

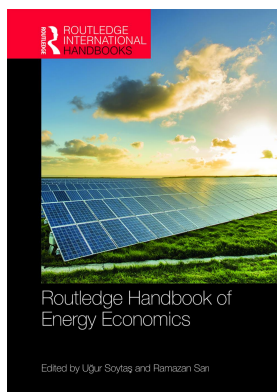
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Access details: *subscription number*

Publisher: *Routledge*

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## **Routledge Handbook of Energy Economics**

Uur Soyta, Ramazan Sar

### **Energy economics as an energy justice dilemma**

Publication details

<https://test.routledgehandbooks.com/doi/10.4324/9781315459653-21>

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**Published online on: 30 Sep 2019**

**How to cite :-** Kirsten Jenkins, Shanil Samarakoon, Paul Munro. 30 Sep 2019, *Energy economics as an energy justice dilemma from*: Routledge Handbook of Energy Economics Routledge

Accessed on: 30 Mar 2023

<https://test.routledgehandbooks.com/doi/10.4324/9781315459653-21>

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# Energy economics as an energy justice dilemma

## Case studies of normative trade-offs in Malawi, Mexico, and Germany

*Kirsten Jenkins, Shanil Samarakoon, and Paul Munro*

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### 1 Introduction

The Paris Agreement has set ambitious goals that demand an average reduction of energy-related carbon dioxide emissions of about 2.6% per year (IEA 2017); an unprecedented challenge that will necessitate the transformation of our energy infrastructure and the societies that surround them. To this end, we must reduce our dependence on fossil fuels, increase energy efficiency, reduce energy demand (where possible), and increase our utilization of renewable energy sources, all while populations grow and lifestyles become more energy intensive. It is easy to frame this challenge as an economic one: complex energy systems and the actors behind them must grapple with the uncertainties of evolving energy provision and use, the prices of fossil fuels, non-fossil fuels, and carbon emissions trading, for instance. They must also factor in the economic advantages and challenges of new and emerging technologies, the impact of new emissions or resource dependencies, and how to incentivize various regulatory regimes around the “good” technologies, processes, and ownership models that reverse previous and often damaging trends (Huang et al. 2017). Yet we cannot forget that the implications of energy transitions also go beyond the issue of market-led material expenditure, financial benefit, or loss.

As energy infrastructures change, so do the social justice outcomes of energy provision and use. Transformations will carry implications for human health, economic advancement, and education (Labelle 2017) and will require large-scale behavioral change and alterations to social practices and cultural norms. Furthermore, transformations that are not mindful of justice process and outcomes carry the risks of providing insufficient services, insufficient access, underconsumption, poverty, health risks, shortened lives, gender bias, or non-participation, as well as the overburden risks of waste, overuse, and pollution (Sovacool et al. 2016). In this regard, each stage of the energy system carries implications for who “wins” and who “loses” on a global scale (Jenkins et al. 2016a). The argument here, then, is that energy transformations are both an economic *and* an equity concern, and that both are intimately linked.

While it seems somewhat obvious that energy economics *should* grapple with questions of justice and equity (and indeed, we must acknowledge that some modes of economics already aspire to or achieve this), this challenge can be forgotten or misunderstood. In a critical account,

Heffron et al. (2015) illustrate this through their exploration of an imbalance of the energy trilemma, a triangular model in which energy law and policy is in the center, and economics (e.g. energy finance), politics (e.g. energy security), and the environment (e.g. climate change mitigation) make up each of the points. They outline that while each competes to place different demands on law and policy outcomes, more often than not, economic arguments win out, often to the detriment of long-term resource sustainability and climate change goals. Indeed, Özden-Schilling (2015) notes that even if motivated by political or cultural concerns, economic frameworks often return to the efficient functioning of the system rather than transfers conscious of one or other social group. In this regard, Breslau (2013) establishes that economic practitioners and economic reports not only represent the economy, but go on to define economic markets, agents, and outcomes. This means that economic knowledge is “performative” (MacKenzie 2007) and defines social justice consequences and world states both positively, and without appropriate censorship and monitoring, negatively (Alvial-Palavicino and Ureta 2017). According to Heffron and McCauley (2017), a more just and reasonable focus for energy decision-making (i.e. one that balances the energy trilemma) would include other economic concerns such as energy finance (project finance); energy prices (e.g. oil and gas); electricity prices; insurance costs; subsidy support (in all its forms); tax incentives; and affordability alongside classical goals. In our argument, energy economics would seek to fully embed justice principles and outcomes in economic thought.

