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Margarita M. Balmaceda. *Russian Energy Chains: The Remaking of Technopolitics from Siberia to Ukraine to the European Union*. New York: Columbia University Press, 2021. 421 pp. ISBN 9780231197496.

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Margarita Balmaceda's book *Russian Energy Chains* wants to rethink energy and power from the perspective of value chains. Unlike other studies of Russian energy resources, Balmaceda focuses on the paths that the goods take and analyzes them through their respective value chains. The central questions the book seeks to answer are, first, how the specificities of these energy value chains affect power relations in the region; second, how these value chains have been different through different types of energy; and, third, how their specificities constrain or amplify Russia's ability to use energy supplies as leverage. Finally, the publication aims to provide a deeper understanding of complex relationships such as coalitions of local actors instead of a mostly state-based classification of energy policy through and throughout energy chains. The research field of energy relations, which has already been examined from a historical or political science perspective (e.g., Gustafson 2012, 2020; Högselius 2013), gains a new viewpoint here.

The book is divided into three parts with several chapters in each part. In chapter 1, "Dependency on Russian Energy: Threat or Opportunity?," Balmaceda demonstrates that conventional concepts of energy and power are limited. Thus, from her point of view, energy should be understood not only by looking at who uses it to exert power over others (e.g., a person or state), but through the prism of its value and supply chains as a commodity, which leads to a much broader view of the entire set of actors involved and their influences on political decisions and, therefore, on how power is exerted through and throughout energy value chains (pp. 13–14).

In chapter 2, Balmaceda therefore explains her decision to concentrate on materiality and value chains. In her view, analyses of value chains draw attention to the entire circle of economic and political activities, which allows to evaluate them from a different angle, for example, how different types of energy and their different value chains lead to different ways of incorporating local actors into related transborder coalitions, affecting power relations and a state's ability to use energy as a means of external leverage (p. 26). Balmaceda shows this using the example of Belarus, which, having established itself as a key refining center for Russian oil, could ignore revenue-sharing agreements with Russia that were intended to benefit the Russian state budget (p. 27). Furthermore, Balmaceda explains that she evaluated the value chains of the three energy resources—natural gas, oil, and coal—separately because of their very different materiality (physical state, value-to-volume ratio, transportation, and substitutability). The study covers the years 2010–2014, the "calm years

before the storm,” a period of relative stability of both prices and energy-related governance in each of the three sectors and key countries—Russia as the start of the chain, Ukraine as the main transit country, and Germany as the end point of the chain.

In chapter 3, “Power and Materiality,” Balmaceda goes deeper into the subject of materiality. With regard to the three energy resources, the author explains how different the physical state, homogeneity, typical markets, processing needs, CO₂ profiles, investment patterns, substitutability, role in production chains of nonenergy industries, or the degree of autonomy/networkness of an overall functioning energy system can affect power relations within the chain and constrain actors’ behavior. In addition, Balmaceda argues that materiality can in turn influence political and economic decisions, for example, through processing, technology commitment, branding, or legal/regulatory frameworks and the longer-term path dependencies that sometimes result from them, which displays a different perspective than looking at energy as an abstract concept or a political instrument. It is understandable that this part of the book is very long, because, as the author explains, she wants nothing less than to provide a new approach to the subject of energy relationships. The theoretical explanations of this approach make it easier to follow the practical path of energy resources through the value chain and energy relationships.

Part 2 provides three case studies following the supply and value chains of Russia’s three top hydrocarbon products—natural gas (chapter 4), oil (chapter 5), and coal (chapter 6)—on their way from extraction in the Russian Federation, through transit and processing in Ukraine (and other states), and to their final use in Germany as part of the European Union. In chapter 4, “Natural Gas: Managing Pressure from Western Siberia to Nürnberg Power Plant,” Balmaceda highlights the chain of gas as a commodity that places high technological demands on its transport system (pipelines) and that through its main use is deeply connected to the electricity network. Due to its physical characteristics, natural gas has numerous constraints in terms of the processing, transportation, and the location of the markets. In this chapter, Balmaceda focuses on the context and circumstances of gas production and transport in the upstream sector in Russia, midstream sector in Russia and Ukraine, and the midstream and downstream sector in Germany, providing several examples of local interactions, power coalitions, and constraints. Using the delivery point in Velké Kapušany in Slovakia as one example of the importance of the regulatory environment, Balmaceda shows in detail how power relations change along the way and thus underlines her methodical approach. Gas molecules in transit from Uzhhorod (Ukraine) to Velké Kapušany fall under a different regulatory space and under other local contracts than earlier in the supply chain. After 2008, when Ukraine began exploring possibilities of reverse flows of gas from Slovakia to Ukraine to extend gas imports beyond its contracts with the Russian state-controlled Gazprom, the question arose as to whether Velké Kapušany would be suitable as a hub to carry out these reverse flows. This raised not only technical questions about feasibility, but also about crucial contractual and regulatory possibilities and limitations of such reverse flows. Velké Kapušany became an example of Ukraine’s ability to successfully access natural

gas supplies outside of its contractual relationship with Gazprom and, as a result, to be able to achieve a degree of energy independence from its main supplier. An approach such as that pursued by Balmaceda offers a very good basis for understanding such complex processes in energy trading.

