1 *Political Economies of Energy Transition in Brazil and South Africa*

Wind and solar power are growing at remarkable rates worldwide, driving new industries worth many billions of dollars every year. These developments have eased a possible transition to a lower-carbon energy system, itself crucial for addressing global climate change. Yet as wind and solar power are growing beyond minimal levels, they are becoming increasingly disruptive to existing electricity systems and economies. The analytical starting point for this book is that a renewable energy transition requires a large-scale political economy transition. That is, successful energy transitions mean changing a series of political and economic arrangements even as they also demand new physical infrastructure and patterns of electricity consumption. Incumbent sources of electricity are locked in "through a complicated series of interlocking payments, patronage, and tax arrangements" (Victor and Heller 2007a: 274) that often contributes to making them both cheaper sources of electricity and politically entrenched. This book is about the potentially disruptive power of renewable electricity and the political and economic challenges associated with its expansion in middle-income and developing countries.

Almost all existing studies of renewable energy focus on advanced industrialized countries or China (e.g., Aklin and Urpelainen 2018; Geels 2014; Gilley 2012; Karapin 2016; Lewis 2013; Moe 2015). Often motivated by concerns about global climate change, these countries led the way in developing the sector, introducing many innovations and enabling a sharp drop in costs. Renewable energy has been an economic and environmental game changer for the early adopters. This book turns from advanced industrialized countries to cover the development of wind and solar power in Brazil and South Africa, two important emerging economies. With India, Mexico, and others, their investments in wind and solar power are starting to catch up with those of the first generation of developers of nonhydro forms of renewable energy (Frankfurt School-UNEP

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Centre/BNEF 2019: 14).[1] Most of the future growth in the sector will come in middle-income and developing countries, as will much of the future greenhouse gas (GHG) emissions. This book takes on the critical question of whether renewable energy can be an economic and environmental game changer for such countries as well, using the Brazilian and South African cases to illuminate the dynamics that arise.

Economic growth is important for all countries, but it is an especially high priority in middle-income and developing countries. In a low-carbon energy transition, economic growth is decoupled from GHG emissions, meaning that an economy can grow even as GHG emissions fall. This can happen as the economy draws on energy inputs that are less carbon intensive (like wind and solar sources of electricity) and as a result of related transformations in the socioeconomic model (Geels 2014; Meadowcroft 2009). If a low-carbon transition is feasible, it could transform some of the long-standing tensions between environmental and economic development goals. Thus, this book allows for a reconsideration of the relationship between environment and development in two emerging powers, a generation after the Brundtland Report popularized the claim that sustainable development was possible (World Commission on Environment and Development 1987).

Economically, policies promoting wind and solar power were some of the most common governmental responses to the 2008 financial crisis. This modern economic sector, promising strong future demand, good manufacturing jobs, and lots of room for innovation, appeals to many countries as a growth sector (Aggarwal and Evenett 2012; Hess 2012). Because it can operate at a small scale, solar power can also bring to unserved consumers and communities everything from electric light to cell phone charging to medical clinics. Environmentally, three-quarters of the GHG emissions that cause climate change come from the extraction, refining, and industrial use of fossil fuels, with the electricity sector accounting for 31 percent

[1] Brazil also produces other forms of renewable energy, especially hydropower and biofuels. It has a petroleum industry, too, and both countries have actual (Brazil) and potential (South Africa) natural gas resources. For tractability, this book focuses only on wind power and photovoltaic solar power, so it is not a full account of energy transition. It also focuses primarily on grid-scale electricity because it is most common in these countries, although Chapters 2 and 4 discuss distributed solar generation.

of all global emissions in 2014.[2] Clean, renewable electricity – including solar and wind power – could replace fossil fuels, generating minimal GHG emissions and fewer of the other environmental impacts of power installations. It is no wonder that expanding renewable energy is central to the UN's Sustainable Development Goals and the Paris Agreement on Climate Change.

At the same time, there are equally evident problems with the transition to these new sources of electricity. Broader use of renewable energy will require expensive changes in existing electricity grids, as well as the displacement of powerful entrenched actors in traditional electricity sectors (Aklin and Urpelainen 2018; Geels 2014; Ting and Byrne 2020). As existing electricity sources are shut down, the communities and workers who depended on them will lose out (Healy and Barry 2017; Swilling, Musango, and Wakeford 2016) – even as the quantity and quality of new jobs are not always as advertised. Market forces are unlikely to push a low-carbon transition when fossil fuels are still readily available and their costs can be externalized. Instead, government support is needed, at least to start the transition, risking expensive rent-seeking (Pegels 2014a: 3–4). Despite striking declines since 2009, the market costs of renewable sources of electricity have usually been higher than those of the fossil fuels they would replace (Schlömer et al. 2014: 1332–1333). Further, the typically small installations of wind and solar power can have significant negative effects on local conditions – birdlife, economic activities, and so on – leading to community opposition (Avila 2018).

Notwithstanding the challenges outlined, 164 countries had some kind of renewable energy target by 2015 (International Renewable Energy Association 2016a: 8). Governments around the world are promoting wind and solar power (e.g., Aggarwal and Evenett 2012; Aklin and Urpelainen 2018; Barbier 2010: 6–10; Hochstetler and Kostka 2015; Kim and Thurbon 2015; Lewis 2013; Mazzucato 2015; Moore 2018; Nahm 2017; Pegels 2014b; Unruh 2002; Wu 2018; Zysman and Huberty 2014). But how are states intervening, and why are they intervening as they are? Will those interventions be successful, and on what terms? Which other actors help to determine outcomes, in cooperation with or against states? Cross-cutting all of this is the "just

[2] www.climatewatchdata.org/ghg-emissions?breakBy=sector&chartType=percentage.

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transition" question: Who will pay the costs and receive the benefits of energy transition? I argue that answering these questions for Brazil and South Africa requires investigating four political economies of renewable energy: those of climate change, industrial policy, distribution and consumption, and siting. These are all potential drivers of renewable energy expansion or delay, each reflecting the problem structure of a different policy sector related to renewable energy.

To briefly introduce the themes of each political economy, Chapter 2 examines the role of wind and solar power plans in the climate action commitments of Brazil and South Africa, looking directly at how such plans reflect the balance of forces between actors who favor low-carbon and high-carbon economic models. Chapter 3, on industrial policy, sees low-carbon transition as a problem of developing the firms and industries that can generate electricity from non-fossil fuel sources. Chapter 4 asks whether and how renewable electricity can meet the needs of both household and industry consumers, paying attention to price, physical access, and quality concerns. Although most of the book is about grid-scale wind and solar power because that is where Brazil and South Africa have focused their policies, this chapter addresses the question of distributed (small or household-level) generation as well. In Chapter 5, I examine the siting challenge: renewable electricity plants, like all physical infrastructure, must be sited in particular locations, where their impact on local ecosystems and communities may generate support or opposition.