Beyond the fact that classical economic thinking often wins out, there is a further weakness in our approaches to such issues to date. While many authors have highlighted the necessity of applying the concepts from ethics and justice to energy economics, and vice versa, the reality is that very few articles have dealt with this subject in a great deal of depth (at least within the field of energy justice in particular). Indeed, what does exist are primarily conceptual reflections or single-case explorations that do not engage with economic tradeoffs. With this in mind, this chapter has two aims. First, it seeks to introduce concepts of energy justice to a potentially new audience – those interested in energy economics. For this reason, the first section of this short chapter outlines the core tenets of the energy justice approach; distributional justice, justice as recognition and procedural justice and briefly covers what work *has* been done. Second, it aims to introduce the complexity of this challenge through three empirical case studies, each of which focuses on a different tenet of energy justice, and therefore, a theoretically discrete but practically interlinking set of demands. Specifically, we present real-world energy dilemmas that illustrate the challenge of economic *and* ethical thinking in Malawi, Mexico, and Germany.

## 2 Energy justice and economic applications to date

It bears mentioning that there is an extensive literature that seeks to embed justice thinking into economics that will *not* be caught under the umbrella of “energy justice approaches”. One such example is the work on intersectional justice, where financial exchanges are taken not only to represent commodity chains, but a variety of social exchanges with potential social justice interactions (Bies 1987; Symington 2004). This chapter does not seek to introduce these literatures in depth. Indeed, it is, by necessity, too short to do so. Instead, the aim is to introduce energy justice as one increasingly popular strand of literature that provides a framework through which to explore the relationship between justice challenges and economic thought.

The exact format of the energy justice concept is now well debated in the energy and social science literature. With acknowledgement of its roots in environmental and climate justice (Jenkins 2018), some authors introduce the core tenets of distributional justice, justice as recognition

and procedural justice (see Schlosberg 2004, 2007; Walker 2009; McCauley et al. 2013). Others consider cosmopolitanism and restorative justice (Sovacool and Dworkin 2015; Heffron and McCauley 2017). In contrast, (and although the authors flip between different approaches in other works) Sovacool et al. (2016) speaks of eight core themes: (1) availability, (2) affordability, (3) due process, (4) intra-generational equity, (5) sustainability, (6) transparency and accountability, (7) equity, and (8) responsibility (see Table 20.1). Here, we take the approach of distributional justice, justice as recognition, and procedural justice and in the following paragraphs briefly introduce each in turn.

*Table 20.1* Concepts discussed in relation to the energy justice approach

<i>Tenet</i>	<i>Approach</i>
Distributional justice	Distributional justice recognises both the physically unequal allocation of environmental benefits and ills, and the uneven distribution of their associated responsibilities (Jenkins et al. 2016b).
Justice as recognition	Recognition justice is more than mere tolerance and states that individuals must be fairly represented, that they must be free from physical threats and that they must be offered complete and equal political rights (Jenkins et al. 2016b).
Procedural justice	Procedural justice concerns access to decision-making processes that govern the distributions outlined above. It manifests as a call for equitable procedures that engage all stakeholders in a non-discriminatory way (Jenkins et al. 2016b).
Cosmopolitan justice	Acknowledges that all ethnic groups belong to a single community based on a collective morality (Sovacool et al. 2016).
Restorative justice	Restorative justice aims to repair the harm done to people (and/or society/nature), rather than solely focus on punishing the offender – as societies use the legal system for. Further, restorative justice can assist in pinpointing where prevention needs to occur (Heffron and McCauley 2017).
Availability	People deserve sufficient energy resources of high quality (Sovacool et al. 2016).
Affordability	The provision of energy services should not become a financial burden for consumers, especially the poor (Sovacool et al. 2016).
Due process	Countries should respect due process and human rights in their production and use of energy (Sovacool et al. 2016).
Intragenerational equity	All people have a right to fairly access energy services (Sovacool et al. 2016).
Intergenerational Equity	Future generations have a right to enjoy a good life undisturbed by the damage to our energy systems inflicted on the world today (Sovacool et al. 2016).
Sustainability	Energy resources should not be depleted too quickly (Sovacool et al. 2016).
Transparency and accountability	All people should have access to high-quality information about energy and the environmental and fair, transparent, and accountable forms of energy decision-making (Sovacool et al. 2016).
Responsibility	All nations have a responsibility to protect the natural environment and reduce energy-related environmental threats (Sovacool et al. 2016).

