FRIEDRICH NAUMANN FOUNDATION For Freedom.

המכון למחקרי ביטחון לאומי
THE INSTITUTE FOR NATIONAL SECURITY STUDIES
TEL AVIV UNIVERSITY אוניברסיטת תל אביב

POLICY PAPER

IRAN-RUSSIA NUCLEAR COOPERATION

Arkady Mil-Man & Dmitry Kovchegin

ANALYSIS

Publication Credits

Published by
Friedrich Naumann Foundation for Freedom
Jerusalem Office
Al-Yabusiyoun Buildings
24 Othman Ibn Affan Street
P.O. Box: 18133 – Jerusalem 91180

/freiheit.org/jerusalem
/@fnfjerusalem
/@fnfjerusalem

Authors
Dmitry Kovchegin,
Arkady Mil-Man

Editorial team
Raz Peer, Jeroen Dobber, Kristof Kleemann
Jerusalem Office
Friedrich Naumann Foundation for Freedom

Contact
Phone: +972-2-532-6080
Fax: +972-2-532-6084
Jerusalem@freiheit.org

Last update
March 2025

Note on the use of this publication
This publication is published in cooperation with The Institute for National Security Studies and is an information offer of the Friedrich Naumann Foundation for Freedom. It is available free of charge and not intended for sale. It may not be used by parties or election workers for the purpose of election advertising during election campaigns (federal, state or local government elections, or European Parliament elections).

Table of contents

INTRODUCTION 4

1. HISTORY AND CURRENT STATUS OF IRAN'S NUCLEAR WEAPONS PROGRAM 4

2. HISTORY OF THE RUSSIAN–IRANIAN NUCLEAR COOPERATION 6

3. POLITICAL ENVIRONMENT FOR NUCLEAR COOPERATION BETWEEN RUSSIA AND IRAN 8

4. BALANCE BETWEEN DEMAND AND SUPPLY 9

5. OPTIONS FOR RUSSIA'S NUCLEAR COOPERATION WITH IRAN 11

6. RECOMMENDATIONS 13

ABOUT THE AUTHORS 16

Introduction

Russia has a long history of nuclear energy cooperation with Iran. Until recently, it maintained a constructive position on international efforts to prevent Iran from obtaining a nuclear weapon. Russia balanced the benefits of its nuclear energy cooperation with Iran alongside its relationships with the United States and its commitment to the robust nonproliferation regime. However, recent developments may have affected Russia's position on the Iranian nuclear program and could help Iran obtain nuclear weapons.

The *Joint Comprehensive Plan of Action* (JCPOA) eventually collapsed by the end of 2022 as a result the US withdrawal from the JCPOA under the first Trump administration in 2018 and Russia's cooperation with Iran during the war in Ukraine. After the US withdrawal from the JCPOA in 2018 that damaged Iran's commitment, especially after the Biden administration took office in early 2021, Russia supported the renewal of the JCPOA and even publicly criticized Iran's position. This stance changed immediately after Russia's invasion of Ukraine in February 2022. In March 2022, Russia had conditioned its support of JCPOA on concessions regarding sanctions imposed on Russia due to its invasion. Efforts to revive the JCPOA were suspended in the Fall of 2022 after Western negotiators learned that Iran was supplying drones to Russia for use in the war with Ukraine. Current relationships among JCPOA sponsors lack the consensus that resulted in the JCPOA. At the IAEA Board of Governors meeting in November 2024, JCPOA signatories were divided over a resolution expressing growing concern over Iran's lack of cooperation. France, the United Kingdom, Germany, and the United States voted for the resolution, while Russia and China voted against it.

The war in Ukraine and resulting sanctions against Russia, as well as shared animosity toward the West, have pushed Russia and Iran closer together. In addition, the war has created a demand for a range of conventional arms that Russia's production capabilities cannot meet. In this context, Iran has established itself as a critical supplier of the conventional arms Russia needs to wage its war in Ukraine. This dependency on Iran raises the risk that Iran could leverage its support to Russia to advance its nuclear weapon program.

However, the history of relationships between Russia and Iran and the current controversies cast doubt on the likelihood of a strategic partnership between the two rather than a tactical alliance. Building on a review of the strategic relationships between Russia and Iran,[1] along with an analysis of the history and current state of Iran's nuclear weapons program and Russian-Iranian nuclear cooperation, this paper evaluates the risks of Russian support for the Iranian nuclear weapons program, including potential areas of such support and the likelihood of Russia providing it.