Explanations of wind and solar power adoption usually focus on only one or perhaps two of these dynamics. Yet they simultaneously present different packages of incentives and disincentives for wind and solar power generation that interlock to sometimes reinforce and sometimes oppose each other. A powerful coalition to support climate action may lose out to coalitions worried about protecting existing industries and minimizing costs, for example, or could get an additional boost from them. Understanding national renewable energy outcomes requires looking not just at a fuller array of policy sectors implicated in renewable energy but also at their intersection. Always important, these observations are especially critical for middle-income and developing countries where the economic drivers are particularly important and may or may not coincide with the climate change motivations that drove many early adopters.

All of these are critical questions for major emerging powers like Brazil and South Africa. These two countries are now among the

top emitters of GHG globally, but they reached that status decades after the current industrialized powers did and are still catching up economically. They have been rapidly building out their electricity infrastructures, both to support their expanding (they hope) economies and to bring historically excluded citizens onto national electricity grids (Abromovay 2010; Leite 2009; Winkler 2009). Their decisions about the electricity sources that will power their next decades of economic growth are central to current uncertainty about whether global GHG emissions targets can be met – and are also potentially important models for their regions and other later-rising countries (Downie and Williams 2018; Masters 2011). As Brazil and South Africa always rank as some of the most unequal countries in the world, they face particularly compelling questions about who will pay the costs of energy transitions.

Figure 1.1, which shows the amount of wind and solar power procured for the national grid in Brazil and South Africa between 2002 and 2019, tracks intriguingly different outcomes that also suggest that there is no single political economy of energy transition. Wind power generation in Brazil started earliest and is by far and away the most

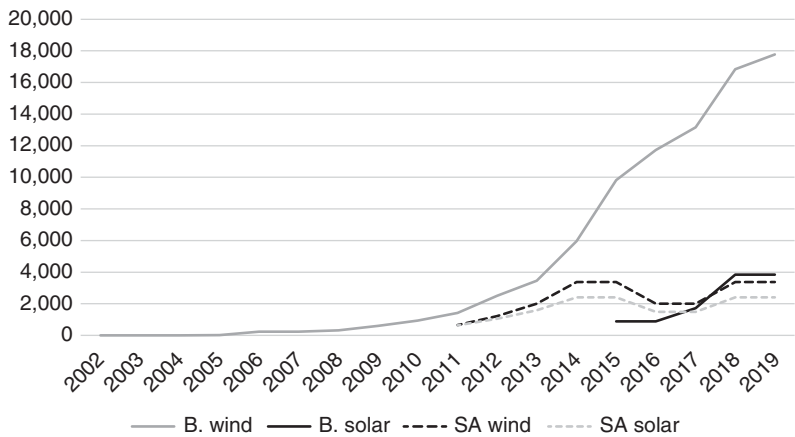

Figure 1.1 Cumulative MW wind and solar power contracted for national grids in Brazil and South Africa, 2002–2019
Sources: www.aneel.gov.br/resultados-de-leiloes; www.eskom.co.za/Whatweredoing/Pages/RE_IPP_Procurement_Programme.aspx.

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expansive. It was about 9 percent of total electricity supply in 2019. Solar power generation there was the latest of any of the forms of generation to start, beginning twelve years after wind power in Brazil. Yet it has now caught up in quantity to wind and solar power in South Africa, where both kinds of electricity share a pattern of advances and retreats and have never quite taken off. They are together less than 5 percent of the built electricity supply in South Africa.

In different ways, the two countries also show the usefulness of considering how multiple political economies of energy transition intersect. For example, most of the articles cited earlier in the chapter see climate change policy as a crucial motivator for adopting wind and solar power. One could understand Brazil's development of wind power as part of its climate action strategy and find evidence in government statements and industry commitments to support that. But no climate action strategy easily justifies producing a great deal of wind power while ignoring the low-carbon potential of solar power in a sunny, tropical country. A climate-based explanation of energy transition in Brazil would be misleading. The contrasting outcomes must come from other dynamics, and I conclude that industrial policy and cost considerations are the political economies that best account for the different fates of wind and solar power in Brazil, undercutting the climate rationale for solar power.

South Africa shows a pattern that appears to be much more consistent with the political economy of climate change. The Electricity Supply Commission (Eskom), the public utility that has historically powered South Africa with cheap coal, is at the center of a state–society coalition that defends that incumbent fossil fuel. Meanwhile, the renewable energy sector – wind and solar power alike – has found other state and civil society allies to help it push for that change which is critical to reducing GHG emissions there. The starts and stops visible in Figure 1.1 reflect their power struggle. Yet the struggle is especially intense because several of the other political economies aggravate the divisions. Will public sector jobs be created in Eskom's coal plants or will jobs be found in the private companies chosen to build wind and solar plants? That industrial policy question moved much of the labor movement from an early alliance with environmentalists in favor of climate action to the coalition resisting energy transition. Arguments about comparative production costs see the same actors in place in their countervailing coalitions. In South

Africa, a climate-based political economy story is incomplete but not wholly misleading.

These brief observations begin to illustrate how energy transition simultaneously engages multiple political economy transitions in potentially different ways in different places. While sharing many common features, the two countries studied here differ on a key element of energy transition (Moe 2015). South African electricity is dominated by a fossil fuel, coal, while Brazil's hydro-based electricity system is not. An important fact in itself, it is also the linchpin of this comparison of two national political economies of energy transition.

1.1 Political Economies of Energy Transition

What sources of energy do states prioritize? This is the basic dependent variable of this book. Will electricity come from fossil fuels or from new renewables like wind and solar power? When and how do states intervene to support a low-carbon transition? Drawing on existing studies of energy transition and comparative political economy, I argue that the answers to these questions engage three stages of analysis. I begin with the generic interests of state and societal actors in four policy arenas related to the electricity sector, the four political economies. However, those interests do not generate outcomes on their own; interests must be actively defended by what I characterize here as pro-reform and status quo coalitions operating inside existing institutions and socioeconomic structures.

The final step in the analytical framework analyzes the interconnections among the policy arenas. These may go well beyond policy coordination issues, as actors and dynamics may spill across the policy arenas to reinforce each other either for interlocking positive ("green spiral") or for oppositional outcomes. I argue that the presence of a strong status quo coalition in the electricity sector that is committed to fossil fuels will generate such politicized and contentious spillovers, while national settings without such an actor may have more technical and bureaucracy-dominant energy transition processes with fewer direct connections among the actors and the debates in the four policy arenas. Sections 1.1.1–1.1.3 and 1.2 develop this analytical and theoretical framework before Sections 1.3 and 1.4 introduce the cases.

