

ANNEX 3 – RUSSIA NUCLEAR INTERDEPENDENCIES

Table 27 · Fuel Supply for Soviet-designed Reactors in the EU and Ukraine (as of mid-2026)

Country	Nuclear Share 2025 ¹	Unit	Type	TVEL (Russia) ²	Westinghouse (US/Canada)	Framatome (France)
Bulgaria	38.2%	Kozloduy-5	VVER-1000	- Contract until end-2025 ³	- 10-year supply contract (Dec. 2022) ⁵ - Mixed core with 50% Westinghouse fuel as of April 2026 ⁶	
		Kozloduy-6	VVER-1000	- “Final deliveries” from March–April 2025, serving as a reserve ⁴	- Contract for licensing, executing a Lead Test Assemblies Licensing Program (Dec. 2024) ⁷ - Lead Test Assemblies “will be loaded” (April 2026) ⁸	- Preliminary Agreement for 10-year supply (Dec. 2022) ⁹ - Supply contract for 2025–2034 (2023) ¹⁰
Czech Republic	42.1%	Dukovany-1–4	VVER-440	- Deliveries continued in 2025 ¹¹ - Contract until 2028 ¹²	- 7-year supply contract starting 2024 (Apr. 2023) ¹³ - First delivery (June 2025) ¹⁴	- Development contract for Framatome VVER-440 fuel design (April 2026) ¹⁵
		Temelín-1–2	VVER-1000	- Supply since 2010 ¹⁶ - Contract until 2023 ¹⁷ - Last delivery in 2024, no further deliveries planned ¹⁸ - Fuel reload completed (June 2024) ¹⁹	- Supply 2000–2010 ²⁰ - 6 lead test assemblies loaded in 2019 ²¹ - 10+-year contract (June 2022) ²² - Two deliveries in 2025 ²³	- 10+-year contract (June 2022), supply was to begin in 2024 ²⁴ ; as of April 2026, delivery expected in 2026 ²⁵ - MoU on development of Framatome own-design VVER-1000 fuel program (Oct. 2024) ²⁶
Finland	39.5%	Loviisa-1	VVER-440	Contract until end 2027 ²⁷	- Supply 2001–2007 ²⁸ - Supply contract (Nov. 2022) ²⁹	Development contract for Framatome VVER-440 fuel design (Apr. 2026)
		Loviisa-2	VVER-440	Contract until end 2030 ³³	- Lead test assembly loaded: 2023 ³⁰ - First reload (Sept. 2024) ³¹ , “performing as expected” ³²	
Hungary	40.9%	Paks-1–4	VVER-440	- “Lifetime” supply contract ³⁴	- Supply contract for delivery starting 2028 (Nov. 2025) ³⁵	- MoU, incl. fuel supply (Sept. 2023) ³⁶ - Supply contract for delivery starting 2027 (Oct. 2024) ³⁷ - Development contract for Framatome VVER-440 fuel design (Apr. 2026) ³⁸

Country	Nuclear Share 2025 ¹	Unit	Type	TVEL (Russia) ²	Westinghouse (US/Canada)	Framatome (France)
Slovakia	65.2%	Bohunice-3-4	VVER-440	- Supply contract 2022–2026, with option until 2030 (June 2019) ³⁹	- Supply contract (Aug. 2023) ⁴¹	- MoU, incl. fuel supply (May 2023) ⁴³
		Mochovce-1-3	VVER-440	- Supply contract extended to 2030 (Nov. 2024) ⁴⁰	- First delivery planned in 2026, first load 2027 (Nov. 2024) ⁴²	- Supply contract for delivery starting 2027 (July 2024) ⁴⁴ - Development contract for Framatome VVER-440 fuel design (Apr. 2026)
Ukraine	54.8%	Rivne-1-2	VVER-440	Supply contract for 8 reactors, 2021–2025 (Dec. 2018) ⁴⁵	- Since 2010, fuel supplied to 6 VVER-1000s ⁴⁶ - Supply contract for all Ukrainian reactors (June 2022) ⁴⁷ - First load Rivne (Sept. 2023) ⁴⁸ - First delivery Khmelnytskyi (March 2024) ⁴⁹	
		Khmelnytskyi-1-2	VVER-1000			
		Rivne-3-4	VVER-1000			
		South Ukraine-1-3	VVER-1000			
		Zaporizhzhia-1-6	VVER-1000			

Sources: Various, compiled by WNISR, 2026

Notes

1 - Based on gross production from Energy Institute, “Statistical Review of World Energy—Consolidated Dataset”, June 2026, see https://www.energyinst.org/___data/assets/file/0005/1827617/Statistical-Review-of-World-Energy-Narrow-format.xlsx, accessed 30 June 2026.

