Chapter 9
A Hindu Philosophy Perspective on the Temporal Nature of Energy Justice in Odisha, India

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Abstract This chapter draws upon Amartya Sen's interpretation of the Hindu *Bhagavad Gita* to discuss temporal justice implications underlying energy transitions observed in much of the Global South. In particular, it applies this Hindu-based philosophy to unpack the energy policy dichotomy currently facing policymakers in the Indian state of Odisha: the conflict between achieving sustainable development whilst also rapidly decarbonising by transitioning away from a strong industrialisation-driven model of economic development. Drawing from the *Gita*-inspired notions of a focus on duty in the here-and-now versus a sensitivity towards future consequences of present actions, this chapter introduces *Nyāya*, a Sanskrit term for justice. We argue that *Nyāya's* focus on 'realised' justice is far more comprehensive and inclusive in that it allows policymakers to move beyond *Niti*, which limits, instead, policy to follow the trappings of bounded institutions, rules, and regulations.

9.1 Introduction

Globally, the twin policy priorities—to achieve sustainable development and tackle climate change—represent challenging battle lines to navigate, particularly for policymakers in the Global South. The energy sector embodies this battlefield greater than most, with the need to rapidly decarbonise the energy industry whilst also providing reliable, affordable and modern energy access to the more than three

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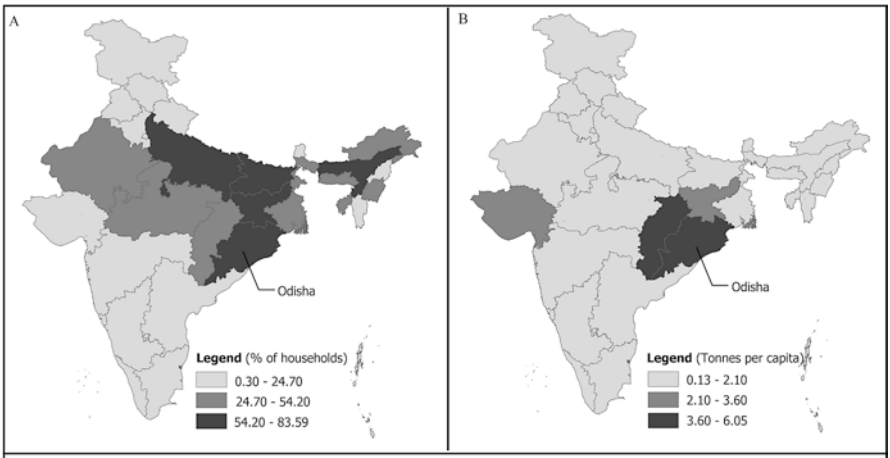
billion people who currently remain energy poor (IEA et al. 2018). Yet despite the recognition of attainable synergies, these two energy priorities are often regarded as being separate by policymakers (see, for example, Bhardwaj et al. 2019; Cameron et al. 2016; Malakar et al. 2019; McCollum et al. 2011; Stechow et al. 2016; van Vuuren et al. 2012). In India, an energy policy paradox formed along these battle lines has become particularly apparent. India recognises the need to transition away from its current high dependence on fossil fuels (Oliver et al. 2016) and to avoid potentially significant global climate consequences (IEA 2015; Spencer et al. 2018). Of the World's 20 biggest energy-consuming countries, India's progress in increasing the share of renewables in its final energy consumption was the slowest between 2010 and 2015 (IEA et al. 2018). Meanwhile, 20% of India's total households (approximately 45 million) remain energy poor. Achieving universal access has remained an elusive and challenging goal for Indian policymakers for the past several decades (Dubash et al. 2018, p. 380; Palit and Bandyopadhyay 2017).

For emerging economies such as India, these two energy sector priorities represent an important paradox that local policymakers struggle to navigate in light of numerous political and resource constraints; resources invested to address one priority may impede progress on other pressing needs—whether energy-related or broader development agenda. Given that energy sector investments typically play out on temporal scales measured across decades (Gross et al. 2018; Lund 2006), decisions made by policymakers today will have both intra- and inter-generational consequences. Consistent with other contributions in this volume (see for example, Pellegrini-Masini et al. 2019), we argue that this complexity increases with the presence of divergent stakeholders with their own interests and priorities. In other words, a plurality exists within this energy paradox that is largely built upon a multiplicity of knowledge and expertise and actors and institutions, interacting over time (Delina and Janetos 2018; Delina and Sovacool 2018). This plurality necessitates a framework that allows policymakers to cohesively and simultaneously address the temporality and the dynamic nature of justice implications underlying the energy paradox.

In this chapter, we build upon a temporal energy justice framework (Malakar et al. 2019), inspired by Amartya Sen's interpretation of the Hindu *Bhagavad Gita* (the *Gita*), and apply it to the contemporary case of the Indian state of Odisha. Here, local policymakers are confronted with stakeholder plurality determined by an underlying energy paradox. As one of India's most mineral resource-rich states, Odisha is known for its heavy focus on industry-driven economic development. Yet despite economic and industrial progress in the state, the flow of benefits has remained highly unequally distributed. Rates of rural electrification remain low with 57% of households without electricity[1] (India Census 2011). In Odisha, 42% of households were reportedly below the poverty line in 2016 (International Institute for Population Sciences and ICF 2017). Odisha's Gini coefficient (a proxy measure for economic inequality), whilst slightly better than the all India average (World Bank 2018), has worsened between 1994 and 2012, particularly in urban areas (World Bank 2016). Furthermore,

[1] We note that India has made significant progress in rural electrification over the last two years. However, despite more than 99% village electrification claimed by the Government of India, robust household level data for Odisha remains unverified at time of writing.



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Variables	India	Odisha
Lack of electricity access (% of households) in 2011	33	57
Coal production (Million tonnes in 2016-17) (%)	662.79 (100%)	139.38 (21.03%)
CO_2 emissions per capita (tonnes) in 2011	1.5	3.65
Gini coefficient in 2012	0.35	0.28

Fig. 9.1 (**a**) Electricity access by India State (data obtained from Government of India 2011), (**b**) CO_2 emissions by India State, excluding land use (data obtained from Ananthakumar et al. 2017), (**c**) comparison between Odisha and whole India, various measures (data obtained from Government of India 2018; World Bank 2018)

with intense coal mining and a suite of large-scale heavy industry dependent on thermal power operating in the state, Odisha remains India's second largest carbon emitter of all 29 states (Ananthakumar et al. 2017) (see Fig. 9.1).