The first tenet of energy justice in the framework used throughout this piece is distributional justice. Energy justice is an inherently spatial concept that includes both the physically unequal allocation of environmental benefits and ills and the uneven distribution of their associated responsibilities (Walker 2009: 615). Thus, energy justice can appear as a situation where “questions about the desirability of technologies in principle become entangled with issues that relate to specific localities” (Owens and Driffill 2008: 4414), and represents a call for the distribution of benefits and ills on all members of society regardless of income, race and so forth (Bullard 2005; Heffron et al. 2015). This embodies, in essence, a concern over the inequitable distribution of energy facilities and infrastructure, as well as access to energy services – issues of “what” is in question and “where”.

Throughout this chapter, justice as recognition – the second tenet – is taken to be a means of explicitly engaging with the questions of “who” is energy justice for, and, who is responsible for its provision (Jenkins et al. 2017). Justice as recognition appears as a concern for “how people are involved in environmental decision-making, or ‘who (and what) is given respect’” (Eames 2011). Drawing on Fraser (1999), Schlosberg (2007: 18) conceptualizes the concerns around justice as recognition as three separate issues: (1) practices of cultural domination, (2) patterns of non-recognition (invisibility of people and their concerns), and (3) disrespect through stereotyping and disparaging language (misrecognition). Within this context, justice as recognition is more than tolerance, and requires that individuals are fairly represented, free from physical threats, and offered complete and equal political rights (Schlosberg 2003).

The last tenet in this tenet framework is procedural justice, or the “how” of energy justice. Procedural justice concerns access to decision-making processes that govern the distributions outlined above, and manifests as a call for equitable procedures that engage all stakeholders in a non-discriminatory way (Walker 2009; Bullard 2005). It states that all groups should be able to participate in decision-making, and that their contributions should be taken seriously throughout. It also requires participation, impartiality and full information disclosure by government and industry (Davies 2006), and the use of appropriate and sympathetic engagement mechanisms (Todd and Zografos 2005). It is concerned about the fairness of decision-making processes, or justice in “doing”, and emerges as a claim for representational space and free speech (Sayer 2011; Sze and London 2008). To illustrate, procedural justice manifestations include questions arising around how and for whom community renewables projects are developed (Walker and Devine-Wright 2008), and the ethics of the emergent voluntarism debate, where communities volunteer to host facilities (Butler and Simmons 2013).

Within the energy justice literature (and commonly using the three tenet framework introduced directly above) several approaches have been made to engage with economic thought. Capaccioli et al. (2017) explore “participatory energy economics”, for instance, where they describe that shifts towards decentralized renewable energy exposes new challenges and possibilities for communities to become economic actors (see also Schoor et al. 2016). They state too that participation in such initiatives can also mean that actors become engaged in direct public participation, allowing the establishment of effective civic participation and self-government – forms of justice as recognition and participatory justice (see also Hoffman and High-Pippert 2010). Alvia-Palavicino and Ureta (2017) consider how energy justice is economized – the process by which political and ethical claims about injustice can or may be turned into economic valuations. This approach is in line with Heffron et al. (2015), who suggest that the cost of energy justice can be included into economic model cost calculations when planning for the construction of different energy infrastructure – a process that may coincide with a cost-benefit analysis model. Liljenfeldt and Pettersson (2017) link the process of energy siting to the socioeconomic characteristics of consumers.

Two of the most prominent writers in this area are Heffron and McCauley, who have delivered a series of critiques of economic thought, arguing, in the first instance, that security and environmental goals are more important to the long-term future of a society than economic competition. Within Heffron et al. (2015), they write that the contribution of economics to policy formation on new energy infrastructure needs to be revised, and that we need to look past Chicago neoclassical economic perspectives. Indeed, they identify that current thinking has led to economic malaise in many sectors, including for all things energy, where, for instance, six companies in the UK have around a 90% market share. This includes a continued emphasis on delivering low-cost and/or efficient outcomes that often perpetuate fossil fuel-based status quo (Heffron and McCauley, 2017). Heffron and McCauley (2018) add, in this regard, that traditional economics has yet to deliver positive justice outcomes for society and that philosophical underpinnings of economic policy have yet to advance. Indeed, the injustice caused by energy systems can be framed as a set of pervasive negative externalities (Le Grand 1991; Alvial-Palavicino and Ureta 2017). The weakness of this and related works, however, is that it is largely conceptual and infrequently draws on comparative empirical material that considers difficult trade-offs. To illustrate the challenges involved as well as highlight alternative, arguably more socially just economic models, this chapter now draws on three empirical examples – Malawi, Mexico, and Germany – each of which coincides with one of the distributional, recognition, and procedure tenets.

