

ROSATOM: Russia's nuclear Trojan horse in the EU

Briefing by Vladimir Sliviyak (Ecodefense), Patricia Lorenz (Friends of the Earth Europe), Klara Butz & Sebastian Rötters (urgewald), 05/23

The Russian invasion of Ukraine started over one year ago. Tens of thousands of people have been killed and millions have fled their homes. The list of Russian war crimes keeps growing longer each day. In response to Russia's military aggression, the EU has placed 1,473 individuals and 205 organizations on its sanctions list as of the beginning of May 2023.¹ The import and export of a range of goods has been sanctioned, most prominently the import of Russian coal and oil. However, the state-owned nuclear company ROSATOM has remained almost untouched so far. Only Atomflot, a ROSATOM subsidiary for nuclear icebreakers, was put on the sanctions list on February 25, 2023.²

This is noteworthy because hardly any Russian company is as directly involved in the war effort as ROSATOM. The company was involved in the occupations of the Chernobyl and Zaporizhzhia nuclear power plants from the very beginning. In the case of Zaporizhzhia, ROSATOM officials on the ground know about the capture and torture of Ukrainian employees. There is credible testimony that ROSATOM personnel helped the Russian army select targets.³ ROSATOM specifically created a new subsidiary called *JSC Operating Organization of Zaporizhzhia NPP* for the purpose of forcibly taking over the power plant.⁴

ROSATOM reports directly to the Russian president and consists of more than 350 companies covering the entire nuclear power generation value chain.⁵ About one-third of ROSATOM employees work in the military nuclear sector, since the company is also responsible for Russia's nuclear arsenal.⁶ In addition, ROSATOM cooperates with Russian manufacturers of non-nuclear weapons.

ROSATOM is among the Kremlin's geopolitical weapons

ROSATOM constructed dozens of nuclear reactors around the world, financed with Russian government loans. The company thus creates decades-long dependencies by controlling the maintenance, operation and fuel supply of these reactors. In some cases, the energy supply of entire countries depends on Russia, making ROSATOM a sharp geopolitical sword for the Kremlin.

Currently, yet another Trojan horse is under construction in the EU. ROSATOM is building two new nuclear power plant units, referred to as Paks II, in Hungary. With a €10 billion loan from Russia, ROSATOM was able to come up with 80% of the supposed costs.⁷ Paks II will be equipped with the latest VVER-1200 reactor type. These reactors can only be operated – at least for the foreseeable future – with fuel rods from TVEL, a ROSATOM subsidiary. Despite Russia's war against Ukraine, Hungary is knowingly entering into a long-term dependency on Russia. Similar dependencies can be expected in countries like Turkey, Bangladesh, India or Egypt where ROSATOM is currently building reactors as well.

Is the EU dependent on Russian nuclear fuel?

Within the EU, TVEL already supplies nuclear power plants in Bulgaria, the Czech Republic, Hungary, Finland and Slovakia. The VVER-1000 nuclear reactors used in the Czech Republic and Bulgaria can also run on fuel rods manufactured by US company Westinghouse.⁸ Both countries have announced plans to switch to fuel rods from the U.S. company and French Framatome by 2024.⁹ From this news it can be

¹ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02014R0269-20230208>

² <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023D0432&from=EN>

³ <https://www.washingtonpost.com/world/2023/01/20/rosatom-ukraine-war-effort-sanctions/>

⁴ <https://www.rosatom.ru/journalist/news/zaporozhskoy-aes-budet-upravlyat-novaya-rossiyskaya-ekspluatiruyushchaya-organizatsiya/>

⁵ <https://rosatom.ru/en/press-centre/references-about-enterprises-and-projects/>

⁶ <https://www.umweltbundesamt.at/fileadmin/site/publikationen/rep0814.pdf>

⁷ <https://www.paks2.hu/web/paks-2-en/background-of-the-project>

⁸ https://www.westinghousenuclear.com/Portals/0/flysheets/VVER-1000_181121.pdf

⁹ <https://www.world-nuclear-news.org/Articles/Framatome-and-Westinghouse-to-supply-fuel-to-Temel>

concluded that Framatome is now also capable of producing VVER-1000 fuel rods. There are currently no alternative fuel suppliers for the smaller VVER-440 reactors operating in Slovakia, Hungary, Finland and the Czech Republic. However, Westinghouse and the Spanish company ENUSA have announced that they will be able to supply fuel rods for VVER-440 reactors in early 2024 as part of a cooperation agreement.¹⁰

This begs the question: Why does the EU allow new, intractable dependencies as in the case of Paks II and its VVER-1200 reactors?