Odisha represents a relevant case to develop this temporal justice framework, particularly as 94% of its population is of the Hindu faith (Government of India 2011). By extension, we hope that a framing of temporal justice, using the teachings of the Hindu *Gita*, may resonate both culturally and philosophically with local policy makers.

We proceed in three steps. First, we briefly outline a framework, grounded in the *Gita*, to navigate plurality and the temporal nature of energy justice implications. Next, in Sects. 9.3 and 9.4, respectively, we outline and interpret what we see emerging in the power sector in Odisha, indicating a strong emphasis towards duty with limited consideration of the future consequences of present-day policy decisions. Finally, we expand and draw on the justice-related concept of *Nyāya*, a Sanskrit term from Buddhist and Hindu philosophy, to identify a path forward that can support local policymakers to address the multiplicity of objectives, stakeholders and interests. A *Nyāya* framing, through its focus on realised justice, will allow energy policy to be more comprehensive and more inclusive.

9.2 Navigating the Temporal Nature of Energy Justice: A Hindu Lens

From theoretical and applied standpoints, the twin energy priorities discussed above highlight important questions of ethics and justice. First, the global climate imperative to facilitate the rapid decarbonisation agreed upon as the Paris Agreement in 2015 highlights the responsibility of all governments to participate as global citizens.[2] The Agreement reiterates that the variability across regional and local adaptive capacities towards ongoing climate-related impacts is a result of a number of past and present, context-dependent factors. The latest IPCC report (IPCC 2018) also indicates that the uneven distribution of climate change impacts will likely lead to particularly harsh consequences on disadvantaged and vulnerable populations, including those in India who, generally speaking, are already subjected to global structural inequalities.

Second, the strong political and social imperative to deliver critical services to the energy impoverished is founded upon principles of ethics, morality and justice. The lack of access to even the most basic of energy services, such as a reliable electricity connection or a supply of modern, clean cooking fuels, is already established as having diverse and profound repercussions on people's opportunities and their capabilities to pursue a quality life (Day et al. 2016).

Energy justice is an emerging framework designed to theorise, analyse and navigate energy transitions to enable the just distribution of benefits and burdens that ensue (Jenkins et al. 2016; McCauley 2018; Sovacool et al. 2017). The assessment of injustices and inequalities is critical to identify (1) who is being treated unjustly (recognition), (2) where they are located (distributional) and (3) why they are not being recognised in the decisions that affect their lives (procedural). Answers to these questions provide a foundation to establish just energy systems that not only address present energy needs but also take account of future consequences of current energy decisions.

A recent contribution to the energy justice literature expanded the notion temporally to argue the inclusion of inter-generational concerns with respect to energy transitions (Malakar et al. 2019). Importantly, this temporal energy justice framework draws upon a non-Western philosophy, namely, Sen's interpretation of the *Gita*, to analyse and formulate energy policy decisions based on two time-based notions of justice: 'duty-focused' and 'consequence-sensitive'.

The *Gita* is a part of an epic Hindu tale, the *Mahabharata*. It is set in a great battle for the kingdom of *Kurukshetra*, raged between the *Pandavas* and the

[2] Recognising, of course, the principle of common but differentiated responsibilities and that parties to the Agreement vary widely in their responsibility for climate change, thus raising pertinent questions regarding their obligation to and role in undertaking climate mitigation beyond what is rationally commensurate. Although not all governments are signatories to the Paris Agreement, the 197 members of the UNFCCC who have signed or acceded represent more than 88% of global greenhouse gas emissions.

Kauravas; the former are the rightful proprietors of the kingdom, whereas the latter (which includes members of the extended *Pandavas* family) have wrongfully taken control of the kingdom. The *Gita* describes a dialogue between *Arjuna*, the commanding general of *Pandavas*, and his charioteer Lord Krishna, as they ride out to battle. In the dialogue, *Arjuna* shares his concerns to Krishna regarding the consequences of the battle he must lead and the ensuing social, moral and emotional destruction. *Arjuna* foresees an inevitable personal guilt from those consequences and questions whether he should proceed to battle. Lord Krishna advises him to do his *karma*, or duty, irrespective of the potential consequences. Krishna reminds *Arjuna* of his duty, as a born warrior, to win against the (evil) *Kauravas* and do justice to his people, the rightful rulers of the kingdom.

Sen draws two time-based notions—'duty-focused' and 'consequence-sensitive'—from the dialogue in this tale. Sen interprets that *Arjuna* legitimately expresses sensitivity towards consequences of his actions, whereas Krishna is concerned only with duty. Developed from the text of the Gita, Sen argues for the integration of a consequence-sensitive lens in present-day actions and political thinking to minimise, if not avoid, the future injustices that may ensue.

To contextualise, a duty-focused energy policy direction would entail actions that primarily address observable present-day challenges, such as to expand energy supply for economic advantage and/or to provide access to the energy impoverished. The extreme version of this duty-focused position would act to achieve these objectives using any means necessary—i.e. ignoring the consequences of these energy investments (conceivably of a fossil-fuel-based nature). A consequence-sensitive policy pathway, on the other hand, promotes energy decisions in the present that are sensitive to the consequences, both immediately and in the future. An extreme consequence-sensitive position may argue against any current energy interventions driven on fossil fuels, as they may lead to severe medium- to long-term consequences on the climate, thus making it dangerous for future generations.

To move beyond this seemingly conflicting temporal dichotomy, we introduce the concept of 'Nyāya', which allows the expansion and consideration of substantive freedoms in both the present and the future (Sen 2009). *Nyāya* comprises realised justice beyond institutional rules, roles and policies. Sen writes, '[t]he realization of justice in the sense of *Nyāya* is not just a matter of judging institutions and rules, but of judging the societies themselves' (p. 20). For Rao (2015, p. 122), *Nyāya* 'entails a broader, more substantive focus on the world that emerges from the institutions we create, and it is central to creating a sustainable and just society'.

Due to the 'multi-dimensional' nature of energy transitions (Stirling 2014), policymakers need to step outside their institutional boundaries, integrate multiple disciplines and collaborate with diverse stakeholders (Delina and Sovacool 2018). The concept of *Nyāya* justifies and promotes processes to achieve this. We now attempt to unpack what it means to take a *Nyāya* account of justice, leveraging the unique case of Odisha's energy paradox to draw out practical recommendations for its policymakers to advance a just energy transition.