### 3 Beyond economics: empirical cases of energy justice *and* economic trade-offs

#### *Case 1: distributive justice – Zuwa Energy in Malawi*

Power cuts in the sub-Saharan African nation of Malawi can last over 24 hours and most days, in the capital city of Lilongwe, are punctuated by the thrum of diesel generators as businesses, government departments, and affluent households attempt to navigate their way through an enduring energy crisis. Meanwhile, most urban low- and middle-income households are forced to revert to energy sources used by the rural majority, such as candlelight, kerosene lamps, and battery-powered torches. The combination of an unreliable supply, rising electricity tariffs, and the slow rate of grid expansion has resulted in acute energy poverty for most Malawians (Guardian 2017). Of its approximately 18 million people (World Bank 2018), only 11% of Malawians are estimated to have access to electricity through the national grid, the vast majority of whom are concentrated in a few urban centers (NSO 2018).

While some of the aforementioned challenges are acknowledged in Malawi's energy policy, there has been little in the form of investment to improve reliability and increase supply (Zalengera et al. 2014). In the context of energy justice, this is equivalent to a lack of distributive justice. The limited and unreliable supply of electricity in Malawi disproportionately impacts the livelihoods and well-being of Malawians across both income and geography, with the rural poor being the worst affected.

One response to the lack of access to electricity has been the adoption of off-grid solar technologies, often provisioned through a blend of philanthropic projects and entrepreneurial approaches (ODI 2016). Yet, while off-grid technologies like solar lanterns have helped further distributive justice in rural Malawi by displacing kerosene lamps and battery-powered torches, they are increasingly viewed as entry-level products. Growing demand for energy means that rural households and energy insecure urban households are increasingly looking for more capable energy solutions that can power multiple lights, charge mobile devices, and even household appliances. While larger solar household systems are available for purchase in urban centers, they



are often prohibitively expensive and thus beyond the reach of most Malawian households (see also Batchelor et al. 2018; Monyei 2018). This is further complicated by an influx of cheap, sub-standard solar products that most Malawian households may have a limited ability to differentiate from more expensive, quality-certified products.

It was against this backdrop that social enterprise Zuwa Energy launched its operations in late 2016, aiming to provide affordable, quality-certified solar household systems to *both* rural and urban populations in Malawi. Following in the footsteps of the remarkable success of solar businesses like M-Kopa, Off-Grid Electric, and Mobisol in East Africa (Bloomberg New Energy Finance 2018), the company is addressing the issue of solar affordability by using pay-as-you-go (PAYG) technology. The company sells a range of quality-certified solar household systems that can charge mobile phones, power multiple LED lights, and appliances such as radios and flat-screen televisions. Zuwa Energy's efforts in furthering distributional justice are primarily through the use of financial innovation. PAYG technology allows Zuwa Energy's customers to purchase a solar household system with a 20% deposit. The 80% balance is then paid across an 18- to 24-month period through the use of mobile money or via cash installments to a local agent. This greatly reduces the up-front cost of a solar household system (typically between USD 250–1,000), making them more affordable to a wider range of rural and urban households. Further to addressing solar affordability, Zuwa Energy's model also has social and economic impacts through its commission-based distribution network. The company reaches its customers through a network of women entrepreneurs, youth groups, and cooperatives across several districts in Malawi, providing them with systems on loan and extensive training (both sales and technical) – here, overlaps with justice as recognition appear. The organization is illustrative of a market-based approach to furthering distributive energy justice, a model that has enjoyed considerable success in Eastern and Southern Africa, yet this is not the norm.

### *Case 2: recognition justice – Los Proyectos de Muerte: the case of unconventional gas in Mexico*

In 2013, Mexico's energy policy was fundamentally changed, effectively opening the nation's energy industry to mass private and foreign investment for the first time in 75 years (Santiago 2015). Sparked by state-owned Petróleos Mexicanos' (PEMEX) decline in productivity in the 2000s and an increased reliance on imported oil from the United States, the notion of "energy security" emerged as a rationale for the Mexican government to liberalize the energy industry and pursue large-scale mining projects as a national priority (Castro-Alvarez et al. 2018; Silva Ontiveros et al. 2018). This ended PEMEX's monopoly over hydrocarbon production and distribution – a dramatic shift given that for much of Mexico's history, resource extraction was a state-led affair that was seen as an integral part of its national identity and sovereignty (Hyatt 2017). In striving for energy security, and in recognition that they possessed some of world's largest deposits of shale gas resources, the Mexican government has started to promote unconventional gas extraction in the country's northeast (García Chediak 2016; Silva Ontiveros et al. 2018).