Framatome/Siemens Energy intend to deliver high-end technology to ROSATOM

The Framatome/Siemens Energy consortium is a major enabler of Russia's geopolitical machinations via ROSATOM. The French-German consortium plans to deliver its Instrumentation & Control system (I&C system) TELEPERM XS for the NPP Paks II in Hungary. However, according to Siemens Energy the German Federal Office of Economics and Export Control (BAFA) has not issued the necessary export licenses for these high-tech products as of May 2023.¹¹

According to Siemens Energy, the company's I&C system is the only one approved in the EU to date.¹² Siemens Energy thus holds the most important lever to prevent Russia from exerting even more influence on EU member Hungary. However, at its Annual General Meeting on February 7, 2023, Siemens Energy emphasized that it intends to adhere to the contracts with ROSATOM. Against the backdrop of Russia's war of aggression on Ukraine, such an approach stands in stark contrast to the EU's goal of reducing dependence on Russia. If the EU refuses to introduce sanctions against ROSATOM and BAFA will grant the export licenses, Russia will be enabled to expand its political influence on Hungary and the entire EU, thus preventing serious decisions against Russian interests.

Are there currently sanctions against ROSATOM?

So far, only two senior ROSATOM officials are on the EU sanctions list: Sergei Kiriyyenko, the chairman of the Supervisory Board, and Sergei Korolev, member of the Supervisory Board. Kiriyyenko has been under sanctions since 2020 in connection with the poisoning of Russian opposition figure Alexei Navalny, and Korolev – for his role as deputy head of Russia's FSB intelligence agency.¹³ Their activities at ROSATOM have not yet been deemed sanctionable by the EU. On the company level, only ROSATOM's subsidiary Atomflot is on the sanctions list and only by extension, because the EU included the maritime transport sector in the 10th sanctions package.¹⁴

The United Kingdom imposed new sanctions on February 24, 2023, including on senior executives of ROSATOM and two of the state corporation's scientific institutes. The UK government justified the sanctions pointing out ROSATOM's ties to the Russian military: *"The state-owned company has reportedly supplied arms manufacturers with the technology and materials needed to supply the Russian front, including to defense companies under sanctions."*¹⁵

The USA sanctioned three ROSATOM subsidiaries, the ROSATOM entity created to steal the Zaporizhzhia nuclear power plant (ZNPP) and the appointed general director of ZNPP, Oleg Evgenievich Romanenko, on February 24, 2023. The State Department declared, that *"[...] Russia's military attacks on, and subsequent seizure of the ZNPP, have only underscored the global concerns related to nuclear energy security and undermine the Kremlin's efforts to portray itself as a responsible supplier of nuclear energy products."*¹⁶

¹⁰ <https://info.westinghousenuclear.com/news/wec-enusa-collab-vver-440>

¹¹ <https://hungarytoday.hu/exclusive-reaction-from-siemens-regarding-delayed-nuclear-plant-export-license/>

¹² Statement of CEO Christian Bruch at the Siemens Energy AGM, February 7, 2023.

¹³ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2020:341:FULL>
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02014R0269-20221114>

¹⁴ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023D0432&from=EN>

¹⁵ <https://www.gov.uk/government/news/new-sanctions-ban-every-item-russia-is-using-on-the-battlefield>

¹⁶ <https://cl.usembassy.gov/the-united-states-imposes-additional-sweeping-costs-on-russia/>

The EU must immediately put ROSATOM on the sanctions list

Ecodefense, Friends of the Earth Europe and urgewald call on the EU Commission and EU member states to place ROSATOM and its over 350 subsidiaries on the sanctions list and prohibit cooperation with them.