1.1.1 Political Economies of Wind and Solar Power: Interests, Coalitions, and Institutions

A standard starting point for analysis of a policy change is to consider the nature and structure of the private and public interests involved (Oye and Maxwell 1994: 594). In environmental policy more generally, certain relationships are expected to hold (Lyon and Yin 2010; Oye and Maxwell 1994): potential beneficiaries are assumed to support a policy change, while those who would be harmed by it will resist. Policy-makers in democracies are assumed to be at least somewhat responsive to how a policy change will affect the interests of their political base. Benefits or harms that are large, concentrated in specific populations, and/or certain are more likely to drive policy processes – not least because those characteristics support collective action – while those that are small, diffused, and/or uncertain are less likely to do so.

Yet interests play a complex role in explaining previous political economy transitions like market reform (Kingstone 1999: 4; Schneider 2004: 458–459). While participants in those transitions often had a basic preference for market- or state-based economic decision-making, those preferences could vary depending on whether, say, trade or financial liberalization was at stake (Schneider 2004: 461). Groups could also accept reforms against their interests if they were offered compensation elsewhere (Kingstone 1999: xxi; Murillo 2001), an idea with parallels in the demands that labor and other actors make for a just energy transition (Stevis and Felli 2015). I expect that interests alone cannot account for a low-carbon energy transition, either.

Wind and solar power also exhibit substantially different structures of interest depending on the vantage point from which they are considered (Hughes and Lipscy 2013: 451–452). The topic of each of the four main chapters of this book departs from a different version of the interests involved in expanding wind and solar power. Each policy arena triggers the active engagement of potentially different sets of actors in both state and society to defend those interests, creating multiple potential alignments of supporters and opponents. Environmental ministries play lead roles in some, for example, while economic agencies and banks dominate in others. As a corollary, each policy arena also offers a unique insight into the drivers of and obstacles to a just low-carbon transition.

Interests cannot generate outcomes on their own. Key participants in the state, economy, and civil society must embody and promote them through concrete actions in order to result in policy change. Coalitional analysis is a very common strategy for explaining political economy outcomes (Hess 2014: 279; Schneider 2004: 456; Shadlen 2017); changes in those state–society coalitions then account for changes in outcomes or maintenance of the status quo. A number of authors have already made related arguments about energy transition, showing that a country's decisions about whether to take climate and energy action are the product of active coalition-building and struggle among three key sets of actors defending their interests: state actors, business associations and firms, and civil society groups (e.g., Breetz, Mildenberger, and Stokes 2018; Downie 2018; Hadden 2015; Hess 2018; Hochstetler and Viola 2012; Meckling 2011; Newell and Paterson 2010; Roberts et al. 2018; Stokes 2013; Vasi 2011; Zysman and Huberty 2014). This book goes on to show that there are multiple coalitions simultaneously being built, grounded in the multiple policy framings of wind and solar power.

Beyond the coalitions themselves, important institutional and socioeconomic legacies affect which actors are present to form coalitions in the first place, and endow them with differentiated power resources. Renewable energy does not emerge in a vacuum. Its fate inevitably reflects path dependencies from existing contexts that may have little to do even with electricity. Better understanding of such historical institutional dimensions is a major component of the emerging research agenda on energy transitions (Lockwood, Kuzemko, Mitchell, and Hoggett 2016; Roberts et al. 2018; Roberts and Geels 2019). Some of these elements are widely shared, if varying, like the contrasting experiences of democracies – which will almost always have more actors actively engaged and potentially powerful in a policy sector, whatever it is – and autocracies of various kinds. This characteristic makes Brazil and South Africa different from the emerging power case most commonly studied, China. Some of the other elements will be more specific, however, like the particular industrial history in Brazil that allows it to make an existing airplane industry one of the building blocks of a wind turbine industry, which South Africa lacks. As this is an emerging research agenda, this book helps to identify relevant dimensions through its case studies.

Finally, principled advocates who lack direct self-interest in the outcomes have helped to promote the global development of the wind and solar industries (Vasi 2011). Principled actors – or those with both self-interested and principled motivations – may appear in any type of coalition, active themselves and magnifying the efforts of other actors (Hadden 2015: 5; Prakash and Gugerty 2010: 1). In energy transitions, an especially important set of principled actors focuses on just transition issues, looking especially for the impacts on marginalized and vulnerable populations (Newell and Mulvaney 2013: 133; Sovacool, Burke, Baker, Katikalapudi, and Wlokas 2017: 677). These relate to substantive outcomes as well as to procedural questions about who is included in policy-making and who is actually influential. If participants view the overall distribution of costs and benefits as unjust, that will affect the fate of wind and solar power and their accompanying low-carbon transition (Roberts et al. 2018: 305).

1.1.2 Interests and State–Society Coalitions in Four Political Economies

Moving beyond abstract discussions of interests and state–society coalitions, I introduce four major political economies of renewable energy in this section. These have been four of the most common potential drivers behind energy transition, either accelerating or blocking energy transition. For each, I draw on existing studies to sketch the nature of the interests involved and the actors who typically make up coalitions in this arena (summarized in Table 1.1). I also identify relevant theoretical frameworks that analysts use to explain outcomes in this policy arena, which identify more specific themes for study. These are then developed further in the chapters themselves, which each focus on one driver.

The focus on climate change and low-carbon transitions in Chapter 2 emphasizes the potentially large but dispersed and uncertain benefits of decarbonization. These are accompanied by concentrated costs for the high-carbon electricity sector, which must be limited to reduce GHG emissions (Levin, Cashore, Bernstein, and Auld 2012; Pearson and Foxon 2012). As a result, the climate frame powerfully mobilizes opponents from incumbent fossil fuel sectors and their allies in government, including energy ministries and utilities (Aklin and Urpelainen 2018; Geels 2014; Huberty 2014: 34–35; Ting and Byrne 2020). The

Table 1.1 *Policy arenas governing renewable electricity production and use*

Policy Arena	Basic structure of interests	Primary state actors expected	Primary societal actors expected
Chapter 2 Climate Change Policy	Broad and diffuse future benefits from climate action; concentrated costs for fossil fuel actors in electricity sector	Environment, energy, and foreign ministries, Legislature, Executive	Organized societal groups, differentiated by attitudes toward low-carbon transition; fossil fuel industries
Chapter 3 Industrial Policy	Broad interests in economic outcomes like innovation, employment, and growth (cobenefits) that are also concentrated benefits for firms in wind and solar sectors; possible costs from rent-seeking	Development and energy ministries, public finance institutions	Firms and industry associations, labor, private finance institutions
Chapter 4 Social Policy/ Service Provision	Diffuse costs for consumers and concentrated costs for electricity-intensive industries; concentrated benefits for those without electricity access	State roles in service provision: utilities, regulators, politicians in electoral democracies	Industrial and household consumers – individual and collective
Chapter 5 Siting Policy	Concentrated costs and/or benefits for hosting communities	Environmental and planning ministries, licensing agencies	Local communities, environmental activists

diffuse and future-oriented nature of the climate benefits of wind and solar power draws in principled proponents who value outcomes beyond short-term interests, such as environmental activists and ministries (Hochstetler and Viola 2012; Hughes and Urpelainen 2015: 52; Levin et al. 2012).