2 - Compare with the EU imports of Russian nuclear fuel elements in Figure 59. The information in this column is partial because not all deliveries related to the imports mentioned in the Figure have been publicly reported on. For example, in 2025 Finland imported 19.5 tons of nuclear fuel from Russia, but there have been no reports about their delivery.

3 - TVEL, “TVEL and Kozloduy NPP Have Contracted Supplies of Russian Nuclear Fuel to Bulgaria through 2025”, 19 December 2019, see https://www.tvel.ru/en/press-center/news/?ELEMENT_ID=8140, accessed 19 July 2023.

4 - NEI Magazine, “Kozloduy Receives Final Delivery of Russian Fuel”, *Nuclear Engineering International*, 8 April 2025, see <https://www.neimagazine.com/news/kozloduy-receives-final-delivery-of-russian-fuel/>, accessed 2 September 2025; and Kozloduy NPP, “Annual Separate Management Report—Corporate Governance Statement—Independent Auditors’ Report—Annual Separate Financial Statements”, 2026, see https://www.kznpp.org/upload/38811/Financial_Report_2025.pdf, accessed 9 August 2026.

5 - Westinghouse, “Westinghouse’s VVER-1000 Nuclear Fuel Fabrication Agreement Helps Cement Bulgaria’s Energy Security”, Press Release, 22 December 2022, see <https://info.westinghousenuclear.com/news/westinghouse-vver-1000-nuclear-fuel-fabrication-agreement-helps-cement-bulgarias-energy>, accessed 7 July 2024.

6 - Westinghouse, “Westinghouse Hosts Annual VVER Fuel Forum with Customers”, Press Release, 8 April 2026, see <https://info.westinghousenuclear.com/news/westinghouse-hosts-annual-vver-fuel-forum-with-customers>, accessed 16 June 2026.

7 - Westinghouse, “Westinghouse and Kozloduy NPP Sign New Contract for Safety Analysis to License Alternative Nuclear Fuel Design for Unit 6”, Press Release, 20 December 2024, see <https://info.westinghousenuclear.com/news/westinghouse-and-kozloduy-npp-sign-new-contract-for-safety-analysis-to-license-alternative-nuclear-fuel-design-for-unit-6>, accessed 1 May 2025.

8 - Westinghouse, “Westinghouse Hosts Annual VVER Fuel Forum with Customers”, Press Release, 8 April 2026, op. cit.

9 - Ministry of Energy, “Министър Христов: С подписаното споразумение с Фраматом завършва процесът по диверсификация на доставките за българската ядрена централа”, Government of Bulgaria, 30 December 2022, see <https://www.me.government.bg/bg/news/ministar-hristov-s-podpisanoto-sporazumenie-s-framatom-zavarshva-procesat-po-diversifikaciya-na-dostavkite-za-balgarskata-yadrena-centrala-3128.html>, accessed 13 August 2025; and WNN, “Kozloduy and Framatome Sign Nuclear Fuel Agreement”, *World Nuclear News*, 4 January 2023, see <https://www.world-nuclear-news.org/Articles/Kozloduy-and-Framatome-sign-nuclear-fuel-agreement>, accessed 4 January 2023.

10 - Various inconsistent dates have been communicated; see Council of Ministers, “Bulgaria and France Explore Opportunities for Cooperation in Power and Defense Sectors”, Government of Bulgaria, 12 October 2023, see <https://www.gov.bg/special/en/Press-center/News/Bulgaria-and-France-explore-opportunities-for-cooperation-in-power-and-defense-sectors>; and Framatome, “Framatome and Bulgarian Technical University to Collaborate on Education and Training”, Press Release, 2 May 2024, see <https://www.framatome.com/medias/framatome-and-bulgarian-technical-university-to-collaborate-on-education-and-training/>; both accessed 31 July 2024; also Council of Ministers, “First 43 Cassettes with Alternative Type of Fuel Produced by American Westinghouse Are Loaded at Kozloduy NPP”, Government of Bulgaria, 29 May 2024, see <https://www.gov.bg/en/Press-center/News/First-43-cassettes-with-alternative-type-of-fuel-produced-by-American-Westinghouse-are-loaded-at-Kozloduy-NPP>, accessed 20 July 2025.