Unconventional gas extraction often utilises controversial commercial practices such as horizontal drilling and hydraulic fracturing (i.e. "fracking"), and is commonly associated with a range of negative social and environmental impacts (de Rijke 2013). Therefore, in parallel to the Mexican government's prioritization of mega development projects (unconventional gas being one nascent type), rural social movements have coalesced in opposition to what they provocatively term as *Los Proyectos de Muerte* – "The Projects of Death". While the drive to capitalise on the nation's endowment of gas resources is rationalized by the Mexican government as being in the national interest, the firm opposition from rural social movements present deeper

questions of justice as recognition. Perhaps most pertinent is the question of whose vision of development counts (Silva Ontiveros et al. 2018).

A notable part of the 2013 energy reforms was the inclusion of the requirement of social impact assessments (SIAs) to determine potential project effects on communities, and develop mitigation strategies and approaches to community engagement (Silva Ontiveros et al. 2018). In practice, however, comments from affected rural and Indigenous communities suggest that these SIAs may not be providing the due recognition and participation they were intended to (Legarreta et al. 2016). Among the reasons cited are asymmetries in power that result in corporations being slow and selective with the release of vital information to affected communities (Silva Ontiveros et al. 2018). Another stated reason is that the government, despite the reality of its underresourced departments, guarantees project permits within three months to attract investors (Legarreta et al. 2016). The latter, in particular, is quoted as being a systemic impediment to conducting rigorous SIAs that feature meaningful consultations with communities. For instance, Indigenous communities claim that rushed SIAs fail to recognize traditional decision-making bodies and practices such as the *Asamblea* (Assembly), leading to the impression that the process is more a technocratic exercise than one aimed at genuinely furthering justice (Silva Ontiveros et al. 2018).

Underlying these conflicts between energy megaprojects and rural social movements are different “languages of valuation” (Martinez-Alier 2008, 2014). For the Mexican government, energy megaprojects are modernist, nation-building endeavors that are critical to furthering the well-being of Mexicans as they raise vital revenue, generate employment, reduce reliance on imported energy, and thereby provide energy security. Given these ambitions, populations that resist energy development projects might be branded as an inconvenience as they are seen as obstructing national progress. In contrast, the very phrase “*Proyectos de Muerte*” frames these projects in terms of their destructive impact on lives (human and more than human), heritage and livelihoods, and as such they are the antithesis of development: regressive and devastating (Silva Ontiveros et al. 2018). Thus, the social movements against energy megaprojects (among others) identify themselves as being anti-death rather than anti-development (Deckard 2016; Silva Ontiveros et al. 2018). As populations that disproportionately experience the burdens of such megaprojects, they seek to shift the discourse about what “development” means in the context of rural Mexico – complexifying projects pursued for economic and energy security gain (Silva Ontiveros et al., 2018). This case also highlights the challenges of implementing energy reforms given the diversity of perspectives gained through justice as recognition approaches – even for projects ostensibly tasked with addressing issues of justice.

### *Case 3: procedural justice – Energie-Genossenschaften (German energy cooperatives)*

Introduced in 2000, *Erneuerbare Energien Gesetz* (EEG – *The Renewable Energy Act*) has been Germany’s main legislative tool for promoting renewable energy power generation. A central feature of this legislation involves offering an above-market feed-in tariff rate to anyone generating renewable power for a 20-year period. This has served as an important incentive for German households to install solar panels on their roofs to generate power for their own consumption or sell to the national grid. Yet, further to this, citizens have also banded together to invest and operate larger scale renewable energy installations, allowing for projects that would be beyond the financial means of individual households. For more than a decade, this has led to a growing wave of *Energie-Genossenschaften* (energy cooperatives) that permits citizens to own solar parks and wind farms.