1. History and Current Status of Iran's Nuclear Weapons Program

The history of Iran's nuclear weapons program is well documented.[2] It emerged in the mid-1980s as a response to security considerations during the Iran-Iraq war. According to an internal IAEA report,[3] in April 1984, Ayatollah Khamenei, who was then the president of Iran and now the current supreme leader, reportedly informed the nation's top political and security officials that the Supreme Leader at the time, Ayatollah Khomeini "had decided to reactivate the nuclear program." According to Khamenei, this path was the "only way to secure the very essence of the Islamic Revolution from the schemes of its enemies, especially the United States and Israel."

Iran's nuclear weapons program has been driven primarily by the aspiration to deter the United States and regional rivals, including Israel and the Arab Gulf States. Iran was particularly affected by the eight-year war with Iraq, during which it suffered hundreds of thousands of casualties, including from Iraq's use of a chemical weapon. This experience led Iranian leaders to view nuclear weapons as the only reliable guarantor of their security. Secondary drivers for the Iranian civilian nuclear program include the pursuit of energy and economic independence, as well as the desire to replace oil and gas in domestic energy production and conserve them as valuable export resources.[4]

1 Sima Shine, Danny (Dennis) Citrinowicz, Arkady Mil-Man, Bat Chen Druyan Feldman, *"Global Power Shifts: Iran–Russia Relations and Their Impact on European and International Security,"* May 2024, https://www.freiheit.org/israel-and-palestinian-territories/publication-global-power-shifts

2 See, for example, David Albright and Sarah Burkhard, *"Iran's Perilous Pursuit of Nuclear Weapons,"* Institute for Science and International Security Press, May 2021; IAEA Director General, *"Final Assessment on Past and Present Outstanding Issues Regarding Iran's Nuclear Programme,"* GOV/2015/68, December 2, 2015, https://www.iaea.org/sites/default/files/documents/gov-2015-68.pdf; *"Iran's Nuclear Program,"* Iran Watch, https://www.iranwatch.org/weapon-programs/nuclear

3 Cited in Albright and Burkhard, "Iran's Perilous Pursuit of Nuclear Weapons," 26–27.

4 Alireza Nader, *"Iran After the Bomb: How Would a Nuclear-Armed Tehran Behave?,"* (RAND Corporation, 2013), https://www.rand.org/pubs/research_reports/RR310.html

The development of the Iranian nuclear weapons program can be divided into three distinct periods. During the first period from the mid-1980s until the late 1990s, Iran's nuclear weapons program developed slowly due to technical difficulties and international opposition. Nonetheless, Iran managed to lay the foundation for future progress.

The second period began in the late 1990s, when Iranian leaders came to believe that building a nuclear weapons arsenal was finally becoming a practical reality and decided to implement a crash program known as the Amad Plan[5]. The plan, which started no later than Spring 2000, aimed at obtaining a small arsenal of five nuclear warheads by March 2003. The plan pursued three main goals: the production of nuclear explosive materials (Iran chose to use weapon-grade uranium); the development, manufacture, and testing of nuclear warheads; and integration of the warhead into ballistic missile. However, Iran failed to achieve the plan's ultimate goal of producing five nuclear warheads by March 2003 due to organizational and technical challenges. In late 2003, due to growing international pressure and the risk of detection, the Iranian leadership decided to put the Amad Plan on hold. By that time, however, Iran had achieved substantial progress in its nuclear weapon program, acquiring nearly all the technologies and infrastructure necessary to produce a nuclear weapon. The most critical bottleneck remained Iran's ability to produce sufficient quantities of weapons-grade nuclear material, with Iran obtaining substantial uranium enrichment capabilities only by the end of 2007.[6]

However, the Iranian nuclear weapons program did not stop there. Instead, it transferred into the third phase – a hide-and-seek strategy – that continues until now. In this period, the international community has sought to prevent, expose, and curtail Iran's nuclear weapons through inspections, intelligence, and a combination of incentives and sanctions. Iran has tried to escape detection and avoid violent intervention while working to develop and maintain a threshold capability that enables rapid nuclear weapons production on demand if a political decision is made.

After the termination of Amad Plan in 2003, Iran reorganized its nuclear weapons program to include both overt activities, subject to intrusive IAEA inspections, and covert weapons-related activities. This reorganization preserved critical expertise, capabilities, and personnel, while it allowed for continued development of components crucial for a nuclear weapons program. In addition to reorganization, Iran's tactics in this period have included sharing accurate or misleading information with the IAEA or rejecting altogether its requests for information; suspending or terminating some activities while pursuing others covertly; granting or denying the IAEA access to specific areas and sites; engaging in public relations and outreach efforts aimed at portraying the "peaceful nature" of the Iranian nuclear program[7].