11 - CEZ Group, “2025 Annual Financial Report”, April 2026, p. 67, see <https://www.cez.cz/webpublic/file/edee/ospol/fileexport/investori/vz-2025/cez-group-annual-financial-report-2025.pdf>, accessed 1 June 2026.

12 - CitiGroup and Deutsche Bank, “Base Prospectus—ČEZ, a. s.—€8,000,000,000 Euro Medium Term Note Programme”, ČEZ, April 2025, see <https://www.cez.cz/webpublic/file/edee/2025/04/cez-emitn-base-prospectus-16-april-2025.pdf>, accessed 13 July 2025; and Denisa Funtíková, “Slovensko využilo možnosť odobrať

ruské jadrové palivo, ktoré vystačí až do roku 2030. Česi ho začnú brať už tento rok radšej od Američanov”, *Denník E*, 14 November 2024, see <https://e.dennikn.sk/4306174/slovensko-vyuzilo-moznost-odbrat-ruske-jadrove-palivo-ktore-vystaci-az-do-roku-2030-cesi-ho-zacnu-brat-uz-tento-rok-radsej-od-americanov/>, accessed 1 July 2025.

13 - Westinghouse, “Westinghouse Reinforces its Commitment to Energy Security in Czech Republic”, Press Release, 29 March 2023, see <https://info.westinghousenuclear.com/news/westinghouse-reinforces-its-commitment-to-energy-security-in-czech-republic>, accessed 26 June 2024.

14 - CEZ Group, “First Westinghouse Nuclear Fuel Arrives in Dukovany”, 16 June 2025, see <http://www.cez.cz/en/media/press-releases/first-westinghouse-nuclear-fuel-arrives-in-dukovany-1-222263>, accessed 27 June 2025; and Westinghouse, “Westinghouse Completes First VVER Fuel Deliveries to Temelín and Dukovany Nuclear Power Plants”, Press Release, 16 June 2025, see <https://info.westinghousenuclear.com/news/westinghouse-completes-first-vver-fuel-deliveries-to-temelin-and-dukovany-nuclear-power-plants>, accessed 19 June 2025; also CEZ Group, “2025 Annual Financial Report”, April 2026, p. 67, op. cit.

15 - Framatome, “Framatome Contracts with Four VVER 440 European Nuclear Utilities to Further Advance the Development of Its 100% Sovereign European Fuel”, Press Release, 9 April 2026, see <https://www.framatome.com/medias/framatome-contracts-with-four-vver-440-european-nuclear-utilities/>, accessed 9 April 2026.

16 - ČEZ, “Temelín Will Buy Fissionable Fuel from the Russian TVEL”, Press Release, 17 May 2006, see <https://www.cez.cz/en/media/press-releases/temelin-will-buy-fissionable-fuel-from-the-russian-tvel-70158>, accessed 8 July 2024.

17 - ČEZ, “Refueling Will Start at Temelín. Six Fuel Assemblies Made by Westinghouse Electric Sweden Will Be Tested”, Press Release, 4 April 2019, see <https://www.cez.cz/en/media/press-releases/refueling-will-start-at-temelin.-six-fuel-assemblies-made-by-westinghouse-electric-sweden-will-be-tested-69837>, accessed 8 July 2024.

18 - CEZ Group, “2025 Annual Financial Report”, April 2026, p. 67, op. cit.

19 - CEZ Group, “The First Temelín Unit Produces Electricity Again. It Has Been Shut Down for Two Months to Inspect and Replace Fuel Assemblies”, Press Release, 12 June 2024, see <http://www.cez.cz/en/media/press-releases/the-first-temelin-unit-produces-electricity-again.-it-has-been-shut-down-for-two-months-to-inspect-and-replace-fuel-assemblies-192183>, accessed 8 July 2024.

20 - Daniel Ernst and Lukáš Milisdörfer, “10 Years of Experience with Westinghouse Fuel at NPP Temelín”, ČEZ, as presented at the VVER 2010 Conference, 1–3 November 2010, see https://inis.iaea.org/collection/NCLCollectionStore/_Public/42/016/42016135.pdf, accessed 2 August 2023.

