brazilianpoliticalsciencereview

BOOK REVIEW

The Political Economies of Energy Transition in Brazil and South Africa: Driving Causes and Political Effects

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(HOCHSTETLER, Kathryn. *Political Economies of Energy Transition*: Wind and Solar Power in Brazil and South Africa. New York: Cambridge University Press, 2021)

The ongoing global climate emergency has sparked renewed interest in transitioning away from carbon-based economies towards renewable energy sources. While there exists a growing body of literature exploring the conditions, incentives, and processes of adopting solar and wind power worldwide, most of this research primarily focuses on advanced industrialized nations and China, with still considerably less studies on other developing countries. Kathryn Hochstetler's latest book (2021), 'Political economies of energy transition: wind and solar power in Brazil and South Africa' is, thus, a much welcome and noteworthy exception.

The book is structured into six chapters, with Chapter 01 providing a general introduction to the topic and outlining the research design. Hochstetler (2021) acknowledges that the reasons and opportunities for developing countries to adopt solar and wind power can differ significantly from those of industrialized early adopters such as Denmark, Germany, and the USA. By focusing on middle-income, unequal societies such as Brazil and South Africa, she posits that we may be able to gain a clearer understanding of the disputes and coalitions that emerge around what she calls the political economies of energy transition. Both Brazil and South Africa share similar structural characteristics: they are multi-ethnic democracies with significant industrial

http://doi.org/10.1590/1981-3821202400030008
Correspondence: cunhafilho@ufc.br
Funding: Fundação Cearense de Apoio ao Desenvolvimento Científico e Tecnológico - PIBIC 2023/24.

economies, leaders in their respective regions, and they rank among the world's most unequal societies. However, while Brazil has swiftly increased the integration of wind and solar power into its electricity grid, South Africa's adoption has been more erratic and internally contested. This contrast sets the stage for a compelling MSDO comparative research design.

The author proposes to analyze the two countries across four interconnected yet distinct policy arenas. Each arena has its own structure of interests, attracting specific actors within both the State and society, leading to the formation of coalitions either in support or opposition to the adoption of solar and wind power (a summary of each is provided in Table 01.1, page 11). The author refers to these arenas as the political economies of climate change, industrial policy, service provision and siting. Hochstetler (2021) explores the divergent paths taken by these two countries based on the outcomes of the power plays within these four political economies, the mutually reinforcing or contradicting tendencies they generate, and the path-dependent trajectories that ensue. Each of the following four chapters focuses on one of these arenas, examining its sets of actors and interests, and the disputes that arise within them.

In addition to selecting understudied cases, this analytical framework is, perhaps, Hochstetler's main contribution (2021) to the growing corpus of literature as it shows how various political considerations beyond climate change can significantly influence the initiation (or delay) of an energy transition. While climate change considerations are crucial and pressing, they may sometimes be deemed of lesser political priority when decisions in this arena collide with industrial policy or job creation. Conversely, support for climate action may strengthen when it is seen as contributing to these objectives.

In Chapter 02, Hochstetler (2021) begins by analyzing the dynamics involved in the political economy of climate change and its incentives for energy transition. In principle, there should be little opposition to adopting cleaner, renewable energy sources, which typically garners broad support for wind and solar power. However, even if there exists widespread support for addressing climate change through energy transition, this broad coalition of interests tends to be superficial, as the expected benefits are diffuse and not concentrated on any specific group. However, in countries heavily reliant on fossil fuels for their economy and energy supply, sectors directly involved in fossil fuel exploitation may form a deeper, albeit narrower, opposing coalition that can hinder the transition.

Such is the case of coal-dependent South Africa, where a strong coalition has formed around 01. coal miners' unions concerned about job losses in a country where unemployment ranks high among social concerns; 02. the energy parastatal ESKOM, worried about losing its near-monopoly on energy provision; and 03. the powerful Energy Intensive Users Group (EIUG), which congregates most of the country's largest conglomerates and was initially skeptical about changes to a sector that had historically benefited them with abundant cheap coal power. This opposing coalition was initially very strong and able to virtually block the adoption of wind and solar power in South Africa after some early progress.

Brazil, on the other hand, began its transition with a much less fossil-dependent electricity grid, facing fewer strong opposing interests to energy decarbonization, which helps explain its more consistent adoption of wind and solar power. However, Brazil also lacked strong incentives to form an energy transition coalition, as most of its electricity historically came from hydropower, a renewable and carbon-free energy source at the point of generation. The country's initial adoption of wind power in 2002 was driven by a severe drought that compromised the hydropower supply, rather than by climate change considerations.