9.3 Current Policy Landscape of the Power Sector in Odisha

Within India, Odisha provides a unique context to explore energy justice implications. It has historically remained one of India's most disadvantaged states both in relation to absolute and multidimensional poverty (UNDP 2011). Odisha's per capita gross state domestic product stands at the fourth lowest of all major Indian states (Government of India 2011; UNDP 2011). As one of India's key resource-rich states, Odisha has focused heavily on industrialisation through mineral wealth accumulation (Kale 2014) and in doing so has inadvertently diminished the share of agriculture and other rural economies in the state's gross domestic product (Das and Nayak 2018; Nayak et al. 2016). As an example, income from mining royalties doubled in 5 years between 2000 and 2005, constituting up to 65% of the total earnings for the state (Dash 2007; Spencer et al. 2018). Through its combined extractive and productive industry focus however, Odisha has lately emerged as one of the most favoured investment destinations for producers of aluminium, iron and steel, both for local and international use (India Brand Equity Foundation 2018).

From a power sector perspective, Odisha was the first state nationally as well as across South Asia to undertake an exhaustive power sector reform in the early 1990s. This resulted in the restructuring of the state's primary utility, the Orissa State Electricity Board (OSEB), the privatisation of thermal generation and distribution entities and a substantial tariff reform. The power reform was essentially triggered by a suite of factors, ranging from poor performance of the OSEB, the lack of a substantive agricultural lobby in the state (Thillai Rajan 2000), changes to the World Bank lending conditions for power sector development at the time, the state government's limited capacity to raise finance for a much-needed 600 megawatt (MW) hydroelectric project in the early 1990s and, consequently, efforts to 'restore the finances of a debt-trapped government' (Das and Nayak 2018: 195).

The results of this reform process have remained mixed with regard to achieving a more efficient power structure in Odisha or in substantially improving rates of state-wide energy access. As an outcome of its reform process, OSEB withdrew all subsidy support to the power sector, including the distribution companies, which were completely privately owned by 1999. On the one hand, this action critically disengaged potential investors, undermining the original purpose for power restructuring, whilst on the other hand, leading to a sharp rise in tariffs. This further compounded inequities in electricity access owing largely to poor affordability. Moreover, it brought forth a suite of bills collection and management challenges for the distribution businesses (Das and Nayak 2018).

Even after power and electrification were recognised to play a significant role in the state's potential development, a steadfast focus on industrial advancement historically left little political attention towards rural electrification. As a region, Odisha has maintained an ongoing tussle between its industrial and rural priorities where a lack of attention towards the latter has pushed rural communities to a further disadvantage. In a 2001 review of Odisha's power sector reform, it became clear that 'rural electrification was the worst casualty [of power sector reform] …

and agricultural pumping [i.e. irrigation] by use of electricity remained grossly neglected' (Das 2016b: 194). The situation only began to change seriously with the push for rural electrification in 2007. The emergence of renewable alternatives, and their access to high-paying customers (such as policy to support the uptake of solar rooftops in the state's two largest urban centres), poses another contentious justice-related challenge for Odisha's power sector utilities (Das and Nayak 2018).

Despite this reform—and as some even suggest, perhaps because of this—Odisha's energy accessibility rates and the pace of electrification remain one of the slowest of all mainland states in India (Das 2016a; Kale 2014). The situation is even worse in relation to the availability of clean cooking energy; of India's six largest states, Odisha ranks the second worst in access to clean cooking energy, with less than 10% of all households currently using LPG (UNDP 2011). Table 9.1 shows a comparison of how Odisha fares vis-à-vis the national average on energy poverty.

In terms of the current breakdown of Odisha's power sector, the state has a total installed capacity of 7378 MW (Central Electricity Authority 2018). Just under 5000 MW (68%) of this capacity is coal-fired thermal power generation, whilst 29% comes from hydropower. Only a small 3% (233 MW) share of current installed generation capacity comes from other renewable energy sources, including small hydro, biomass, solar and wind. Odisha is not only one of India's top ten states reliant on coal-fired power generation, but its 2011 carbon footprint of 3.65 tonnes of carbon emissions per capita (tCO_2-e) was more than twice the all-India average of 1.5 tCO_2-e (Central Electricity Authority 2018).

Looking forward, the state government's plan for the future of the energy sector is largely summarised in two primary policy documents. The Odisha Renewable Energy Policy (2016–2022) outlines their vision to encourage additional renewable capacity of up to 2750 MW by 2022 including solar (2200 MW), wind (200 MW), small hydro (150 MW), biomass and other renewables (200 MW) (Central Electricity Authority 2016; Government of Odisha 2016). The policy's three focal areas align with the national renewable energy guidelines in that they promote (1) state's energy security and commitment to carbon emissions reduction, (2) investment in renewable energy markets as well as manufacturing and R&D and (3) private sector

Table 9.1 Comparing energy poverty between Odisha and India (Government of India 2011; UNDP 2011)

	Total no. of households (% of national share)	% electrified	% with no lighting	% using solid fuels for cooking	% using LPG for cooking
India	246,740,228	67	0.5	67.4	28.6
Rural	167,874,291	55.3	0.5	86.4	11.4
Urban	78,865,937	92.7	0.3	26.1	65
Odisha	9,661,085 (3.9%)	43	1.1[a]	86.2	9.8
Rural	8,144,012 (4.8%)	35.6	1.1	93.8	3.0
Urban	1,517,073 (1.9%)	83.1	1.2[b]	45.3	46.1

[a]Third highest nationally

[b]Largest percentage of all 34 States and Union Territories

participation in renewable energy projects to seek a greater share of green energy within the state's overall installed capacity.

The second primary instrument indicative of the energy policy intentions of the Odisha government is the *24x7 Power for All*, a joint initiative between the Government of Odisha and the Government of India (Government of Odisha and Government of India 2016). This document offers a more inclusive perspective on the energy sector, placing the state's renewable energy ambition within the wider context of national energy sector expectations. The objectives for the power sector, according to this policy instrument, are to connect the remaining unelectrified domestic, commercial and industrial customers by 2019, whilst ensuring reliability (24 × 7) and affordability of supply. To achieve these objectives, the *24×7 Power for All* analysis anticipates energy demand would increase from 3900 MW in 2015 to approx. 5300 MW in 2019, requiring a 64% increase in installed capacity over the same period to cater to the rising demand. Importantly, the forecast anticipates less than 10% of this additional capacity to come from renewable energy sources, with the vast majority expected to come from thermal (coal-fired) generation.