In the climate policy arena, the most important theoretical questions are about state capacity in its classic and broadest sense (Evans, Rueschemeyer, and Skocpol 1985). That is, do states have the capacity to formulate and implement policies that achieve broad public goods, even when powerful societal actors are harmed by those policies (Meckling and Nahm 2017: 741)? This is both the positive capacity to plan and execute policy that provides public goods and the negative capacity to take on powerful societal interests that benefit from existing energy systems. The state's own policy-making and bureaucratic capacities are central to this chapter.

Viewing wind and solar power through the lens of green industrial policy (GIP), as Chapter 3 does, highlights a very different interest calculus: certain, concentrated benefits through rents accrue to a small set of firms in the promoted sector while costs are more widely dispersed (Hughes and Urpelainen 2015: 53; Kelsey and Zysman 2014: 79–81; Pegels 2014a: 1). Since firm assets are specific to different electricity sources, mobilization on industry lines is likely with wind and solar firms and their industry associations being dominant actors along with state economic agencies (Hughes and Lipscy 2013: 459). While the benefits are most direct for the sector itself, national governments also conceive outcomes like jobs and new industry creation as economic benefits or "cobenefits" of energy transition for the country as a whole (Aggarwal and Evenett 2012). In this chapter, just transition concerns emerge in one of their earliest formulations, by labor unions, who wonder whether a low-carbon transition will actually replace current high-carbon energy and industry sector jobs with decent work accessible to those same workers (Stevis and Felli 2015).

Theoretically, this chapter develops debates about how state–business relations can contribute to development. This begins with basic preferences for state or market control over the electricity sector before passing to the specific policies that might promote wind and solar industries. These also involve state capacity but with a narrower focus on how well states can manage positive rents. Classic

formulations are concerned with the ability of economic bureaucracies to avoid "capture" by the private sector actors they regulate and to use economic tools to discipline them to avoid excessive rent-seeking (Amsden 2001; Johnson, Alterburg, and Schmitz 2014), while others stress that states need close ties to business for success (Evans 1995: 12). Scholars studying GIP – sector-promoting industrial policies with environmental aims – have argued that the process of developing renewable energy can take advantage of these tensions. The countries that have developed substantial wind and solar power typically experienced a "green spiral" where initial steps towards new kinds of electricity were locked in politically as industry coalitions began to lobby to continue to expand their industry with the support of associated labor, parts suppliers, and so on (Kelsey and Zysman 2014: 79; see also Aklin and Urpelainen 2018; Meckling, Kelsey, Biber, and Zysman 2015).

Chapter 4, on electricity service provision, finds diffuse costs of wind and solar power typically spread across industrial and household consumers, along with some potential concentrated benefits for consumers who currently lack access to electricity (Márquez and Rufín 2011; Monyei, Adewumi, and Jenkins 2018). The diffuse costs come from the historically (much) higher costs of wind and especially solar power, as well as the problems their intermittency raises for the security of electricity supply (Trainer 2007). A small number of consumers in electricity-intensive industries may also face concentrated costs and benefits from any policies chosen for tariffs and distribution in the sector. In this book on two middle-income countries, the question of access to electricity is much more important than in the countries usually studied.

This chapter's theoretical theme invokes all the considerations related to government service provision, including debates about levels and distribution of government provision, tariff-setting and possible cross-subsidization of costs by some consumers or taxpayers, and the political and economic implications of access to electrical services (Golden and Min 2013; Henisz and Zelner 2006; Márquez and Rúfin 2011). Modern standards of competent governance assume that states will oversee and often provide universal access to electricity for household and economic consumption, as it is a critical input into a number of socially and economically desirable outcomes (Brown and Mobarak 2009: 194). The ambition for universality makes the societal actors correspondingly broad, including household consumers, industrial

consumers, and those without access to the grid. Each of these may or may not be represented by collective actors promoting their interests.

Finally, Chapter 5 focuses on the impact of renewable energy infrastructure on the local communities and environments where wind and solar plants are sited (Avila 2018; McAdam and Boudet 2012; Stokes 2016). It acknowledges considerable theoretical debate over the nature of the interests at stake. Scholars in economics and energy disciplines tend to assume that there will be net economic benefits for host communities, with much of their debate focused on how to measure and compare the gains (e.g., Brown, Pender, Wiser, Lantz, and Hoen 2012). Geographers and anthropologists, in contrast, are much more likely to see sociocultural and environmental harms, expecting local resistance to defend the human rights of host communities, with vulnerable populations under systemic threat (e.g., Avila 2018; Zhouri and Valencio 2014). This chapter considers both possible logics.

However communities assess their interests, they must be able to organize to affect outcomes. Drawing on theories of the emergence and success of social movements, in this chapter, I assess state actors and institutions for the constraints and opportunities they present for social groups to organize collective action and influence outcomes (McAdam, McCarthy, and Zald 1996; Tarrow 2011). Environmental impact assessment (EIA) and land-use policies, including those developed for historically excluded groups, are particularly important here (Hochstetler and Tranjan 2016; McEwan 2017). Another strand of research examines the ability of social movements and other collective actors to take advantage of structural opportunities that might exist: can they overcome the disincentives to collective action, mobilize resources, and coordinate coalitions that are coherent enough to bring pressure on the state; and *how* will they do so (Hadden 2015; Prakash and Gugerty 2010)?

In this book, I propose that to understand the renewable energy choices of Brazil and South Africa, we need to analyze the multiple status quo and reformist coalitions that form around wind and solar power, depending on the policy sector. Those coalitions are grounded in a generalizable underlying foundation in interests and institutions, and the energy transitions literature is helpful for identifying the effects of those. Actual outcomes, however, are crafted in path-dependent ways out of the distinct political economies of energy in national economies (Edomah 2020; Hughes and Lipscy 2013: 452; MacNeil

and Paterson 2012; Nahm 2017). The final shape of the four political economies and the ways in which their elements intertwine – sometimes reinforcing, sometimes counteracting – are likely to be somewhat different for every country. Section 1.1.3 elaborates how that happens.