The collapse of the JCPOA further exemplified Iran's "hide-and-seek" behavior. A recent report by the IAEA director-general to the Board of Governors on Iran's implementation of the *Nuclear Non-Proliferation Treaty* (NPT) Safeguards Agreement once again highlights discrepancies between the Iran reporting and the IAEA findings. It also draws attention to Iran's lack of cooperation, including the withdrawal of the authorization granted to the experienced IAEA inspectors. It concludes that "the outstanding safeguards issues stem from Iran's obligations under its NPT Safeguards Agreement and need to be resolved for the Agency to be in a position to provide assurance that Iran's nuclear programme is exclusively peaceful."[8] However, there is little doubt that international pressure, including the JCPOA, has slowed Iran's nuclear progress. Experts note that Iran's nuclear weaponization activities are neither steady nor continuous, often oscillating both over time and in their level of intensity, with periods of increased activity with intervals of little to no progress.[9]

After the collapse of the JCPOA, Iran significantly increased its uranium enrichment capacity and stockpile of enriched uranium. According to the most recent IAEA verification and monitoring report,[10] experts estimate that Iran's stocks of enriched uranium and its centrifuge capacity are sufficient to produce enough weapon-grade uranium for a nuclear weapon in about one week after the breakout, nine nuclear weapons in one month, 12 nuclear weapons in two months, 13 in three months, 14 in four months, and 15 in five months, assuming 25 kg of weapon-grade uranium is needed per weapon.[11]

The weaponization process – converting weapons-grade nuclear material into a functional nuclear explosive device – could take anywhere from three months to two years after breakout.[12] This timeline depends on the progress Iran has made in its weaponization technology and infrastructure development since late 2003, as well as its willingness to accept trade-offs in weapon quality and safety.

---

5 David Albright and Sarah Burkhard, *"Iran's Perilous Pursuit of Nuclear Weapons,"* Institute for Science and International Security Press, May 2021.

6 *"Beyond the IR-1: Iran's Advanced Centrifuges and their Lasting Implications,"* November 22, 2021. https://www.iranwatch.org/our-publications/articles-reports/beyond-ir-1-irans-advanced-centrifuges-their-lasting-implications

7 Albright and Burkhard, *"Iran's Perilous Pursuit of Nuclear Weapons,"* 622.

8 IAEA Board of Governors, *"NPT Safeguards Agreement with the Islamic Republic of Iran. Report by the Director General,"* GOV/2024/44, August 29, 2024, p. 9, https://www.iaea.org/sites/default/files/documents/gov2024-44.pdf

9 Albright and Burkhard, *"Iran's Perilous Pursuit of Nuclear Weapons,"* 569.

10 IAEA Board of Governors , *"Verification and monitoring in the Islamic Republic of Iran in light of United Nations Security Council resolution 2231 (2015),"* GOV/2024/41, August 29, 2024, https://www.iaea.org/sites/default/files/documents/gov2024-41.pdf

11 David Albright, Spencer Faragasso, and Andrea Stricker, *"Analysis of IAEA Iran Verification and Monitoring Report — August 2024,"* Institute for Science and International Security, September 9, 2024, https://isis-online.org/isis-reports/detail/analysis-of-iaea-iran-verification-and-monitoring-report-august-2024/8

12 See, e.g., Amos Yadlin and Ephraim Asculai, "How Close is Iran to a Nuclear Bomb?," INSS Insight, No. 1421, January 13, 2021, https://www.inss.org.il/wp-content/uploads/2021/01/no.-1421.pdf; David Albright, *"How Quickly Could Iran Make Nuclear Weapons Today?,"* Institute for Science and International Security, January 8, 2024, https://isis-online.org/isis-reports/detail/how-quickly-could-iran-make-nuclear-weapons-today/8

While the escalation of tensions in the Middle East from August until October 2024 has increased the likelihood of Iran pursuing a breakout,[13] it is unclear whether Iran has decided to develop a nuclear weapon or prefers to maintain its threshold status. Some experts argue that the threshold status – where Iran is capable of producing a weapon but refrains from doing so – is sufficient to meet its deterrence needs.[14] The prevailing consensus is that Iran has established a program that enables it to produce nuclear weapons "on demand," allowing Iran to quickly produce the first nuclear weapon after a breakout decision is made.

