

The Weaponization of Electricity: The Case of Electricity Trade between Russia and European Union

BY EWA LAZARCZYK AND CHLOÉ LE COQ

Abstract

This article discusses the feasibility and the effects of weaponizing electricity. We focus on the consequences on Europe's energy security of Russia using electricity as a weapon, either by stopping electricity trade, as with Finland in May 2022, or by disconnecting some countries from the grid, e.g., prematurely cutting off the Baltics from the BRELL network.

The extremely high prices of natural gas and oil, the halted supplies through gas pipelines, and the security of fuel supplies are discussed at length, especially regarding Europe's energy security. In many instances, Russia was accused of using gas and oil as energy weapons. Still, the Russian electricity supply to some of its neighbouring European countries has not been perceived as a threat. It is primarily due to the modest share of Russian supply in the total EU's electricity consumption. However, in this short article, we argue that the weaponization of electricity is happening and could have severe consequences for some EU member states. We analyse the effects on Europe's energy security of Russia using electricity as a weapon, either by stopping trade (e.g., with a full electricity stop delivery with Finland in May 2022) or by disconnecting some countries from its grid (e.g., prematurely cutting-off the Baltic region from the BRELL network).

Energy security and Electricity trade. The EU-Russia gas relations have been studied in depth. Energy supply security through imports has been a significant concern since the 70's oil crises. At the beginning of the twenty-first century, when Russia temporarily stopped gas supplies to Eastern Europe, gas supply availability became a significant concern again (e.g., Le Coq and Paltseva, 2012).

Electricity is crucial for a country's development. And just like other commodities, when about missing, it severely damages the economy. For example, Georgia being cut off from the Russian grid in 2006 has caused massive blackouts (Newnham, 2015). Nevertheless, electricity is largely ignored by these energy security analyses.

There is an intensification of the electricity trade with an increased integration of electricity markets (Pollitt, 2019). With the growing reliance across countries on electricity exchange, the issue of the weaponization of electricity needs to be looked at more closely.

Stopping the electricity trade. The Russian electricity export is relatively limited as compared to the country's main energy exports: oil, gas and even

coal. In 2019 Inter RAO's total revenue from electricity trading amounted to 77 billion rubbles (Juozaitis, 2021) about \$862 million while the same year the income from oil amounted to \$123 billion, gas \$26.3 billion and coal at \$17.6 billion¹. As illustrated in table below, within EU, Finland and Lithuania used to import Russian electricity the most.

Ewa Lazarczyk is an associate professor at the Department of Business Administration, Reykjavik University. She can be reached at ewalazarczyk@ru.is. **Chloé Le Coq** is a professor at the Stockholm School of Economics (SITE) and University of Paris-Panthéon-Assas (CRED)

Indicator	2019	+/-	2018	2017	2016	2015	2014
Export, billion kWh	19.338	+15.7%	16.711	+15.7%	17.002	17.492	14.044
Finland	7.023	+1.7%	6.903	+1.7%	5.2816	3.383	2.995
China	3.099	-0.3%	3.109	-0.3%	3.320	3.299	3.376
Lithuania	6.286	+42.4%	4.415	+42.4%	3.019	2.995	3.216
Belarus	0.031	-3.7%	0.049	-3.7%	3.181	2.815	1.425
Kazakhstan	1.437	+6.7%	1.347	+6.7%	1.164	1.542	1.644
Georgia	0.525	+154%	0.206	+154%	0.369	0.511	0.607
Mongolia	0.372	-10.5%	0.416	-10.5%	0.3	0.284	0.39
Azerbaijan	0.091	+19.3%	0.076	+19.3%	0.0596	0.055	0.053
Other	0.474	149%	0.19	149%	0.2716	2.608	0.318

Table 1. Russian electricity export 2014 – 2019.

Source: Inter RAO after Juozaitis (2021).

However, on May 14th, 2022, Russia announced a full stop of electricity export to Finland and all flows from Russia were stopped the day later. Although yearly imports from Russia constituted at most 10 percent of Finnish yearly consumption, the sudden withdraw of trade flows from the Eastern neighbor impacted the Nord Pool region as whole.² The Nord Pool's day-ahead electricity prices were much more volatile after 15th of May, see for example the case of Finland (Figure 1). In addition, extreme prices have been observed in the Baltics – on the 17th of August 2022, prices reached the Nord Pool cap of 4000€/MW, the highest ever level in the region.