1.1.3 Interlocking Logics: Four Political Economies Form One National Energy Outcome

National energy transition outcomes derive from the intersection of four quite different policy arenas. At its simplest, the intersection of the four resulting political economies is a policy coordination problem. When issues cross policy arenas, it is easy for the initiatives in one arena to mesh poorly with those in another (Bouckaert, Peters, and Verhoest 2010). Ministries of environment, energy, and economy do not necessarily consult with each other as they follow their bureaucratic mandates. They could work at cross-purposes – as when climate initiatives to reduce GHG emissions are countered by industrial policies supporting fossil fuels – or they could simply omit a potentially important supporting policy or be mistimed and so on. The policy arenas are most likely to drive a consistent outcome if one policy arena dominates or if there are other forms of coordination across arenas. Examining the arenas together, as done in this book, shows a fuller picture and helps account for why the dynamics of single arenas may be difficult to relate to the overall outcomes for wind and solar power. In policy terms, the observation of problematic intersections calls for institutional solutions like a transministerial coordinating committee that can overcome these sorts of coordination gap and problem.

The intersection may go well beyond policies and ministries, however, because energy transition touches so many sectors of society. As producers, workers, consumers, and host communities, ordinary citizens may – or may not – play important roles that are difficult for the state to coordinate. One of the puzzles about renewable energy is that it can present itself as a highly technical area of marginal interest to nonspecialists or form a political flashpoint of contention and dispute. In the first case, there are the policy coordination issues already noted. These are gaps and overlaps that arise when multiple bureaucracies follow institutional procedures and mandates to make choices about what kind of electricity to build and promote, limited by their capacity and resources. But in the second, there is the potential for a much

stronger magnifying effect across the arenas, especially when supporters or opponents reach across them and across the state–society divide. GIP scholars have introduced the idea of the green spiral, where there is a positive reinforcing loop between climate policy and industrial interests that leads to energy transition (Kelsey and Zysman 2014). This idea could be expanded theoretically and empirically to acknowledge that consumer and community interests may also reinforce the choice for energy transition. Policy proposals like the emerging Green New Deal are, in effect, aiming to build such a broad-based green spiral by introducing many cognate issues that may also motivate energy transition (Aronoff, Battistoni, Cohen, and Riofrancos 2019; Pettifor 2019; Stokes 2020).[3] There can, of course, be negative spirals too, with opposition to wind and solar power spilling across arenas and blocking energy transition.

Even as all national cases show their own national variations, there may be dynamics that create subvarieties of energy transitions in the same way that others have identified major patterns of social policy provision (Esping-Anderson 1990; Wood and Gough 2006). Returning to the logics of the policy arenas, the climate policy arena is unique in that it is the only rationale for building wind and solar power where a rise in renewable electricity is directly linked to a decline in fossil fuel electricity sources. As Chapter 2 discusses, this policy arena presents wind and solar power as an existential threat to existing fossil fuel sectors and their allies in ways that the other policy arenas do not (see also Moe 2015; Ting and Byrne 2020). Because of the heightened stakes, I propose that the climate policy arena effectively sets the terms for the others. If there are in fact existing and strong fossil fuel sectors that must be limited or eliminated to reduce GHG emissions, their survival depends on their polarizing and politicizing the policy space around wind and solar power. A technocratic approach will not be likely, while the actual balance of power determines whether the outcome is a green or negative spiral.

The two cases of this book, one that has such an electricity sector and one that does not, offer an opportunity to see how these logical possibilities can play out in practice. South Africa has had a powerful and dominant utility, Eskom, that has been committed to the coal-based

[3] https://ocasio-cortez.house.gov/sites/ocasio-cortez.house.gov/files/Resolution%20on%20a%20Green%20New%20Deal.pdf.

generation on which its economic survival has depended. As it was a state-owned, vertically integrated monopoly as wind and solar power were proposed, it offers an exceptionally powerful version of this type. In fact, every policy arena but the siting one in South Africa features a sharply contentious and politicized battle between opposing and supporting coalitions centered on Eskom, with many actors reappearing in the different chapters as the political economies interlock and reinforce each other. Figure 1.1 shows how they have fought to a near standstill, not yet a green or a negative spiral.

That form of politicized and contentious energy transition contrasts with the bureaucratic mode of Brazil's transition. With its hydro-based incumbent electricity type and no galvanizing actor like Eskom in the sector, the relevant decisions on wind and solar power are made in routine, mostly technical agencies following standard operating procedures. This style of decision-making is likely to produce uncoordinated results unless there is purposeful coordination. For example, Brazilian bureaucrats determined that since existing local content rules and industry legacies made it more difficult to support an industrial policy for solar power and costs were higher for solar, wind power would grow while solar power waited, even though climate logics and policies called for solar power. The South African variant of energy transition shows all the disruption expected when there is a powerful, high-carbon electricity sector, while the Brazilian one demonstrates that even big transitions can sometimes come in small bureaucratic steps when there is not. Whether these patterns hold beyond these cases can be answered only with further research, especially in other middle-income and developing countries.

1.2 Middle-Income and Developing Countries: Why Would They Be Different?

The analytical framework just outlined draws on and further develops existing analyses of ongoing energy transitions. As already noted, most of the studies cited reflect the experiences of advanced industrialized democracies with some attention to those of China. This book shifts the empirical focus to two emerging economies. It is thus beginning the task of evaluating whether existing accounts of energy transition can help understand a wider set of cases in the developing world. These are crucial cases for global energy and climate futures. It is clear that most

future expansion in energy consumption and GHG emissions will come from middle-income and developing countries. However, even the best predictions are limited to presenting an array of future scenarios rather than point predictions: global outcomes will depend on whether these countries choose ambitious and transformative energy strategies or repeat the industrialized countries' reliance on fossil fuels to develop (Intergovernmental Panel on Climate Change 2014, 2018; International Energy Agency 2018).

Much of the writing on energy transitions presumes that there are common patterns of political economy causation that will appear in all countries that are considering increasing their production and use of wind and solar power. In contrast, I argue that it is likely that middle-income and developing countries will show different patterns for two sets of reasons. One is related to the very different characteristics of the wind and solar industries for these later adopters, while the second considers their own economic and political development stages.