21 - Jan Höglund and Ulf Benjaminsson, “New Fuel for Temelín 1”, Technical Lead for Fuel Engineering, and Fuel Marketing Manager, Westinghouse, published in *Nuclear Engineering International*, 3 October 2019, see <https://www.neimagazine.com/analysis/new-fuel-temelin-1-7436970/>, accessed 29 June 2024; and ČEZ, “Temelín’s Unit 1 Restored The Electricity Production”, Press Release, 29 April 2019, see <https://www.cez.cz/en/media/press-releases/temelins-unit-1-restored-the-electricity-production-69835>, accessed 8 July 2024.

22 - ČEZ, “We Are Strengthening the Energy Security of the Czech Republic: We Have Signed Contracts for the Supply of Fuel Assemblies with Westinghouse and Framatome”, Press Release, 28 June 2022, see <https://www.cez.cz/en/media/press-releases/we-are-strengthening-the-energy-security-of-the-czech-republic-we-have-signed-contracts-for-the-supply-of-fuel-assemblies-with-westinghouse-and-framatome-160156>, accessed 26 July 2023; and Westinghouse, “Westinghouse Advances Energy Security in Czech Republic”, 28 June 2022, see <https://info.westinghousenuclear.com/news/westinghouse-advances-energy-security-in-cz>, accessed 26 June 2024.

23 - Westinghouse, “Westinghouse Completes First VVER Fuel Deliveries to Temelín and Dukovany Nuclear Power Plants”, Press Release, 16 June 2025, see <https://info.westinghousenuclear.com/news/westinghouse-completes-first-vver-fuel-deliveries-to-temelin-and-dukovany-nuclear-power-plants>, accessed 19 June 2025; and CEZ Group, “2025 Annual Financial Report”, April 2026, p. 67, op. cit.

24 - ČEZ, “We Are Strengthening the Energy Security of the Czech Republic: We Have Signed Contracts for the Supply of Fuel Assemblies with Westinghouse and Framatome”, 28 June 2022, op. cit.

25 - CEZ Group, “2025 Annual Financial Report”, April 2026, see <https://www.cez.cz/webpublic/file/edee/ospol/fileexport/investori/vz-2025/cez-group-annual-financial-report-2025.pdf>, accessed 1 June 2026.

26 - Framatome, “Framatome Signs Memorandum of Understanding with ČEZ on Framatome Own Design VVER-1000 Fuel Program”, Press Release, 1 October 2024, see <https://www.framatome.com/medias/framatome-signs-memorandum-of-understanding-with-cez-on-framatome-own-design-vver-1000-fuel-program/>, accessed 5 May 2025.

27 - Fortum, “Sustainability 2023”, 13 March 2024, see <https://www.fortum.com/files/fortum-sustainability-2023>, accessed 9 August 2026.

28 - Mark Dye, Jan Höglund and Ulf Benjaminsson, “Diversification of the VVER Fuel Market”, *Nuclear Engineering International*, September 2015, see <https://info.westinghousenuclear.com/media/15pjkvtk/westinghouse-reprint-vver-fuel-nei.pdf>, accessed 29 June 2024.

29 - Westinghouse, “Helping Finland to Secure Its Energy Future”, Press Release, 22 November 2022, see <https://info.westinghousenuclear.com/news/helping-finland-secure-energy-future>, accessed 26 June 2024.

30 - Fortum, “Fortum’s Loviisa Nuclear Power Plant Generated 8.09 Terawatt-Hours of Carbon-Free Electricity in 2023”, Press Release, 4 January 2024, see <https://www.fortum.com/media/2024/01/fortums-loviisa-nuclear-power-plant-generated-809-terawatt-hours-carbon-free-electricity-2023>, accessed 4 June 2024.

31 - Westinghouse, “Westinghouse Completes First VVER-440 Fuel Reload at Finland’s Loviisa Nuclear Power Plant”, Press Release, 2 September 2024, see <https://info.westinghousenuclear.com/news/westinghouse-completes-first-vver-440-fuel-reload-at-finlands-loviisa-nuclear-power-plant>, accessed 1 May 2025.

32 - Westinghouse, “Westinghouse Hosts Annual VVER Fuel Forum with Customers”, Press Release, 8 April 2026, op. cit.

33 - Fortum, “Sustainability 2023”, 13 March 2024, op. cit.

34 - Rosatom, “TVEL Fuel Company of Rosatom Will Develop a Unique Modification of Nuclear Fuel for Paks NPP (Hungary)”, 13 November 2017, see <https://www.rusatom-energy.ru/en/media/rosatom-news/tvel-fuel-company-of-rosatom-will-develop-a-unique-modification-of-nuclear-fuel-for-paks-npp-hungary/>, accessed 8 July 2024.