According to the German apex body for cooperatives, *Deutscher Genossenschafts- und Raiffeisenverband* (DGRV), Germany has 853 energy cooperatives (DGRV 2018), which are credited as being vital to the nation's clean energy transition (Klagge and Meister 2018). Renewable energy sources provided 33% of Germany's electricity in 2017, in comparison to just shy of 4% in 1990 (DESTATIS 2018). Most energy cooperatives are formed at the scale of towns and villages, though they have also been established at regional and interregional scales across Germany. In contrast to traditional centralized energy generation and distribution infrastructure (public or privately owned), energy cooperatives represent a prime example of procedural justice in that citizens, who are both owners and consumers, are able to make democratic decisions about all aspects of their energy system. The democratic governance of cooperatives is epitomized by the fact that all members have a single vote, regardless of the number of shares owned or their capital contributions. As such, cooperatives can be seen as an example of alternative economies, where users are equal owners and as such, the distribution of burdens and benefits tend to be more democratic and equitable when compared to firms, which are often guided by the interests of major shareholders (Sovacool and Dworkin 2014; Klagge and Meister 2018).

The success of energy cooperatives in Germany has been closely linked to the attractive feed-in tariff rates that were introduced in the EEG. The feed-in tariff rates created a low-risk environment in which energy cooperatives thrived. However, an amendment of the EEG in 2014 that led to the phase out of feed-in-tariffs has had negative financial implications for energy cooperatives. The lack of favorable feed-in-tariffs has resulted in energy cooperatives being forced to adopt market-based approaches, such as participating in tender and auction processes in order to compete with other energy providers. This has consequently raised transaction costs and increased financial risk, resulting in a slowdown of energy cooperative formation from 2014 onwards (Klagge and Meister 2018). This change in energy policy has shaped a context where cooperatives may need to pursue aggressive growth strategies to absorb costs and remain profitable, even if they tend to be value-driven, citizen-led action representing a less-carbon intensive and more just energy system.

While the role of cooperatives in shaping Germany's energy transition to renewable energy sources is widely acknowledged, the question of their part in Germany's energy future is a matter of ongoing debate. Some advocate for policies that better incentivize the formation of energy cooperatives as they are more localized and democratic, others contend that market forces should steer Germany's energy sector. Nonetheless, energy cooperatives remain an excellent example of a bottom-up economic approach to ensuring equitable participation.

#### 4 Conclusion

Given its brevity, this chapter is certainly unable to meet the challenge of resolving socially just approaches to energy economics. First and foremost, though, we have argued that energy economics *should* seek to fully embed justice principles and outcomes in economic thought, and indeed, throughout this piece we have highlighted that there are numerous exciting empirical and conceptual instances through which to do so. It goes without saying that in order to achieve this, we need both a good understanding of the challenges involved and an ongoing and reflexive consciousness of their existence. Put simply, this chapter provides an early introduction to the former and advocates for the latter.

The solution to current social justice failings, as Alvial-Palavicino and Ureta (2017) point out, appears to be one of achieving a rebalancing or relocation of both systems costs and benefits in order to correct or prevent further negative externalities, and in so doing, alleviate underlying inequity. Simple? Definitely not. Such an outcome is unlikely to happen given that markets

appear irrational rather than rational (Fourcade and Healy 2007: 299). This is especially true where complex and often conflicting normative frames appear (Fuller and McCauley, 2016). In this regard, we need new, innovative financial models and new ways of evaluating and tackling their impacts. As an illustration of distributive justice thinking, our chapter has introduced Zuwa Energy as one such example, where the challenge of solar affordability are met through a pay-as-you-go scheme in rural and urban areas distributed by women entrepreneurs, youth groups and cooperatives. Alongside such financial schemes, we must also question whose “vision” of justice they represent. Our case study of Mexico highlights dissatisfaction with the process of social impact assessments among rural and Indigenous communities. Further, we illustrate that you must not only consider what and who is at question, but also *how*, as our case study of German energy cooperatives has shown. As a sum of all three, you might suppose that a system of redistribution and equitable access that is conscious of the competing visions of different social groups and achieved in a democratic way is true “energy justice”.

It is worth noting too that pursuing social justice goals can make *good* economic sense. We can achieve co-benefits including the potential enhancement of energy security, reduction of emissions and the impacts of climate change, and reductions in poverty and the empowerment vulnerable groups among other social and environmental gains (Sovacool et al. 2017). Business opportunities may also arise from these co-benefits, “creating situations where justice principles go hand in hand with enhanced business revenue” through innovative business models for services, equipment and supply (Sovacool et al. 2017: 27; Hiteva and Sovacool 2017). Wishful thinking, some may say, but then at one point in time, climate change also wasn’t on the agenda and look how far we have come there.

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