To begin with the first point, early adopters of wind and solar power helped create the industries almost from scratch. In countries like Germany and Denmark in the 1970s and 1980s, these were highly experimental, fringe technologies. Operating at the margins of the energy system, they were taken up by local communities, antinuclear ideologues, and small companies (Morris and Jungjohann 2016). Influential theories stressed the innovative edge of the social–technical transition in Europe, which expanded from niches to transform broader societies (Geels 2002). Notwithstanding the scale of eventual transformations, the process itself was evolutionary, moving in small steps over decades.

Renewable energy presents itself very differently for the late adopting middle-income and developing countries, for whom the high cost of early wind and solar power was almost wholly prohibitive. The wind and solar industries are now well-developed global industries, with complex and well-integrated global supply chains (Meckling and Hughes 2017, 2018). Established actors are defending their positions at the World Trade Organization (WTO) (Lewis 2014) and reaching out for larger shares of global markets (Bayer, Schäuble, and Ferrari 2018). The same innovations and efficiencies that brought prices to affordable levels create high entry barriers for new participants (Schmidt and Huenteler 2016). Similarly, utilities that generated electricity from fossil fuels might have thought into the 2000s that

renewable energy would never challenge them on scale and cost, but few would make that mistake today.

While these developments are largely negative for middle-income and developing countries, later adopters have new advantages on the financial side of developing wind and solar power. The industries themselves no longer look as risky, even if national banks and investors still face a steep learning curve as they enter particular countries. "Green finance," meant specifically to support environmental goods like renewable energy, is increasingly available from multiple sources (Sachs, Woo, Yoshino, and Taghizadeh-Hesary 2019), while financial actors are pulling away from the risk of "stranding assets" in politically unpalatable fossil fuels (Caldecott 2017). Thus, even if Table 1.1 still captures the basic framework of interests around renewable energy, many of the specific costs and benefits have been nudged up or down. These dynamics hold for all later adopters, disproportionately developing countries, although they also confronted the early adopters after about 2010.

Turning to the second point, the framework here also contends that the quite-different national institutions and economic trajectories of middle-income and developing countries will shape how coalitions can be built around the more abstract interests of Table 1.1. Many of these factors could be effectively ignored in past studies because the advanced industrialized countries shared so many characteristics: they were politically stable democracies, they had effective national bureaucracies, they had achieved economic levels that allowed them a very large scope when making energy choices. None of these characteristics can be assumed to be true for middle-income and developing countries as a group, but nor can they be assumed to be absent. Some are quite strong democracies, while many are not; some have competent bureaucracies in some areas, while others do not; and they have notably fewer economic options. Because middle-income and developing countries vary more, studying them can give us a fuller view of the drivers of energy transition since fewer characteristics can be taken as givens.

Finally, one characteristic that middle-income and developing countries do share is that they have fewer economic resources than developed countries. As a consequence, economic motivations for energy transition are even more likely to outweigh long-term and abstract considerations like climate change than they are for developed

countries (Moore 2018). In the global climate change negotiations, for example, middle-income and developing countries often insist on looking for "cobenefits" or "no regrets" policies that would achieve climate and development goals together (Conrad 2012; Delina 2017; Dubash 2013). Middle-income and developing countries in Asia, Africa, and Latin America have already been driving the global growth in energy-related GHG emissions for several decades (Intergovernmental Panel on Climate Change 2000: 106), so identifying and developing such economic drivers for energy transition is critical for limiting future global climate change.

The economic status of middle-income and developing countries also affects energy transition on a smaller scale. Most importantly, many of these countries are still building out national electricity infrastructures. Only 43 percent of Sub-Saharan Africans had access to electricity in 2019, half the global rate of 87 percent, and the rural access rate was only one-quarter of the population (Blimpo and Cosgrove-Davies 2019: 1). This creates bigger challenges for distribution and consumption issues but potentially leaves less of a legacy of powerful actors committed to fossil fuels. This means that many more of them may fall into the pattern of a more technocratic transition, where state capacity and resources, rather than open political opposition, set the limits for energy transition.

1.3 Overview of Methodology and Evidence

The overarching approach of this book is a structured, focused comparison of the national policies around renewable energy in two large developing countries, Brazil and South Africa (George and Bennett 2005). The two countries differ most importantly on the central question of whether or not they have had an electricity sector dominated by fossil fuels (Moe 2015). South Africa has been heavily reliant on coal as its incumbent electricity source, while Brazil has historically drawn on its hydropower resources. This gives wind and solar power fundamentally different positions in the political economy of climate change in the two countries, which I have suggested should set a different, more openly conflictual starting point for energy transition in South Africa than in Brazil.

In the less-systematic features of national political economies, the two countries share major similarities. These include histories of authoritarianism and recent democratic transitions (in 1985 and

1994, respectively), the distinction of being the most industrialized and largest economic powers of their regions, similar development strategies through the twentieth century, ethnically mixed societies with severe income inequality still highly correlated with race, related histories of European colonization and slavery, and significant regional differentiation (Lieberman 2003: 2–3). United Nations data for the last two decades shows remarkably similar upward trajectories in income per capita, although Brazil has managed significantly higher levels of employment and its overall economy is about four times the size of South Africa's. In both, there is a recent history of labor and civil society contestation, with strong links to the parties that governed during all or most of the period of expansion of wind and solar power (Heller 2019; Hochstetler 2008; Seidman 1994). Since the late 1990s, both have been debating whether and how to add wind and solar power to their national electricity grids, so they are on a similar timeline even though Brazil began wind generation first. While there are also many large and small differences between the two, these many similarities mean that a comparison between them should illuminate the importance of the systematic distinction that divides them.

For extending arguments and hypotheses beyond them, emerging economies like Brazil and South Africa are especially interesting political economy cases because they tend to have characteristics of both developed and developing countries. For example, Kelsey and Zysman (2014: 81) say that developed countries have large existing electricity infrastructures that must be revamped for a green economy, while developing countries are still rapidly expanding their electricity networks; both of those statements are true about Brazil and South Africa. Similarly, they tend to be second movers on new technologies and industries, compared to Europe and North America, but first movers in their respective regions. Their duality makes them especially useful cases for beginning to try to apply ostensibly general arguments made on the basis of developed countries' experiences to developing countries.