Brazil's adoption of wind power to supplement its hydroelectricity supply was a logical choice for a country with abundant and strong winds. However, this does not explain why solar power was adopted much later, in 2014, despite Brazil's equally plentiful solar radiation throughout its territory. An explanation emerges in Chapter 03, where Hochstetler (2021) examines the political economy of industrial policy to understand the potential incentives and barriers to adopting solar and wind power. Hochstetler (2021) shows how studies during Brazil's Fernando Henrique Cardoso administration, which coincided with a drought-induced energy crisis, suggested that the higher initial costs of adopting wind power could eventually be offset by establishing a new industrial sector to manufacture parts and equipment for wind farms, leading to job creation. In contrast, the solar power industry was deemed much less feasible at the time, delaying its integration into the grid due to cost concerns. Brazil's strategy ultimately paid off, despite the decision to promote local production of parts for its wind power projects initially slowing adoption in the years following its start in 2002. The country ultimately succeeded in attracting production, establishing the wind power industry as a significant sector of its economy today. In comparison, South Africa also sought to stimulate new

economic sectors through energy transition. However, President Zuma's lack of commitment and Eskom's refusal to integrate mostly private investments in wind and solar power into the grid posed significant obstacles to energy transition initiatives for a considerable period.

In Chapter 04, the political economy of service provision reveals a fracture in South Africa's staunch coalition opposing energy transition. Eskom's declining ability to maintain a stable electricity supply led to the alienation of the EIUG, which gradually shifted its stance to support the transition. Contrary to initial impressions, the political economy of electricity provision is not a neutral ground: when resources are scarce, decisions about who gains access to the service, when, and at what price are eminently political and carry distributive implications, as clearly exemplified by the electricity policies under the Apartheid regime. Electricity provision was reserved for white businesses and consumers, leaving black residents in Bantustans underserved, resulting in only 36% of the population having access to electricity as late as 1993. It was thus natural that post-Apartheid administrations made universal provision a top priority. However, as distribution expanded without equivalent increments in generation, the country began experiencing blackouts from late 2007 onwards. This prompted members of the EIUG and affluent residents to increasingly view wind and solar power as reliable alternatives for electricity provision and security, outside of the Eskom-controlled national grid.

In contrast, Brazil began its post-democratization era from a much more advantageous position, with electricity access reaching 91.1% of the population by 1990. As previously mentioned, concerns over energy security prompted the integration of wind power into the grid in the early 2000s, prioritized over solar power due to industrial policy considerations. However, since 2012, top-down bureaucratic reforms allowing for decentralized self-generation, coupled with decreasing prices for solar panels, have precipitated a dramatic increase in solar power adoption. Private companies and middle- to upper-class consumers have increasingly adopted the technology to lower their utility bills, even before the government began integrating larger solar installations into the grid. While Brazil has yet to achieve the same level of localization in the solar industry as it has in wind power, the sector already employs enough people to become a constituency in support of further investments in solar adoption.

However, like any other infrastructure investment, electricity generation and distribution must occur at specific sites where some level of intervention will be felt. Although renewable energies are often promoted as 'clean', their construction and operation can have negative impacts on the communities that host them. And, while such impacts are typically localized, most of the benefits – whether economic or environmental – tend to be more diffuse, thus generating a political economy of siting, explored in Chapter 05. Hochstetler (2021) demonstrates that in South Africa, much of the opposition in this arena stemmed from environmentalist groups concerned about wind farms disrupting migratory bird routes. However, this opposition was mostly ad hoc and specific to the circumstances. When construction projects adjusted their siting to avoid bird-sensitive areas, much of the opposition was resolved. In Brazil, Hochstetler's research (2021) found a higher incidence of conflict, with community opposition to wind farm siting resulting in registered conflicts in 19 out of 77 host municipalities (24.7%). All of these conflicts occurred in Northeast Brazil, but no clear pattern emerged regarding what drives local opposition or acceptance of wind farms. Some of the most well-known case studies, such as the wind farms in Aracati, Ceará, were among the earliest projects built when environmental regulations were less stringent. They were allowed to proceed with accelerated construction, even in environmentally sensitive areas such as sand dunes and estuaries. While subsequent regulatory adjustments have not banned such siting, they now require stricter, longer, and more costly environmental impact studies. As a result, constructors have tended to avoid these sensitive locations, as there are still plenty of other suitable siting possibilities available.

Finally, in Chapter 06, Hochstetler (2021) concludes with a general recap of the book's main findings across the four political economies and their interactive dynamics. Brazil appears to have embarked early on a self-reinforcing path where successful policies have generated a constituency that strengthened the likelihood of their continuation. This was accompanied by enhanced energy security achieved through diversifying away from an overly hydropower-dependent system and the development of a robust new industrial sector that created thousands of jobs. However, some policy choices have concentrated economic benefits at the top, while negative effects have been more keenly felt at the bottom of society. In contrast, South Africa's heavy reliance on coal hindered the emergence of the same self-reinforcing dynamic seen in Brazil. Nevertheless,

inefficiencies within Eskom and the resulting trend toward self-generation by private businesses and affluent citizens have significantly accelerated the expansion of wind and solar power. However, this shift has a downside: the increasing disconnection of the wealthiest sector from the national grid poses a potential threat to its future sustainability.

Both case studies are thoroughly analyzed and highly informative. However, the book could have better situated these cases within the broader international context of the wind and solar industries. For instance, can Brazil's successful localization of the wind turbine industry compete as an exporter against China and OECD countries? Additionally, how do these energy sources compare to other technological advancements for energy transition, such as green hydrogen? Despite these unanswered questions, the book remains a superb contribution to the literature and a highly recommended reading for researchers interested in energy and environmental policies and politics, as well as those on their impact to development possibilities for the Global South.

Revised by Paulo Scarpa