In chapter 5, the author spotlights the oil value chain from Siberian LUKoil fields to gasoline stations in Germany. Crude oil is more flexible in how it can be transported, but its physical processing is expensive and to some extent inflexible. The chapter traces the complex value chain of crude oil from challenges for the production sector in Siberia, via the Russian oil taxation system after 2011, the Druzhba pipeline system in Tatarstan, players in the Ukrainian midstream sector, the Czech refinery Litvinov to the end consumers in Dresden. Among other things, the example of the Litvinov refinery shows how much the materiality characteristic of a certain type of crude oil affects the arrangements along its value chain.

In chapter 6, Balmaceda largely examines the value chain of coal from the mines in Kemerovo to quarto plates used in German wind turbines. Coal as a resource is of very different quality and different caloric content than oil or gas. Coal deposits can be found in numerous countries and regions, which makes it more widely available. However, its different quality means that it cannot be processed everywhere and sometimes requires intensive processing. The case study of the coal value chain is particularly interesting in the Ukrainian midstream sector, where close links with other value chains have emerged. This happened against the background of Soviet path dependencies and initial developments in the post-Soviet period, when strong vertical power developed around individuals who formed captive relationships across multiple value chains, as in the case of private companies such as Metinvest (coal-coke-steel chain) and DTEK (coal-power generation-electricity chain) around the oligarch Rinat Akhmetov. DTEK provided energy for metallurgy. However, since the companies did not form their economic activity on market-based mechanisms and their focus was on short-term profits, this had a negative effect on long-term viability. This meant that Ukrainian companies had to resort to importing coking coal (by 2010, 90 percent of it was coming from Russia, making Ukraine one of Russia's largest importers of coking coal), which demanded greater financial efforts on their part. The steel produced by the Metinvest group from Russian coal reached German wind turbines, assembled by companies such as Siemens, Senvion, and Enerconvia, as quarto plates manufactured in Italy, whose steel industry is also controlled by Metinvest. With this, Balmaceda provides an outstanding example of the power of local actors within the value chain in the midstream area.

The three case studies are very successful and show the complexity of value chains due to the actors involved, legal regulations, technical restrictions, and so on. In addition, thanks to various maps and tables as well as the extensive appendixes, even readers who are not very familiar with the subject can understand the technical, economic, and personal connections. Overall, it is a great strength of the book that Balmaceda addresses equally an academic and a broader audience.

In chapters 7 and 8 (which comprise part 3 of the book), Balmaceda provides an important summary of her findings from the presented case studies and an outlook

on possible future developments. In her summary, however, she also shows that her concept of materiality-constrained relations is limited. Some infrastructure projects, such as the Nord Stream project, for instance, are to a greater extent based on political decisions, although these are of course still linked to the materiality of the energy resources. However, one of the most important conclusions that emerge from her approach is that although the energy resources may be part of a distinct contractual space, they interact with the territory they cross, that is, with national or supranational systems and regulatory nodes governing key issues in that jurisdiction. This, as Balmaceda states, should be understood in the context of the impact of commercial and regulatory nodes on physical nodes and flows and of how energy interactions in the broad space encompassing Russia, Ukraine, and the EU should be looked at in the triangle between national, EU, and multinational corporate policy (p. 213). Among others, this leads to the conclusion that the value chains of oil, gas, and coal are not vertically integrated and masterminded by one single entity but result from a series of decisions and transactions throughout the chain (p. 215).

Furthermore, the book extensively covers the shutting out of Ukraine from Russia's export value chain of all three energy resources, which in some ways can be seen as a cataclysmic event for an increasingly difficult political and economic situation. This is due not only to technical problems of maintaining pipeline pressure and capacities, but also to lost transit revenue and increasing resource and energy prices for Ukraine's metallurgic and energy sectors. Even more important is the fact that by bypassing Ukraine as a transit country, an economic and contractual model that has existed for nearly four decades comes to an end. This model has not been replaced by new Ukrainian energy strategies yet, although after the beginning of Russia's war against Ukraine in February 2022 such strategies might appear much faster. In this way, the war that Balmaceda could not have foreseen for her analysis might become a catalyst for new energy strategies in Russia, Ukraine, and the EU. These will include not only new production forms for fossil fuels and renewables, but also new diversification options, for example, through the expansion of natural gas liquification technology. But here, too, Balmaceda aptly points out that such developments cannot be implemented overnight due to materiality-related constraints.

Overall, Margarita Balmaceda contributes a valuable new perspective and methodical approach to a topic that since the Cold War—and now even more intensely due to the Russian invasion of Ukraine—has been discussed in academic publications and the media. In doing so, Balmaceda leaves the classic path of viewing energy as an instrument of state power by concentrating on the materiality of the resources enabling and constraining human choices. Thus, she remains focused on value chains, uncovering complex political, social, and economic relationships that arise around the energy resources. This allows for a differentiated view of recent issues of energy dependency between Russia, Ukraine, and the EU that are changing even more drastically and faster after the beginning of Russia's war against Ukraine. At times, a more comprehensive look at the value chains in the entire Europe and the post-Soviet Eurasian space would have been valuable to build a comprehensive understanding of the value and supply chains along its existing energy grids. However,

it is clear that because of the sheer scale of this endeavor, it cannot be achieved in one book project. It is to be hoped that further research will be able to close this gap in the future.

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