9.4 *Upamāṇa* (Comparison): Evaluating Justice Implications of Divergent Energy Policy Pathways for Odisha

Despite being one of the more resource-rich states in India, the benefits from Odisha's industry-led economic development have been far from equitably distributed, as demonstrated by the region's deteriorating Gini score. Similarly, transitions in the energy sector have led to substantive inequalities. Here, we further examine Odisha's current energy policy position and consider divergent pathways and possibilities that policymakers must contend with moving forward. To that end, we draw upon the temporal energy justice framework outlined earlier and in particular on Sen's use of the analogous *Gita*, to compare and contrast a focus on duty with a focus on sensitivity towards consequences and to consider the underlying justice implications of divergent energy policy pathways.[3]

Although Sen departs slightly from early Hindu philosophers[4] in his articulation of *Nyāya*, he usefully carries forward the idea of *Upamāṇa* (Sanskrit for 'comparison'), a core characteristic of the traditional *Nyāya* philosophy. To emphasise the position of *Nyāya*, Sen dismisses the idea of seeking the perfectly just society. Instead, he argues for identifying comparative and feasible alternatives and for

[3] Sen acknowledges that the extremes he uses with respect to these positions (i.e. a pure deontology/duty focus or an exaggerated concern for consequence leading to inaction) remain analogous and may not be representations of the real world, but nevertheless are useful to contemplate for the purpose of theory development.

[4] See, for example, Gotama (1974), who refer to *Nyāya* as a distinct epistemology, a systematic process of logic development and reasoning.

making an informed choice among them, whilst accepting that necessary trade-offs at times may be required. *Upamāṇa*, as a source of knowledge generally derived from comparison and analogy, serves as a tool in the process of attaining *Nyāya*. Following Sen's argument and the *Nyāya* spirit of *Upamāṇa*, we evaluate the inter- and intra-generational justice implications of two broad energy policy positions for Odisha; the first with a primary focus on duty in the here-and-now and the second with embedded sensitivity towards the consequences of present day actions and decisions.

9.4.1 A Focus on Duty: Industrial and Economic Development

Odisha's historical focus on exploiting its mineral and resource wealth can be analogous to a focus on duty; a clear focus on the here-and-now, to take advantage of the state's rich endowment. At the risk of over-simplifying the moral argument for this position, the assumption underpinning this deeply entrenched policy push in Odisha is that economic returns from industrialisation are for the benefit of all citizens of the state. This is achieved, for example, through job creation, improved infrastructure and royalties to boost state revenues which, in turn, will provide for social services such as education and health. Lord Krishna uses a similar position to implore Arjuna in the *Gita*, reminding him of his duty as a born warrior to go to war and fight for the side of the righteous.

As this strategy plays out for Odisha, the energy sector is developed to support the state's insatiable urge to encourage mining and industrial activity. The outcome observed for Odisha is an increase in installed power capacity predominantly fuelled by coal, which has incentivised greater industrial activity, whilst the revenue from industrial expansion has done little to promote citizens' social and economic upward movement.

Odisha's focus on industry-based economic development also intended to develop institutions capable of, through wealth redistribution, delivering a just world. Sen clarifies a similar interpretation of justice, in the form of *Nīti*, that encapsulates a focus on organisational propriety, bounded by the rules and roles of institutions. Yet, as it can be seen, wealth redistribution through these institutional mechanisms has largely remained a populist intention, delivering patchy outcomes at best. This regulatory and institution-bounded *Nīti* approach to justice has remained limited in its scope to equitably and meaningfully improve the Odia peoples' capabilities to live a fulfilled life.

For Sen, justice considerations need to be concerned with the actual lives that people live. Here, it can be seen that injustices have played out despite (or perhaps because of) the state's focus on duty. The extraction of resources for economic development has led to a series of negative externalities, degrading—not improving—people's quality of lives. For example, millions of rural (including indigenous, or locally called 'Scheduled Tribal') communities have suffered from decades of exploitation at the hands of their own 'duty-focused' state government machinery

(Mishra and Mishra 2014; Padel and Das 2006). People have suffered displacement, receiving negligible to poor compensation for forced land acquisitions, as well as exploitation by the mine contractors and middle men over the past several decades in Odisha. Whilst this holds true for communities living in the mineral-rich lands of the state, other rural parts of the state have suffered equally, or more. With limited resource endowments, southern regions of the state have been neglected in other ways, primarily through the state's lack of focus on creating a vibrant rural economy (Mishra and Mishra 2014; Mishra 2010).

In contrast to a *Nīti* interpretation of justice, recall that *Nyāya*, on the other hand, stands for a comprehensive account of realised justice. Both *Nīti* and *Nyāya* are Sanskrit terms for 'justice' yet diverge considerably in their interpretation. For Sen, as important as rules, regulations and the roles of institutions are, these need to be considered within the broader and more inclusive perspective of *Nyāya*, whereby the focus and consideration are importantly placed on the world that actually emerges. As Sen writes, 'we can never hand over the task of justice to some Nīti' (2009: 86).

9.4.2 A Sensitivity Towards Consequences: Transition to a Just and Sustainable Energy Sector

Without careful consideration of the consequences that ensue, Odisha's focus on economic and industrial development over-emphasises the here-and-now and remains largely blind to energy injustices of an inter-generational nature. For *Arjuna*, it was this sensitivity towards consequences that made him purposefully deliberate on whether to proceed to battle. In his deliberations, *Arjuna* considers not only past events and existing rules and norms to help guide a just course of action. He also considers what will actually happen in the world; in other words, the outcome from his actions (in this case, the decision to proceed to battle)—i.e. the killing that will be required, the severe fracturing of society and unravelling of the fabric that binds all members of one family together.

When considering Odisha's energy sector development over the past two decades, several important consequential outcomes are worth noting from a justice perspective. First, that benefits from energy sector development remain unequally distributed. Despite the increase in installed power capacity and Odisha being a largely power-surplus state, its institutions and processes have remained simply incapable of meeting the needs of the poor and maintaining the power sector's financial viability, as demonstrated by its high share of energy poor households and an expanding debt crisis. In other words, the consequence of Odisha's past and present larger focus on adding supply capacity for industrial customers, rather than expanding distribution infrastructure, has made energy access unaffordable and inaccessible, thus also limiting the prospects of sustainable rural development.

Second, Odisha's energy-led economic development has been predominantly fuelled by increases in coal-fired power generation. Furthermore, despite Odisha's ambitious renewable energy policy that indicates a desire to transition towards a cleaner energy sector, progress on the ground has been far too slow to instil any confidence in the state's ambition to achieve its proposed 2750 MW of renewable energy installed capacity by 2022. A 2016 assessment of renewable energy potential across India suggests Odisha has considerable untapped potential, standing at 27,728 MW, 93% of which is solar (25,780 MW) with a small potential of wind (1384 MW) (Central Electricity Authority 2016). Yet despite this potential, Odisha's slow progress puts it in the fifth lowest position for installed renewable energy capacity of all mainland states in the country (Central Electricity Authority 2016).