One distinctive feature of the Iranian nuclear weapons program, from its early years until present, is that Iran does not copy elements from elsewhere. While evidence shows that Iran received substantial input from Pakistan on the design of the weapons and uranium enrichment centrifuges, it has independently developed its own design and production capabilities. This has resulted in a high level of indigenization, enabling Iran to create functional nuclear weapons, including warheads and delivery platforms, without needing external assistance.[15] This indigenization stems from a long-standing policy of self-sufficiency,[16] as well as the inability to procure complete systems from abroad. On several occasions, Iran attempted to purchase complete equipment for its weapon program from foreign suppliers but failed due to export control restrictions in vendor countries. Instead, Iran had to acquire separate components and design and manufacture the necessary equipment itself. While this approach required extensive upfront research and development efforts, it has added resilience to the program in the long run. The consensus is that Iran has already accomplished the critical research and development needed for its nuclear weapon program.

Nonetheless, Iran likely still has technical challenges in developing nuclear weapons. Given the relative immaturity of its nuclear weapons program and the general level of technological development in Iran, there is significant room for improvement. However, considering the program's indigenization and Iran's aspirations to develop its own designs, it is unlikely that existing problems could be resolved with some "plug-and-play" solution from external sources – such as Russia – that would not require adaptation. For its breakout scenario, Iran will likely continue to rely on the technologies that it has already mastered and integrated into its system. In the meantime, barring any disruptive developments, Iran is expected to continue enhancing its weapons-related expertise and capabilities, including actively seeking technologies and solutions that can improve its nuclear weapons program over the long term.

2. History of the Russian-Iranian Nuclear Cooperation

Substantive cooperation between Russia and Iran in the nuclear area began in the early 1990s after the turmoil caused by the revolution in Iran, the Iran-Iraq war, and the collapse of the Soviet Union. With the fall of the Soviet Union, Iranian defense officials saw a "golden opportunity" to acquire advanced Russian technologies.[17] Conversely, the Russian nuclear industry played a key role in shaping Russia's policy toward Iran, driven by a desperate economic situation, the need for financial resources, and Iran's willingness to pay for the construction of a nuclear power plant, personnel education, and other nuclear services and technologies. In August 1992, Iran became the first country to sign intergovernmental agreements with independent Russia on peaceful nuclear energy cooperation and construction of a nuclear power plant. In addition, these agreements included the potential construction of research reactors, cooperation in personnel training, production of medical isotopes, and joint research.

However, tangible cooperation only began in 1995, after the signing of implementation documents by Russia's Minister of Atomic Energy Victor Mikhailov, during his visit to Iran. One reason for the delay was Russia's nonproliferation concerns and the need for security services to analyze Iran's nuclear ambitions. A report published in 1993 by the Russian Foreign Intelligence Service (SVR) raised concerns about Iran's applied military nuclear research, the rhetoric of the Iranian leadership, and the import of dual-use items to Iran, but also noted that Iran lacked sufficient resources and capabilities to complete development of the nuclear weapon in the 20th century.[18] A similar SVR report published on the eve of the NPT Review and Extension Conference in 1995 did not raise any concerns and instead questioned the US claims about Iran's nuclear weapons program.[19]

13 Nicole Grajewski, *"Iran Is at a Strategic Crossroads,"* Emissary (blog), Carnegie Endowment, October 3, 2024, https://carnegieendowment.org/emissary/2024/10/iran-israel-missile-attack-nuclear-strategy-what-now?lang=en

14 Toby Dalton and Ariel (Eli) Levite, *"Iran's Nuclear Threshold Challenge,"* May 23, 2024. https://warontherocks.com/2024/05/irans-nuclear-threshold-challenge/; Eric Brewer, *"Iran's New Nuclear Threat: How Tehran Has Weaponized Its Threshold Status,"* Foreign Affairs, June 25, 2024, https://reader.foreignaffairs.com/2024/06/25/irans-new-nuclear-threat/content.html

15 Albright and Burkhard, "Iran's Perilous Pursuit of Nuclear Weapons."

16 Nader, "Iran After the Bomb."

17 Hanna Notte and Jim Lamson, *"Iran-Russia Defense Cooperation: Current Realities and Future Horizons,"* CNS Occasional Paper #61. August 2024, https://nonproliferation.org/op61-iran-russia-defense-cooperation-current-realities-and-future-horizons/

18 SVR Open Report for 1993, *"New Challenge after the 'Cold War': Proliferation of Weapons of Mass Destruction,"* [in Russian] https://tinyurl.com/3yhz6bnf

19 SVR Open Report for 1995, *"The Non-Proliferation Treaty: Problems of Extension,"* [in Russian] https://tinyurl.com/2p9rdv6w