This includes

- **An embargo on nuclear fuel rods and enriched uranium from ROSATOM or its subsidiaries;**
- **A ban on cooperation in the construction and operation of nuclear reactors. European companies must cut their business ties with ROSATOM and stop the delivery of technical equipment for ROSATOM projects in and outside the EU; and**
- **Individual sanctions against all members of the management and supervisory board of ROSATOM, as well as all employees whose direct involvement in the abovementioned crimes can be proven.**

We welcome the call of the European Parliament of February 2, 2023 to sanction ROSATOM. It is high time for the EU to take action against the supporters of the Russian war of aggression.

EU countries directly involved: Bulgaria, Czechia, Finland, France, Germany, Hungary, Slovakia

Background information

ROSATOM VVER-440 and VVER-1000 reactors in the European Union

Country	Name	Type	Commissioned	Fuel supply ¹⁷
Finland	Loviisa 1	VVER-440	1977	Long-term partnership signed with Westinghouse / TVEL fuel until 2027
Finland	Loviisa 2	VVER-440	1980	Long-term partnership signed with Westinghouse / TVEL fuel until 2030
Hungary	Paks 1	VVER-440	1982	No supplier change confirmed
Hungary	Paks 2	VVER-440	1984	No supplier change confirmed
Hungary	Paks 3	VVER-440	1986	No supplier change confirmed
Hungary	Paks 4	VVER-440	1987	No supplier change confirmed
Slovakia	Bohunice 3	VVER-440	1984	No supplier change confirmed
Slovakia	Bohunice 4	VVER-440	1985	No supplier change confirmed
Slovakia	Mochovce 1	VVER-440	1998	No supplier change confirmed
Slovakia	Mochovce 2	VVER-440	1999	No supplier change confirmed
Slovakia	Mochovce 3	VVER-440	2023	No supplier change confirmed
Slovakia	Mochovce 4	VVER-440	Scheduled start-up 2025	TVEL fuel expected
Czech Republic	Dukovany 1	VVER-440	1985	No supplier change confirmed
Czech Republic	Dukovany 2	VVER-440	1986	No supplier change confirmed
Czech Republic	Dukovany 3	VVER-440	1986	No supplier change confirmed
Czech Republic	Dukovany 4	VVER-440	1987	No supplier change confirmed
Bulgaria	Kozloduj 5	VVER-1000	1987	Westinghouse delivery to start in mid-2024
Bulgaria	Kozloduj 6	VVER-1000	1991	Framatome fuel delivery to start in 2025
Czech Republic	Temelín 1	VVER-1000	2000	Westinghouse/Framatome contracts signed; deliveries starting 2024
Czech Republic	Temelín 2	VVER-1000	2002	Westinghouse/Framatome contracts signed; deliveries starting 2024

¹⁷ <https://www.nytimes.com/2023/03/10/business/economy/russia-nuclear-energy-ukraine.html>
<https://www.world-nuclear-news.org/Articles/Kozloduj-and-Framatome-sign-nuclear-fuel-agreement>