35 - Westinghouse, “Westinghouse and Hungary Establish Landmark Nuclear Fuel Partnership”, 8 November 2025, see <https://info.westinghousenuclear.com/news/westinghouse-and-hungary-establish-landmark-nuclear-fuel-partnership>, accessed 8 November 2025; and *Nucleonics Week*, “US, Hungary Agree on Small Modular Reactor, Nuclear Fuel Supply Deals”, Vol. 66, Issue 46, 12 November 2025.

- 36 - Framatome, “Framatome signs Memorandum of Understanding with Hungary to Extend Long-Term Cooperation in Nuclear Power”, Press Release, 12 September 2023, see <https://www.framatome.com/medias/framatome-signs-memorandum-of-understanding-with-hungary-to-extend-long-term-cooperation-in-nuclear-power/>, accessed 25 June 2024.
- 37 - Framatome, “Framatome to Supply Fuel to Hungarian VVER Reactors”, Press Release, 25 October 2024, see <https://www.framatome.com/medias/framatome-to-supply-fuel-to-hungarian-vver-reactors/?lang=en>, accessed 30 April 2025.
- 38 - Framatome, “Framatome Contracts with Four VVER 440 European Nuclear Utilities to Further Advance the Development of Its 100% Sovereign European Fuel”, Press Release, 9 April 2026, op. cit.
- 39 - SE, “Palivo pre jadrové elektrárne na Slovensku dodá spoločnosť TVEL”, Press Release, Slovenské elektrárne, 5 June 2019, see <https://www.seas.sk/tlacove-spravy/palivo-pre-jadrove-elektrarne-na-slovensku-doda-spolocnost-tvel/>, accessed 26 June 2024.
- 40 - Denisa Funtíková, “Slovensko využilo možnosť odobrať ruské jadrové palivo, ktoré vystačí až do roku 2030. Česi ho začnú brať už tento rok radšej od Američanov”, *Denník E*, 14 November 2024, op. cit.
- 41 - Westinghouse, “Westinghouse Strengthens Energy Security in Slovakia”, Press Release, 25 August 2023, see <https://info.westinghousenuclear.com/news/westinghouse-strengthens-energy-security-in-slovakia>, accessed 26 June 2024.
- 42 - Denisa Funtíková, “Slovensko využilo možnosť odobrať ruské jadrové palivo, ktoré vystačí až do roku 2030. Česi ho začnú brať už tento rok radšej od Američanov”, *Denník E*, 14 November 2024, op. cit.
- 43 - Framatome, “Framatome Signs Memorandum of Understanding with Slovenské Elektrárne to Extend Long-Term Partnership”, Press Release, 31 May 2023, see <https://www.framatome.com/medias/framatome-signs-memorandum-of-understanding-with-slovenske-elektrarne-to-extend-long-term-partnership/>, accessed 25 June 2024.
- 44 - Framatome, “Framatome to Supply Fuel to VVER Reactors in Slovakia”, Press Release, 23 July 2024, see <https://www.framatome.com/medias/framatome-to-supply-fuel-to-vver-reactors-in-slovakia/>, accessed 30 April 2025.
- 45 - WNA, “Nuclear Power in Ukraine”, World Nuclear Association, Updated 25 March 2024, see <https://world-nuclear.org/Information-Library/Country-Profiles/Countries-T-Z/Ukraine>, accessed 28 June 2024.
- 46 - Ibidem.
- 47 - Westinghouse, “Energoatom and Westinghouse Reaffirm Clean Energy Partnership, Announce Expanded Cooperation on Westinghouse-supplied VVER Fuel and AP1000® Plants to be Built in Ukraine”, 3 June 2022, see <https://info.westinghousenuclear.com/news/energoatom-and-westinghouse-reaffirm-clean-energy-partnership>, accessed 9 July 2024.
- 48 - Westinghouse, “Westinghouse Delivers First VVER-440 Fuel Assemblies to Energoatom”, Press Release, 12 September 2023, see <https://info.westinghousenuclear.com/news/westinghouse-delivers-first-vver-440-fuel-assemblies-to-energoatom>, accessed 17 November 2023.
- 49 - Energoatom, “The First Batches of Westinghouse Nuclear Fuel Delivered to Khmelnytsky NPP”, 8 March 2024, see <https://energoatom.com.ua/en/news/na-hmelnicku-aes-zavezli-pershi-partiyi-yadernogo-paliva-westinghouse>, accessed 15 August 2025.