Additionally, a consequence-sensitive energy policy platform might reveal other foreseeable concerns, including financial burdens of current decisions. The risk of stranded coal-fired generation assets, particularly in a global climate that calls for rapid decarbonisation, as well as thermal-power-dependent industrial investments, for example, could be tabled and weighed in deliberations (Helm 2002; Sovacool and Scarpaci 2016).

9.5 Discussion: Progressing a Nyāya-Based Policy Direction

An energy policy position sensitive to the consequences of decisions made in the here-and-now inevitably holds justice implications across space and time. After considering, for example, the climate mitigation imperative from a consequence perspective, should policymakers in Odisha divert limited budget resources to rapidly transition from a coal-dependent power sector to renewable energy? Or, would they rather not encourage this transition in fear of what implications it might hold for Odisha's resource-based economy and/or local communities who rely on the sector for employment and livelihoods?

Importantly, a *Nyāya*-based interpretation of justice does not advocate for policymakers to be negligent towards acting, within their means, on their duty to promote a just and equitable society in the present day. Indeed, a persistent and unyielding consideration and concern for the limitless consequences of present actions can be counterproductive and ultimately lead to decision paralysis. A core, defining feature of a *Nyāya* perspective of justice is that it goes beyond the rather parochial understanding of duty as constructed by present day institutions, rules and norms (*Nīti*). Instead, *Nyāya* calls for a deeper focus on realised just outcomes that are cognisant of duty in the here-and-now, without compromising justice and ethics underlying future outcomes.

And so, the question remains, what exactly does a *Nyāya*-based energy policy pathway look like for Odisha? We offer a suite of principles that may better allow a *Nyāya*-based perspective of energy justice. Table 9.2 provides some guidance on foundational principles, acknowledging their relationship with the three tenets of energy justice (Jenkins et al. 2016).

Table 9.2 Principles for a *Nyāya*-based temporal energy justice policy platform

Principle	Description/rationale	Sample relevant literature
Principle 1. Inclusive, wider stakeholder participation in energy decision-making (*Recognition*)	Considerations of justice, from both an intra- and inter-generational perspective requires input from a broad set of stakeholders, including representation from groups who may not have that capacity (e.g. the next generation)	Delina and Janetos (2018), Sareen (2018), Bhattacharyya and Palit (2016)
Principle 2. Systems-based approach and policy integration (*Procedural*)	Policy integration is a critical component of harnessing the synergies and recognising justice-related trade-offs across different subject areas. A systems-based approach can provide a valuable platform to pursue an agenda that fosters policy integration	Hodbod and Adger (2014), Cherp et al. (2018), Sareen and Kale (2018), Malakar et al. (2019)
Principle 3. Polycentric governance (*Distributional*)	Multiple governing systems operating at multiple levels are needed to manage the plurality of stakeholders, each with divergent interests and priorities	Goldthau (2014), Delina (2012), Delina and Janetos (2018)
Principle 4. Principle-based policymaking and transparency (*Procedural and Distributional*)	Transparency of the ethical guidelines and principles, such as universal access to all and sustainability, that underpins particular actions and decisions invites both criticism and opportunities to engage	Sovacool et al. (2016), McCauley (2018), Bedi (2018)
Principle 5. Medium- to long-term planning and accountability (*Procedural*)	Moving past short-term time horizons for policymaking broadens the focus beyond the here-and-now, to incorporate the possibilities of future consequences into policy deliberations. This must be paired with accountability for energy decision-making	Sovacool and Van de Graaf (2018), Sovacool et al. (2016)
Principle 6. Adaptive management (*Procedural*)	Policies and programmes need to be flexible and adaptive to cope with realised justice outcomes as they transpire. New information, from continued monitoring, gives way to adjustments and readjustments over time	Damgaard et al. (2017), Healy et al. (2019)

Sen's construction of *Nyāya* allows for the emergence of a set of heuristic principles to guide practical reasoning on a realisation-focused account of justice (see Fig. 9.2). To that end, inclusive participation, the first principle to consider, is paramount in order to form a constructive assessment of actual social injustices that (have the potential to) emerge and how they may shape the lived realities of the affected peoples. For Sen, '[t]he central recognition here is that the realisation of justice in the sense of *Nyāya* is not just a matter of judging institutions and rules, but of judging the societies themselves' (2009: 20). Ensuring inclusive and wider stakeholder participation in energy-related decision-making is, therefore, a fundamental first principle, which carries instrumental and normative value for considering, and achieving, just outcomes.