Although Nord Pool as an electricity market continued to function well after the discontinuation of power imports from Russia, more severe consequences could happen.

Disconnecting countries from the grid. The Baltics' power system is part of the large Russian operating synchronous electricity system BRELL, which connects the electricity transmission systems of Belarus, Russia, Estonia, Latvia, and Lithuania (Figure 2). The potential desynchronization from the Moscow-op-

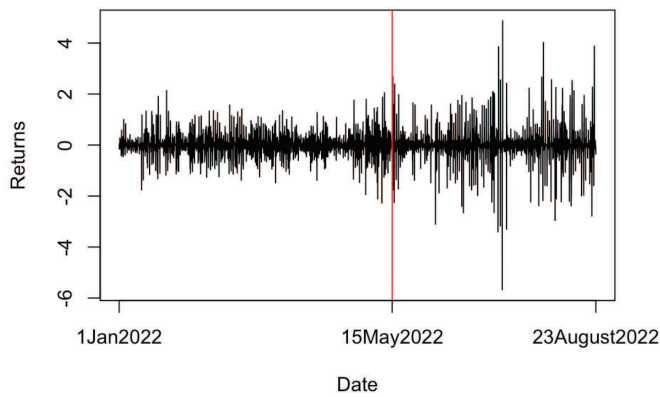


Figure 1. Volatility in Finland

Source: Lazarczyk and Le Coq (2022)



Figure 2. The BRELL power ring

Source: Brinkis et al., 2011

erated power grid and the joining of the European grid have been discussed since 2007 when Baltic States' Prime Ministers have declared the desynchronization as the region's strategic priority. In 2018 the decision to join the Continental European Synchronous Area through the connection with Poland was reached, and massive investment were decided to ensure adequate infrastructure.

Desynchronisation of the Baltics from the BRELL network, foreseen for 2025, means that there will be no connection with Russia and Belarus and no possibility of trade between the two countries and the region. This will be a big disadvantage for Ostroviets nuclear power plant³, whose main purpose was to expand trade with the Nordics, as Belarus has had overcapacity since 2018. At the same time, the desynchronization and the withdrawal from trade with Belarus would limit further dependence on Russian electricity.

An issue not to be overlooked is that although Russia has been opposing the Baltics decision to synchronize with continental Europe, it has moved quickly to improve its infrastructure and might be ready to "cut the

cables" earlier than the Baltics. As a result, Russia can now credibly threaten to prematurely cut the Baltics from the BRELL network, either within the framework of the BRELL agreement, which is at six months' notice or by surprise. If Baltics are not ready to disconnect, this could result in severe blackouts. It is worth noting that a sudden disconnection from BRELL could be harmful to Kaliningrad if it comes too early. Kaliningrad conducted three successful exercises of operating in an island mode, with the longest one of 72 hours. Still, it is unclear whether the region is ready for complete island mode operations. Moreover, the two tests scheduled for 2022 have been cancelled. If the region is not prepared for total disconnection, it will need to rely on power flows from Poland or Lithuania, a situation that might be politically difficult for Russia to accept.

The current situation. Natural gas has been previously used as a political weapon, and multiple studies have focused on Russia-EU gas relations. Still, the weaponization of electricity until now has not been a focus of significant analysis. In this article, we analyse two ways electricity trade can be used strategically: either by directly stopping electricity delivery, and/or indirectly impacting the electricity system balance. The most recent developments in Ukraine illustrate additional way electricity can be used as a weapon. As a result of the latest attacks and damages to the electrical infrastructure, on the 11th of October Ukraine stopped electricity exports⁴. This led not only to missing revenues for Ukraine but also impacted the East EU region as less electricity is available, especially now when gas prices are high (co-occurrence of less electricity and less gas). The threat of massive blackouts if the more electrical infrastructure is damaged is not to be overlooked.

Acknowledgments

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Footnotes

¹ <https://www.weforum.org/agenda/2022/03/russia-gas-oil-exports-sanctions/>

² Which includes the national electricity markets of Norway, Sweden, Finland, Denmark and, the Baltic States.

³ Ostrovietz constructed in Belarus, 20 km from the Lithuanian border, started operations in November 2020.

⁴ <https://www.reuters.com/business/energy/ukrainian-energy-ministry-halts-energy-exports-due-russian-missile-strikes-2022-10-10/>



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