During fieldwork in Brazil and South Africa, I interviewed key participants in the energy sector and collected relevant documents and data from the public and private sectors.[4] I also observed two

[4] While I conducted most of the interviews myself, J. Ricardo Tranjan carried out an important set of interviews in São Paulo and Northeastern Brazil in 2013–2014 for this project. Manjana Milkoreit also participated in an early set of climate interviews.

rounds of global climate negotiations, in Copenhagen in 2009 and in Durban in 2011. Elite interviews with ninety-one individuals involved in the energy sectors in Brazil and South Africa from 2009 to 2018 form an important data source for the book. In elite interviews, specific respondents are chosen for their specialized knowledge and the political importance of their understandings of issues and events. They are interviewed to "help the investigator fill in pieces of a puzzle or confirm the proper alignment of pieces already in place" (Aberbach and Rockman 2002: 673; see also Beckmann and Hall 2013). In this study, I selected such individuals from government ministries, regulatory agencies, public banks, industry associations and firms, energy nongovernmental organizations (NGOs), and social movements and community organizations. I identified major actors primarily through news stories and government documents and websites; a few were indicated by other interviewees. Sixty-seven individuals from the two countries agreed to be identified in this study and their knowledge and points of view appear with full citations in the book. Most of the remaining individuals, almost all technical staff of public entities and representatives of individual firms, are identified by the names of their organizations while a few asked not to be identified at all. No individual from the Department of Energy in South Africa agreed to be interviewed despite numerous requests, but the respondents otherwise cover the relevant organizations.

I used the interviews primarily to reconstruct important policy developments in the two countries. The information in them was supplemented and, where possible, triangulated with other kinds of data, including government reports, quantitative data, and secondary sources. For example, Chapter 4 uses descriptive statistics from national household surveys and Chapter 5 includes new data on community mobilizations against renewable energy projects that was constructed for this project. The chapters contain more detailed discussions of their theoretical expectations and any specific data and methodologies used to assess them.

1.4 Previewing the Evidence for Brazil and South Africa

It should already be obvious that both the analytical framework and the empirical domain of this book are complex. Therefore, the rest of this chapter previews the empirical findings in two ways, as a roadmap

to the four chapters that follow. The first route briefly summarizes the conclusions by chapter, so it is organized by the four policy arenas already identified. This is followed by a more general introduction to the actors who appear across the chapters. The chapters provide documentation for the claims here.

1.4.1 Four Political Economies of Energy Transition

The political economy of climate change (Chapter 2) is the heart of the book. Where wind and solar power are central to climate change mitigation strategies, this policy arena sets the stage for sustained conflict with fossil fuel producers and their allies. In South Africa's coal-dominated electricity system, policy debates on climate involve very active contestation between pro-renewables and pro-carbon coalitions, with the latter shifting its preferences to nuclear power if climate must be considered. Both coalitions have state, business, and civil society partners. State institutions there have struggled to develop the capacity to lead an energy transition on climate grounds, with significant evidence of corruption in the sector. Electricity planning has even moved backwards on its renewable energy commitment, as Figure 1.1 reflects. There is an active just transition debate about the impacts of shutting down coal for coal communities. A very different story emerges in Brazil, where GHG emissions come mostly from deforestation. There, increasingly heated climate action debates pay comparatively little attention to wind and solar power. Electricity planning remains a technical domain with cross-partisan support from five presidents. Brazil presents a puzzle for the climate logic in that planners have steadily increased wind power allocations while solar power was significantly delayed and has only begun to expand.

Many countries hope that a shift to renewable energy will also provide a significant economic boost through industrial policy (Chapter 3), as a new industry creates jobs and possibly even new manufacturing roles. This is the chapter that best accounts for Brazil's surprising result of so much more wind than solar power. There is strong interest in developing a manufacturing industry around renewable energy, and it is easier in the Brazilian economic context to create a domestic wind industry earlier. The wind industry now shows an emerging green spiral, although the desire to manufacture components in Brazil also delayed the introduction of wind power through the

first decade of the 2000s and largely blocked solar altogether until 2014. In South Africa, essentially the same climate coalitions fight industrial policy debates, with labor activists increasingly taking the side of the pro-carbon coalition in the absence of what they see as adequate plans for a just labor transition. Both countries have generally strong rent management strategies for the emerging sectors, not least because they both use an auction system where prospective generators face extensive price-based competition to secure contracts to supply the national grid.

Chapter 4 focuses on the cost and distribution concerns that are especially important for middle-income and developing countries, including the two studied here. Comparative prices are another domain for argument by the same South African coalitions that appeared in earlier chapters. As costs shifted over time to favor wind and solar power over new coal and nuclear plants, the particularly important consumers in the Energy Intensive Users Group (EIUG) shifted to be more open to renewable energy. Twenty percent of South African citizens still lack electricity services, but distributed solar power has not proved to meet their needs. Instead, wealthy consumers opting out of the unreliable public service are abandoning the grid for private provision. Wind and solar power have not addressed many of the distortions of a profoundly inequitable electricity distribution system. In Brazil, the dropping costs of wind and solar power were another important technical determinant of when each began to be added in quantity to the national grid, although both state and private sector actors are now challenging the use of distribution subsidies to support them. Distributed solar power is beginning a late rise in cities after regulatory changes in 2012 and 2016. The *Luz para Todos* (Light for All) policy has also brought it to remote Amazonian communities, so it has enhanced the equity outcomes of its electricity sector.

Does renewable energy infrastructure bring net benefits or costs for host communities (Chapter 5)? Interestingly, this is the one chapter where Brazil shows considerably more contention over renewable energy than does South Africa. New data constructed for the book shows that a quarter of the communities that host wind projects contest them over their local costs, although solar installations go largely unmarked. This contestation has not changed final outcomes – wind power is still much more prevalent than solar – but the livelihood and land-rights challenges to wind power in Brazil add important new information about how communities in the developing world

may react to the many smaller installations required for wind and solar power. In contrast, there is almost no community-based activism around renewable energy in South Africa, although the NGO Birdlife South Africa is very active in siting decisions, seeking to protect birds.

As this brief summary indicates, South Africa, with its incumbent fossil fuel represented by a powerful monopoly utility in the electricity sector and threatened by climate action debates, does show the heightened conflict and open polarization over wind and solar power that is expected. The crossover of actors between policy sectors is especially notable as broad coalitions in favor of transition and the status quo use all arguments and policy arenas (except for siting) to continue their struggle. In contrast, the policy arenas are much more segregated in Brazil, with smaller and largely discrete groups of actors engaging in more routine activities that rarely make headlines. Section 1.4.2 adds names and descriptors to this overview.

1.4.2 *Actors and Agencies: The Raw Material of Policy Coalitions*

A low-carbon energy transition will require the participation of both state and societal actors in whichever coalitions are formed. The state's roles as planner, procurer, and regulator for the electricity sector make it central. Energy issues are often viewed as matters for technical experts, who are very important in this policy area, but this book shows that wider participation may be either granted by the state or seized by nonstate actors themselves. Both the Brazilian and the South African governments increasingly rely on private producers of electricity and need citizens to accept the transition as consumers and neighbors of wind and solar plants. This section introduces the most important players in renewable energy debates in Brazil and South Africa, noting where they are typical or unusual compared to each other and similar actors elsewhere. They do not necessarily appear where Table 1.1 asserts that they should be expected.