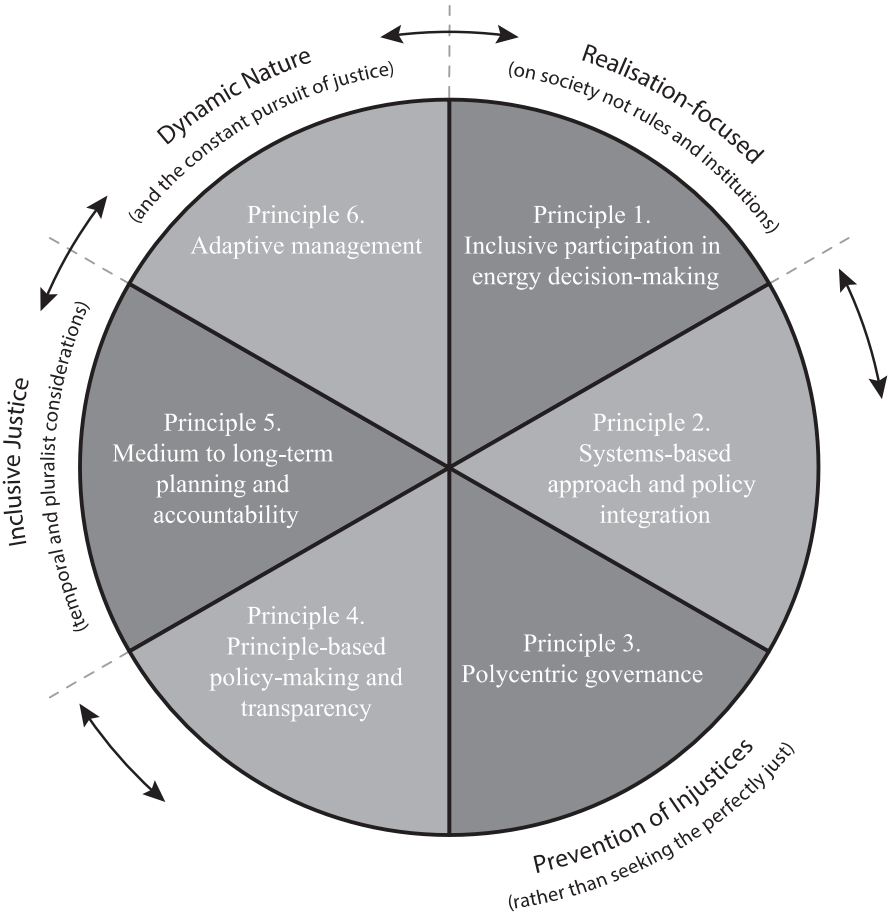

Fig. 9.2 A *Nyāya*-based construction of temporal energy justice

In the discourse on energy transitions, the plurality of intra- and inter-generational stakeholders along with the diversity in their agendas muddles the space for decision-makers. For Sen, it is the prevention of injustices, rather than a perfectly just society, that a *Nyāya*-based perspective promotes, thus flagging the decision-makers' responsibility to identify possible trade-offs: '[a] realisation-focused perspective also makes it easier to understand the importance of the prevention of manifest injustice in the world, rather than seeking the perfectly just' (2009: 22). A systems-based approach to policy integration (Principle 2), polycentric governance (Principle 3) and a policymaking environment that is guided by ethical principles and shared social values (Principle 4) all serve to increase transparency and accountability in these procedures and deliberations. The latter, in turn, allow identifying trade-offs and leveraging synergies to ensure just outcomes in energy decision-making.

Furthermore, a *Nyāya* interpretation of realised justice, inclusive of both a focus on duty and a sensitivity towards consequences, necessitates decision-makers to move beyond short-term thinking by embedding within their process long-term planning and accountability (Principle 5). The focus on comparison, a key component of the *Nyāya* system of public reason and inquiry, helps operationalise this shift and thus serves as a useful foundation for energy policymakers to think of energy justice beyond the immediate value. Energy scholars and practitioners from diverse backgrounds, from the technical to the social sciences, would be familiar with comparative-style tools such as scenario analysis, risk management, case study and narrative inquiry, to name a few. Applying such comparative methods to review and examine energy justice implications would further enable realised justice outcomes from divergent energy transition pathways.

For Sen, considerations of realised justice are essentially dynamic entities which thrive in an environment of review, adaptive feedback and monitoring: '[t]o ask how things are going and whether they can be improved is a constant and inescapable part of the pursuit of justice' (2009: 86). The distinction between *Nīti*—bound by established rules, norms and organisations—and *Nyāya*, which accounts for what actually arises and the lived realities for people in the world, carries with it a responsibility to ensure such *Nītis* do not lead to further injustice. As Sen explains, 'No matter how proper the established organisations might be, if a big fish could still devour a small fish at will, then that must be a patent violation of human justice as *Nyāya*' (2009: 21). Principle 6 of a *Nyāya*-based energy policy platform addresses this dynamic nature of justice, promoting an adaptive management style for deliberations, policy and practice. Adaptive management embeds qualities of flexibility, 'learning by doing' and iteration (Allen et al. 2011; Rist et al. 2012) as a means to manage inherent uncertainties and the dynamic nature of justice outcomes of energy transitions.

Several principles outlined above are certainly not new for energy scholarship, but through presenting them here, they highlight various points of convergence (and divergence) between Western and non-Western philosophies as they relate to energy justice and underlying temporality. In particular, a *Nyāya*-based perspective to unpacking the temporal nature of justice as it manifests in the examined case of Odisha's energy transitions carries with it new food for thought in relation to the value offered by the principles above.

9.6 Conclusion

In this chapter, we have used the temporal energy justice framework founded on Amartya Sen's interpretation of the Hindu *Bhagavad Gita* philosophy, to examine the justice temporalities embedded within the energy policy landscape of the Indian state of Odisha. Odisha presents an insightful case to study, situated firmly within a policy paradox resulting from the twin imperatives of transitioning away from coal to combat climate change and sustainable development for the state.

We find that Odisha's historical policy focus on resource extraction-driven industrial and economic development, akin to emphasising duty over consequence, has

not led to the anticipated trickle-down social and economic benefits for the majority of its people. Contrasting policy positions—a focus on duty versus a sensitivity to consequences—lead us to reveal justice implications of a temporal nature when policymakers fail to meaningfully engage in the latter. The energy sector in Odisha embodies this contrast well. Whilst augmented coal-fired power generation has supported resource industry growth, transitions and reforms in the energy sector have failed to serve the energy impoverished or to make meaningful contributions towards climate mitigation.

Guided by the Hindu philosophy, we introduce *Nyāya*, a Sanskrit term for justice, to appeal to Odisha's energy policymakers for a more comprehensive, inclusive account of realised justice, moving beyond what has historically been a here-and-now-driven policy environment. Whilst this chapter offers an initial introduction, more conceptual and empirical work is needed to help operationalise this temporal framework for energy justice, grounded in non-Western philosophy.

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References

Allen, C. R., Fontaine, J. J., Pope, K. L., & Garmestani, A. S. (2011). Adaptive management for a turbulent future. *Journal of Environmental Management, 92*(5), 1339–1345. https://doi.org/10.1016/j.jenvman.2010.11.019.

Ananthakumar, M. R., Rachel, R., Lakshmi, A., & Malik, Y. (2017). *Energy emissions*. Version 1.0 G. p. India. Retrieved from http://ghgplatform-india.org/data-and-emissions/energy

Bedi, H. P. (2018). 'Our energy, our rights': National extraction legacies and contested energy justice futures in Bangladesh. *Energy Research and Social Science, 41*, 168–175. https://doi.org/10.1016/j.erss.2018.04.009.

Bhardwaj, A., Joshi, M., Khosla, R., & Dubash, N. K. (2019). More priorities, more problems? Decision-making with multiple energy, development and climate objectives. *Energy Research & Social Science, 49*, 143–157. https://doi.org/10.1016/j.erss.2018.11.003.

Bhattacharyya, S. C., & Palit, D. (2016). Mini-grid based off-grid electrification to enhance electricity access in developing countries: What policies may be required? *Energy Policy, 94*, 166–178. https://doi.org/10.1016/j.enpol.2016.04.010.

Cameron, C., Pachauri, S., Rao, N. D., McCollum, D., Rogelj, J., & Riahi, K. (2016). Policy trade-offs between climate mitigation and clean cook-stove access in South Asia (Article). *Nature Energy, 1*, 15010. https://doi.org/10.1038/nenergy.2015.10.

Central Electricity Authority. (2016). *Draft National Electricity Plan (Volume 1) Generation*. New Delhi: Central Electricity Authority, Ministry of Power, Government of India.