ROSATOM VVER-1200/VVER-1300 reactors built/planned/under construction worldwide

Country	Name	Type	Status	I&C system
Bangladesh	Rooppur 1	VVER-1200	Under construction since 2017	Tbc
Bangladesh	Rooppur 2	VVER-1200	Under construction since 2018	Tbc
Belarus	Ostrovets 1	VVER-1200	Commissioned 2020	Tbc
Belarus	Ostrovets 2	VVER-1200	Commissioning expected for 2023	Tbc
China	Tianwan 7	VVER-1200	Under construction since 2021	Tbc
China	Tianwan 8	VVER-1200	Under construction since 2022	Tbc
China	Xudabao 3	VVER-1200	Under construction since 2021	Tbc
China	Xudabao 4	VVER-1200	Under construction since 2022	Tbc
Egypt	El Dabaa 1	VVER-1200	Under construction since 2022	Tbc
Egypt	El Dabaa 2	VVER-1200	Under construction since 2022	Tbc
Egypt	El Dabaa 3	VVER-1200	Construction start tba	Tbc
Egypt	El Dabaa 4	VVER-1200	Construction start tba	Tbc
Hungary	Paks 5 (<i>Paks II</i>)	VVER-1200	Construction start planned for fall 2023	TELEPERM XS (Siemens Energy)
Hungary	Paks 6 (<i>Paks II</i>)	VVER-1200	Construction start planned for fall 2023	TELEPERM XS (Siemens Energy)
Russia	Novovoronesh II-1	VVER-1200	Commissioned 2017	TELEPERM XS (Siemens Energy)
Russia	Novovoronesh II-2	VVER-1200	Commissioned 2019	TELEPERM XS (Siemens Energy)
Russia	Leningrad II-1	VVER-1200	Commissioned 2018	TELEPERM XS (Siemens Energy)
Russia	Leningrad II-2	VVER-1200	Commissioned 2021	TELEPERM XS (Siemens Energy)
Russia	Kursk II-1	VVER-1300	Under construction since 2018	TELEPERM XS (Siemens Energy)
Russia	Kursk II-2	VVER-1300	Under construction since 2019	TELEPERM XS (Siemens Energy)

Apparently, ROSATOM also tried to implement their own I&C systems. In 2016, the ROSATOM subsidiary RASU announced the development of a new and better Instrumentation and Control (I&C) system.¹⁸ However, the corporation continued contracting Siemens Energy/Framatome for such systems even for its domestic NPP projects. This is a strong indicator that their own I&C development was not successful. Rosatom signed a long-term Strategic Cooperation Agreement with Framatome to further develop I&C technologies in December 2021.¹⁹

¹⁸ <https://ria.ru/20160630/1454961770.html>

¹⁹ <https://www.framatome.com/medias/framatome-and-rosatom-sign-long-term-cooperation-agreement/>



In Russia, four VVER-1200 reactors have been commissioned so far. Apart from these four, globally only one more (Ostrovets 1 in Belarus) went online as of 2023. The use of Siemens Energy's TELEPERM XS I&C system is confirmed for all four Russian reactors, while the type of I&C system used at Ostrovets 1 was not made public. TELEPERM XS was also contracted for Paks II. The first VVER-1300 (or VVER-TOI) reactors Kursk II-1&2 will also run on TELEPERM XS, confirming that the systems are indispensable for ROSATOM's VVER-1200 and VVER-1300 reactors.²⁰ By halting the business relationship with ROSATOM, Siemens Energy/Framatome could contribute significantly to defueling Russia's war in Ukraine.

Further reading:

1. Lorenz, Patricia. "Russian Grip on EU Nuclear Power." May 4, 2022, updated November 2022. <https://wua-wien.at/images/stories/publikationen/russian-grip-on-eu-nuclear-power.pdf>
2. Gufler, Klaus and Meister, Franz. "Analysis of ROSATOM Activities or ROSATOM Interlinkages with the EU." Federal Environmental Agency, Vienna 2022. (in German) <https://www.umweltbundesamt.at/fileadmin/site/publikationen/rep0814.pdf>

Contact:

Sebastian Rötters

Energy Campaigner, urgewald
mob/signal: +49-163-4772758
sebastian@urgewald.org

Vladimir Slivyak

Energy Campaigner, Ecodefense
mob/signal: +7 903 299-75-84
ecodefense@gmail.com

Patricia Lorenz

Nuclear Expert, Friends of the Earth Europe
mob/signal: +43 676 4464254
patricia.lorenz@foeeurope.org

urgewald



ECODEFENSE



Friends of the Earth

²⁰ <https://rusatom-energy.com/media/rosatom-news/rasu-jsc-and-framatome-siemens-consortium-sign-contract-to-supply-automated-process-control-systems-/>
<https://www.framatome.com/medias/framatome-to-deliver-reactor-protection-system-to-kursk-nuclear-power-plant-ii-in-russia/>