Brazil's Ministry of Mines and Energy and South Africa's Department of Energy are the energy-specific government actors that are also present in many other countries. They have overarching responsibility for the sector, including planning and regulating it. Such ministries often have strong interests in maintaining the status quo, which they created, although their responsibilities for the cost and

well-functioning of the whole system can create counter-interests. In these countries, the role of the central ministries is somewhat offset by the presence of historically strong national electricity utilities, Eletrobras in Brazil and Escom/Eskom in South Africa. The partial dismantling and privatization of Eletrobras in the 1990s reduced its roles and power resources along with those of the Ministry of Mines and Energy, largely before the rise of wind and solar power. In contrast, Eskom fought off similar changes, so it held a state-controlled, vertically integrated monopoly over the electricity sector until 2010. (Early adopters often had multiple, even hundreds of, utilities.) That year the Department of Energy decided to have private firms build wind and solar power instead of Eskom. Eskom is the only major builder and operator of coal power plants, so the choice of electricity type intersects with the contested balance of public and private roles in renewable energy. That makes these issues key to the South African story as they may not be elsewhere, including in Brazil. Eskom consequently shows up as a prominent actor in many policy arenas where an electricity utility would not be expected, including in climate change and industrial policy debates.

Both countries use competitive auctions to select the private firms that have built essentially all of South Africa's wind and solar power and much of Brazil's. These firms and their industry associations are the only actors who play large roles in every chapter. They are always promoters of more wind and solar power in national electricity systems, using all rationales from climate to cost. They gain influence from the investments and jobs they can mobilize and are the proximate conveyers of many of the benefits and costs of wind and solar power. While the industry firms share many pro-transition interests, the chapters on industrial policy and costs raise issues that often divide the interests of firms that install power plants from those that are part of the supply chain for them. The firms also compete against each other to win elections and finance. Public utilities could also build wind and solar power, as Eletrobras and some state-level utilities do in Brazil (competing in the auctions), so this actor is present only because political actors have decided that it is. The firms that build other kinds of electricity plants in Brazil have not openly taken on wind and solar power, perhaps because an expanding system made room for all of them.

Organized civil society actors are also present in all of the chapters, but they take very different forms. Principled environmental and human rights organizations are advocates for more wind and solar power in both countries. Because they also typically pay attention to environmental and just transition costs, they may raise questions about how renewable energy is deployed, however. They draw on both moral and expertise resources to write policy documents, draw media attention, bring court cases, and support local communities. Local communities and grassroots consumers also weigh in; while they are not notably antagonistic to wind and solar power in the abstract, they tend to mobilize against concrete costs of building and using plants in particular locations. Labor unions, especially in South Africa, show up in multiple chapters, sharing a similar package of support and concerns about wind and solar power. They are powerful enough in numbers and disruptive resources to prompt national consideration of their demands rather than just local responses.

Consumers are especially important in Chapter 4, where their specific situations give them quite varied opinions about how wind and solar power affect their access to and the cost of electricity. South Africa has an especially important consumer group, the EIUG, whose 28 firms use 40 percent of the country's entire electricity supply, 24 hours per day, 365 days per year.[5] The EIUG's electricity dependence makes it an actor with significant interests in any topic that affects the whole sector, and so it also debates climate change and industrial policy. It is increasingly in favor of wind and solar power as their prices drop. Brazil's electricity system has no real equivalent, as its large consumers group is much less dominant.

Brazil's Ministry of Environment and South Africa's Department of Environmental Affairs have mandates for addressing climate change and carrying out EIAs that intersect with wind and solar power development (Chapters 2 and 5). Such ministries favor wind and solar power for the GHG reductions that they bring, although they sometimes challenge the siting of particular projects. Environmental ministries could strike different balances in this "green vs. green" set of dilemmas, but in both of the countries considered here, they lean to promotion of wind and solar power. Both are comparatively weak ministries in their

[5] Interview with Piet van Staden, Past Chairman of EIUG, Johannesburg, 2018.

national contexts, which is especially important in the discussion of climate change and especially for South Africa.

Partisan actors and politicians are most likely to be engaged in issues and debates that affect larger groups, like climate change and electricity service provision. While this is broadly true across the two countries, political actors still play very different roles in Brazil and South Africa – whatever the policy arena – and may do the same elsewhere.

President Fernando Henrique Cardoso's center-right Brazilian Social Democratic Party (PSDB) administration initiated the first wind power policy in Brazil in 2002. President Lula da Silva and his leftist Workers' Party (PT) which followed in 2003 then implemented and greatly expanded the program. The post-PT governments gained office through a controversial impeachment of PT president Dilma Rousseff in 2016. Her vice president Michel Temer (2016–2018) and outsider President Jair Bolsonaro (2019–2023) took the country in a market-oriented direction that changed some of the supporting policies around wind and solar power. Both remained supportive of renewable energy itself, however. Thus, wind and solar power have operated largely outside partisan politics in Brazil. Smaller, technical agencies following their normal activities often have had larger impacts on the sectors. The Brazilian National Economic and Social Development Bank (BNDES), for example, played a very important role in financing wind power installations that is not matched in South Africa – or for Brazilian solar power.

In South Africa, the African National Congress (ANC) has won every post-apartheid election since 1994, winning national parliamentary and most subnational majorities (Booysen 2011). While that might suggest a coherent position on wind and solar power, former president Jacob Zuma (2009–2018) exercised a large personal influence on the renewable energy sector for much of its existence that sometimes advanced and sometimes crippled it. Ongoing corruption investigations suggest that he had personal interests at stake, especially in supporting nuclear power over other alternatives. The party itself is very divided on key debates about which kind of electricity should be produced by whom. Since 2018, when President Cyril Ramaphosa replaced Zuma in a closely contested leadership change, Ramaphosa's substantial executive authority has been thrown behind the coalition supporting wind and solar power. As a result, it is difficult to say whether the overall effect of partisan politics is to

support or delay wind and solar power in South Africa, although partisan engagement is often high and its influence is strong.

For the most part, the stories told in these chapters are domestic ones. At the same time, the firms and civil society organizations include some international actors among them and/or draw resources or ideas from international actors. The unions in both countries have been active in international just transition debates. The state actors are all domestic, of course, but they participate in international negotiations and sometimes receive international resources. Those on climate change have been especially influential. The domestic versus international cleavage has not generally been a large part of the debate around wind and solar power in either country, although the chapters do note a few exceptions. In other countries, it could become a major factor (e.g., Marquart 2017).