Central Electricity Authority. (2018) *All india installed capacity (in mw) of power stations*. Ministry of Power (Government of India). Retrieved from http://www.cea.nic.in/monthlyinstalledcapacity.html

Cherp, A., Vinichenko, V., Jewell, J., Brutschin, E., & Sovacool, B. (2018). Integrating techno-economic, socio-technical and political perspectives on national energy transitions: A meta-theoretical framework. *Energy Research & Social Science, 37*, 175–190. https://doi.org/10.1016/j.erss.2017.09.015.

Damgaard, C., McCauley, D., & Long, J. (2017). Assessing the energy justice implications of bioenergy development in Nepal. *Energy, Sustainability and Society, 7*(1), 8. https://doi.org/10.1186/s13705-017-0111-6.

Das, S. P. (2016a). Economics of natural disasters in Odisha. In P. B. Nayak, S. C. Panda, & P. K. Pattanaik (Eds.), *The economy of Odisha: A profile* (pp. 266–300). New Delhi: Oxford University Press.

Das, S. P. (2016b). Transportation and power. In P. B. Nayak, S. C. Panda, & P. K. Pattanaik (Eds.), *The economy of Odisha: A profile* (pp. 174–230). New Delhi: Oxford University Press.

Das, M., & Nayak, M. (2018). Endless restructuring of the power sector in Odisha: A Sisyphean tale? In N. Dubash, S. Kale, & R. Bharvirkar (Eds.), *Mapping power: The political economy of electricity in India's states*. New Delhi: Oxford University Press.

Dash, N. L. (2007). *Economics of mining in Orissa*. Bhubaneswar: Government of Odisha. Retrieved from http://magazines.odisha.gov.in/Orissareview/nov-2007/engpdf/Pages69-76.pdf

Day, R., Walker, G., & Simcock, N. (2016). Conceptualising energy use and energy poverty using a capabilities framework (Article). *Energy Policy, 93*, 255–264. https://doi.org/10.1016/j.enpol.2016.03.019.

Delina, L. (2012). Coherence in energy efficiency governance. *Energy for Sustainable Development, 16*(4), 493–499. https://doi.org/10.1016/j.esd.2012.10.004.

Delina, L., & Janetos, A. (2018). Cosmopolitan, dynamic, and contested energy futures: Navigating the pluralities and polarities in the energy systems of tomorrow. *Energy Research & Social Science, 35*, 1–10. https://doi.org/10.1016/j.erss.2017.11.031.

Delina, L., & Sovacool, B. K. (2018). Of temporality and plurality: An epistemic and governance agenda for accelerating just transitions for energy access and sustainable development. *Current Opinion in Environmental Sustainability, 34*, 1–6. https://doi.org/10.1016/j.cosust.2018.05.016.

Dubash, N. K., Kale, S., & Bharvirkar, R. (Eds.). (2018). *Mapping power: The political economy of electricity in India's states*. New Delhi: Oxford University Press.

Goldthau, A. (2014). Rethinking the governance of energy infrastructure: Scale, decentralization and polycentrism. *Energy Research & Social Science, 1*, 134–140. https://doi.org/10.1016/j.erss.2014.02.009.

Gotama. (1974). The Nyaya sutras of Gotama (trans: Satis Chandra Vidyabhusana). Allahabad : Panini Office, AMS Press.

Government of India. (2011). *Census of India*. New Delhi: Government of India.

Government of India. (2018). *Indian Minerals Yearbook 2017.* Nagpur: M. o. M. Indian Bureau of Mines. Retrieved from http://ibm.nic.in/index.php?c=pages&m=index&id=1009

Government of Odisha. (2016). *Odisha Renewable Energy Policy*. Bhubaneswar: Department of Energy, Government of Odisha.

Government of Odisha and Government of India. (2016). '24x7 Power For All: Odisha' a joint initiative of Government of India and Government of Odisha. Retrieved from https://powermin.nic.in/content/power-all

Gross, R., Hanna, R., Gambhir, A., Heptonstall, P., & Speirs, J. (2018). How long does innovation and commercialisation in the energy sectors take? Historical case studies of the timescale from invention to widespread commercialisation in energy supply and end use technology (Article). *Energy Policy, 123*, 682–699. https://doi.org/10.1016/j.enpol.2018.08.061.

Healy, N., Stephens, J. C., & Malin, S. A. (2019). Embodied energy injustices: Unveiling and politicizing the transboundary harms of fossil fuel extractivism and fossil fuel supply chains. *Energy Research & Social Science, 48*, 219–234. https://doi.org/10.1016/j.erss.2018.09.016.

Helm, D. (2002). Energy policy: Security of supply, sustainability and competition. *Energy Policy, 30*(3), 173–184. https://doi.org/10.1016/S0301-4215(01)00141-0.

Hodbod, J., & Adger, W. N. (2014). Integrating social-ecological dynamics and resilience into energy systems research. *Energy Research & Social Science, 1*, 226–231. https://doi.org/10.1016/j.erss.2014.03.001.

IEA. (2015). *World Energy Outlook 2015 Special Report: India Energy Outlook*. Paris: OECD Publishing.

IEA, IRENA, Nations, U., Group, W. B., & WHO. (2018). *Tracking SDG: The Energy Progress Report 2018*. Washington, DC: World Bank. Retrieved from https://openknowledge.worldbank.org/handle/10986/29812

India Brand Equity Foundation. (2018). *Industrial Development & Economic Growth in Odisha*. New Delhi. Retrieved from https://www.ibef.org/archives/state/odisha-reports/industrial-dev-economic-growth-november-2018

India Census. (2011). *Census of India: Percentage of households to total households by amenities and assets (India & States/UTs - District Level)*. New Delhi: Office of The Registrar General & Census Commissioner. Retrieved from http://www.censusindia.gov.in/2011census/hlo/Houselisting-housing-PCA.html

International Institute for Population Sciences and ICF. (2017). National Family Health Survey (NFHS-4), India, 2015-16: Odisha. Mumbai: International Institute for Population Sciences (IIPS). Retrieved from http://rchiips.org/NFHS/NFHS-4Report.shtml

IPCC. (2018). Summary for Policymakers. In V. Masson-Delmotte, P. Zhai, H. -O. Pörtner, D. Roberts, J. Skea, P. R. Shukla, et al. (Eds.), Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. World Meteorological Organization, Geneva, Switzerland, 32 pp.

Jenkins, K., McCauley, D., Heffron, R., Stephan, H., & Rehner, R. (2016). Energy justice: A conceptual review (Article). *Energy Research and Social Science, 11*, 174–182. https://doi.org/10.1016/j.erss.2015.10.004.

