements constitutes a major weakness of the approach. Schlosberg and other scholars engaged in the field of environmental justice have highlighted

54 Jenkins, K. (2018) 'Setting energy justice apart from the crowd. Lessons from environmental and climate justice', in Energy Research & Social Science 39, 2018, pp. 117–121. **55** Ibid., McCauley, D. (2018) Energy justice. Re-balancing the trilemma of security, poverty and climate change, Cham. **56** McCauley, D. (2018) Energy justice. Re-balancing the trilemma of security, poverty and climate change, Cham. **57** For example, the US Environmental Protection Agency declared environmental justice one of its leading principles in 1994. (Weis, L., Becker, S. and Naumann, M. (2015) 'Energiedemokratie. Grundlage und Perspektive einer kritischen Energieforschung', Studien 1/2015, Rosa-Luxemburg-Stiftung, Berlin.)

the fruitful relation between environmental justice practice and academic theorizing as it has led to mutual benefits in understanding the core problems and underlying processes leading to injustices in the field.[58] Schlosberg states that '[m]any attempts to define environmental and climate justice have been too detached from the actual demands of social movements that use the idea as an organizing theme or identity',[59] and therefore stresses the importance that theory and practice should inform each other.[60] However, as energy justice until now in fact has not evolved into an essential slogan of social activists in the field, it is worthwhile to reassess the interlinkages between energy issues and environmental and climate justice activism that exist so far (such as in the demands to phase out fossil fuels and move towards a just energy transition) and consider the perspectives of local communities impacted by energy decisions.

Notably, what also needs further attention is an elaboration on visions that are able to challenge the imperial mode of living by applying alternatives to economic rationalities. First of all, this requires a broader understanding of the interrelations between fossil fuel-based energy systems and capitalist modes of production, as well as the logic behind this fusion and the contradictions it produces. Huber stresses: "As the current political economy attests, energy issues are at the epicentre of not only the geopolitics of empire and the global climate crisis, but also the more banal everyday reproduction of capitalist social life."[61] Questions about future visions, therefore, do not only have to tackle alternative, renewable

technologies, but also require broader social and political change that allows for more than a just reorientation of energy politics. Such a vision could be a community-organised and -owned, cooperative-based energy production and supply, based on small-scale renewable energy projects. Today, cooperative-based renewable energy projects only produce a small portion of global energy production and it may seem rather unlikely that such an approach be found on a global or even national scale in the near future. However, there are many already existing projects oriented towards this idea in various parts of the world and their number is growing.[62] Both government incentives and the absence of government services (for example on Indonesia's remote islands), together with growing environmental and socio-economic concerns, can stimulate the establishment of renewable energy cooperatives. Very often, it was also a mixture between top-down, state-led approaches and bottom-up initiatives. Moreover, cooperatives differ concerning their scope: they may work for the benefit of their members or the benefit of the public, they may be profit-oriented or based on the ideas of the solidarity-economy.[63] Although

58 Schlosberg, D. (2013) 'Theorising Environmental Justice. The Expanding Sphere of a Discourse', in Environmental Politics 22(1), 2013, pp. 37–55. 59 Ibid. 60 Ibid. 61 Huber, M. T. (2009) 'Energizing historical materialism. Fossil fuels, space and the capitalist mode of production', in Geoforum 40 (1), 2009, p. 113. 62 One amongst many examples is the initiative of the 'power rebels' from Schönau, a small village community in the Black Forest in Germany that has started to build up their own energy production and supply system in the wake of the Chernobyl disaster. See the homepage of the Energiewerke Schönau (EWS): https://www.ews-schoenau.de/; Morris, C. and Jungjohann, A. (2016) Energy Democracy. Germany's Energiewende to Renewables, Cham. 63 Benton-Connell, K. (2015) 'Energy Cooperatives', in Trade Unions for Energy Democracy (ed.), Power to the People. Toward Democratic Control of Electricity Generation, Working Paper No. 4, 2015, pp. 7–22.

their scope ranges from establishing completely self-sufficient, non-market based small-scale energy systems to larger cooperatives operating based on market mechanisms, they do provide valuable examples for future pathways towards what has been termed 'energy democracy' in recent German debates.[64] Especially since general worldwide developments are indicating that we are on the track towards a low-carbon future – to a large extent due to declining prices of renewable energy technology, but also supported by a rising global awareness about the risks associated with fossil-fuel usage – more attention must be paid to aspects of social justice. The initiation of (albeit only partial) transitions towards new arrangements of national energy systems provides a window of opportunities that – due to the massive infrastructural developments connected to any energy system – will determine future energy pathways. Thus, it is important to further small-scale, decentralised and community-owned energy systems and also consider how to do justice to the people that have been employed in fossil fuel related industries. Social justice in the energy system is a complex matter, as it demands dealing with the injustices connected to old high-carbon energy industries, ensuring pathways for a just transition to renewable energy sources and preventing new injustices stemming from low-carbon energy sources.

Besides these considerations mainly targeting the national scale, it is highly important to seek solutions to solve existing injustices related to energy and climate politics on the global scale. This tackles the myriad questions of historical responsibilities and ecological debt, the quest for continued economic growth, technology transfers, investment practices and general development strategies. It is certainly not an easy task to arrive at agreements on these matters in international fora. However, it is of great importance to emphasise the need for a comprehensive energy transition – including not only technological, but also political-economic change – in order to deal with existing socio-economic and environmental challenges. In view of decreasing production costs for renewable energy technology and rising awareness about the impact of climate change all over the world, it is the right time to place the topic of energy justice more prominently on domestic and international agendas and link it to ongoing debates on climate change, development, economic growth, sustainability and human rights. This must be done by applying a broad understanding of social justice, taking into account the full range of justice issues, including the distribution of costs and benefits as well as recognition-related aspects connected to energy production and supply. The transformation needed thereby not only tackles the energy sector itself but needs to be understood as a more general change in production and consumption patterns. Gaining a better understanding of the myriad injustices evolving from energy production and distribution and the embeddedness of energy systems

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64 For further information on the concept and descriptions of other cooperatives, see, e.g. Kunze, C. and Becker, S. (2015) Wege der Energiedemokratie, Stuttgart; Weis, L., Becker, S. and Naumann, M. (2015) 'Energiedemokratie. Grundlage und Perspektive einer kritischen Energieforschung', Studien 1/2015, Rosa-Luxemburg-Stiftung, Berlin; Trade Unions for Energy Democracy (ed.) (2015) Power to the People. Toward Democratic Control of Electricity Generation, Working Paper No. 4, 2015.

within capitalist modes of production is just the first step towards furthering the idea of 'system change, not climate change' as it is being raised by climate activists.

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'[...] it is the right time to place the topic of energy justice more prominently on domestic and international agendas [...]. This must be done by [...] taking into account the full range of justice issues [...]. The transformation needed thereby not only tackles the energy sector itself, but needs to be understood as a more general change in production and consumption patterns.'

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