Kale, S. (2014). *Electrifying India: Regional political economies of development*. United States: Stanford University Press.

Lund, P. (2006). Market penetration rates of new energy technologies (Article). *Energy Policy, 34*(17), 3317–3326. https://doi.org/10.1016/j.enpol.2005.07.002.

Malakar, Y., Herington, M. J., & Sharma, V. (2019). The temporalities of energy justice: Examining India's energy policy paradox using non-western philosophy. *Energy Research & Social Science, 49*, 16–25. https://doi.org/10.1016/j.erss.2018.11.002.

McCauley, D. (2018). *Energy justice re-balancing the trilemma of security, poverty and climate change*. Cham: Springer: Imprint: Palgrave Macmillan.

McCollum, D. L., Krey, V., & Riahi, K. (2011). An integrated approach to energy sustainability. *Nature Climate Change, 1*, 428. https://doi.org/10.1038/nclimate1297.

Mishra, B. (2010). Agriculture, industry and mining in Orissa in the Post-Liberalisation Era: An Inter-District and Inter-State Panel Analysis. *Economic and Political Weekly, 45*(20), 49–68.

Mishra, B., & Mishra, S. (2014). Mining and industrialisation: Dangerous portents. *Economic and Political Weekly, 49*(14), 56–65.

Nayak, P. B., Panda, S. C., & Pattanaik, P. K. (Eds.). (2016). *The economy of Odisha. A profile*. New Delhi: Oxford University Press.

Oliver, J. G. J., Janssens-Maenhout, G., Muntean, M., & Peters, J. A. H. W. (2016) *Trends in Global CO2 Emissions: 2016 Report*. The Hague: PBL Netherlands Environmental Assessment Agency 2315. Retrieved from http://www.pbl.nl/en/publications/trends-in-global-co2-emissions-2016-report

Padel, F., & Das, S. (2006). Double death: Aluminium's links with genocide. *Social Scientist, 34*(3/4), 55–81. Retrieved from http://www.jstor.org/stable/27644128

Palit, D., & Bandyopadhyay, K. R. (2017). Rural electricity access in India in retrospect: A critical rumination. *Energy Policy, 109*, 109–120. https://doi.org/10.1016/j.enpol.2017.06.025.

Pellegrini-Masini, G., Corvino, F. & Lofquist, L. (2019). Energy justice and intergenerational ethics: theoretical perspectives and institutional designs. In Bombaerts, G., Jenkins, K. E. H., Sanusi, Y. & Wang, G. (Eds.) *Energy justice across borders*. Springer.

Rao, S. (2015). Practices of Indian Journalism: Justice, ethics, and globalization. In S. Rao & H. Wasserman (Eds.), *Media ethics and justice in the age of globalization* (pp. 121–138). London: Palgrave Macmillan.

Rist, L., Campbell, B. M., & Frost, P. (2012). Adaptive management: Where are we now? *Environmental Conservation, 40*(1), 5–18. https://doi.org/10.1017/S0376892912000240.

Sareen, S. (2018). Energy distribution trajectories in two Western Indian states: Comparative politics and sectoral dynamics. *Energy Research & Social Science, 35*, 17–27. https://doi.org/10.1016/j.erss.2017.10.038.

Sareen, S., & Kale, S. S. (2018). Solar 'power': Socio-political dynamics of infrastructural development in two Western Indian states. *Energy Research & Social Science, 41*, 270–278. https://doi.org/10.1016/j.erss.2018.03.023.

Sen, A. (2009). *The idea of justice*. London/New York, Allen Lane/Penguin Books.

Sovacool, B. K., & Scarpaci, J. (2016). Energy justice and the contested petroleum politics of stranded assets: Policy insights from the Yasuní-ITT Initiative in Ecuador. *Energy Policy, 95*, 158–171. https://doi.org/10.1016/j.enpol.2016.04.045.

Sovacool, B. K., & Van de Graaf, T. (2018). Building or stumbling blocks? Assessing the performance of polycentric energy and climate governance networks. *Energy Policy, 118*, 317–324. https://doi.org/10.1016/j.enpol.2018.03.047.

Sovacool, B. K., Heffron, R. J., McCauley, D., & Goldthau, A. (2016). Energy decisions reframed as justice and ethical concerns. *Nature Energy, 1*(5), 16024. https://doi.org/10.1038/nenergy.2016.24.

Sovacool, B. K., Burke, M., Baker, L., Kotikalapudi, C. K., & Wlokas, H. (2017). New frontiers and conceptual frameworks for energy justice. *Energy Policy, 105*, 677–691. https://doi.org/10.1016/j.enpol.2017.03.005.

Spencer, T., Colombier, M., Sartor, O., Garg, A., Tiwari, V., Burton, J., et al. (2018). The 1.5°C target and coal sector transition: at the limits of societal feasibility. *Climate Policy, 18*(3), 335–351. https://doi.org/10.1080/14693062.2017.1386540.

Stechow, C. v., Minx, J. C., Riahi, K., Jewell, J., McCollum, D. L., Callaghan, M. W., et al. (2016). 2 °C and SDGs: United they stand, divided they fall? *Environmental Research Letters, 11*(3), 034022. Retrieved from http://stacks.iop.org/1748-9326/11/i=3/a=034022

Stirling, A. (2014). Transforming power: Social science and the politics of energy choices. *Energy Research & Social Science, 1*, 83–95. https://doi.org/10.1016/j.erss.2014.02.001.

The World Bank (2016) *Odisha—Poverty, growth and inequality*. India state briefs. Washington, DC: World Bank Group. Retrieved from http://documents.worldbank.org/curated/en/484521468197097972/Odisha-Poverty-growth-and-inequality

The World Bank. (2018) *GINI index (World Bank estimate)*. D. R. Group World Development Indicators. The World Bank. Retrieved October 12, 2015, from https://data.worldbank.org/indicator/SI.POV.GINI.

Thillai Rajan, A. (2000). Power sector reform in Orissa: An ex-post analysis of the causal factors. *Energy Policy, 28*, 657–669.

UNDP. (2011) *Economic and Human Development Indicators*. UNDP Factsheets: Odisha. New Delhi: United Nations Development Program.

van Vuuren, D. P., Nakicenovic, N., Riahi, K., Brew-Hammond, A., Kammen, D., Modi, V., et al. (2012). An energy vision: The transformation towards sustainability—Interconnected challenges and solutions. *Current Opinion in Environmental Sustainability, 4*(1), 18–34. https://doi.org/10.1016/j.cosust.2012.01.004.