After the collapse of the Soviet Union and until 1995, Russia tried to balance its policy of nuclear energy cooperation with Iran between economic interests, security and nonproliferation considerations, as well as its relationship with the United States. The initial intergovernmental agreements between Russia and Iran on nuclear energy cooperation included not only projects that do not cause proliferation concerns, such as the construction of Bushehr Nuclear Power Plant, but also provisions for supplying gas centrifuge uranium enrichment technology and training Iranian personnel on potentially sensitive topics. This resulted in significant US pressure, as Washington was concerned with Russian–Iranian nuclear energy cooperation in general and the transfer of sensitive fuel cycle technologies in particular. Various stakeholders in Russia also opposed the supply of uranium centrifuges to Iran. After negotiations with the United States and internal deliberations, President Boris Yeltsin announced in May 1995 that Russia would not supply uranium enrichment technology to Iran. Russia also agreed to limit cooperation in personnel training to issues related only to the operation of the future nuclear power plant. In addition, several Russian universities and research institutes voluntarily stopped training Iranian students, fearing US sanctions.

Around the same time, Russia leveraged its relationships with Iran to secure Iran's support for the indefinite extension of the NPT Treaty during the NPT Review and Extension Conference in April–May 1995.[20]

At the government level, nuclear cooperation with Iran was subsequently limited to the construction of nuclear power plants and the supply of associated goods and services. However, additional proliferation risks arose due to Russia's immature system of export control (the Law on Export Control was enacted only in the summer of 1999) and weak oversight of personnel with expertise that could be used for developing nuclear weapons. This lack of control resulted in several nuclear "entrepreneurship" cases when individual organizations and potentially individual experts worked with Iran on sensitive topics.

In the early 2000s, several factors influenced changes to Russia's nuclear energy cooperation with Iran. First, the relations between the United States and Russia improved, especially after the 9/11 terrorist attacks in the United States. Second, revelations about Iran's suspected nuclear weapons program that Russia could not ignore[21]. Third, the Putin regime brought greater discipline to Russian government agencies. This shift coincided with the growing maturity of Russia's export control system after the enactment of the Law on Export Control in 1999. Fourth, Russia's improved economy led to substantial investments in its nuclear industry, reducing its reliance on foreign revenue. The portfolio of contracts for nuclear power plant construction abroad also grew, making relationships with Iran less critical.

In the 2000s, Russia continued a "Bushehr-only" mode of cooperation with Iran, abstaining from cooperation on proliferation-sensitive topics. This cooperation included the completion of the first unit at the Bushehr Nuclear Power Plant in 2011, signing a contract for the construction of two additional units in 2014 and starting construction of the second unit in 2019. In 2005, Russia signed an agreement to supply fresh fuel and retrieve spent nuclear fuel, which was considered a nonproliferation measure to prevent Iran from extracting plutonium from irradiated nuclear fuel. In addition, Russia trained over 1,200 employees for the Bushehr Nuclear Power Plant between 1999 and 2015.[22]

Simultaneously, Russia demonstrated a willingness to cooperate with the United States and the broader international community to ensure the transparency of Tehran's nuclear activities, its full adherence to the IAEA safeguards, and cooperation with the Agency. This cooperation facilitated greater alignment between Moscow and Washington on tailoring the UN Security Council sanctions on Iran.[23]

Russia contributed to the establishing E3+3,[24] a group of countries including Germany, France, Great Britain, the United States, China, and Russia that were heavily involved in developing sanctions against Iran and ultimately negotiated JCPOA. Between 2006 and 2010, Russia voted for several UN Security Council Resolutions addressing the Iranian nuclear program, including UN Resolution 1929 in June 2010, which imposed the harshest sanctions.[25] Russia even went beyond the requirements of the resolution and declined to supply the S-300 air defense system under a contract signed in 2007.[26]

Russian experts also suggested several technical solutions that were incorporated into the JCPOA, including the removal of enriched uranium and heavy water from Iran and the modification of the Fordow uranium enrichment plant for producing stable isotopes for medical purposes. Uranium was shipped to Russia in December 2015, and heavy water followed in September 2016. However, modification of the Fordow enrichment cascade started only in 2019 and remained incomplete as Iran renewed uranium enrichment at this

20 Vladimir Orlov, *"Konferentsia 1995 goda po Rassmotreniyu i Prodleniyu Sroka Deystviya Dogovora o Nerasprostranenii Yadernogo Oruzhiya: Osobennosti, Rezultaty, Uroki,"* [1995 Conference on the Review and Extension of the Nuclearl Non-Proliferation Treaty: Features, Results, Lessons] Nauchnye Zapiski [Scientific Notes] 11 (PIR Center. Moscow) (1999), https://tinyurl.com/ywpk49td

21 Adlan Margoev, *"Russian-U.S. Dialogue on the Iranian Nuclear Program: Lessons Learned and Ignored,"* Security Index Occasional Paper Series (PIR Press, 2021), pp. 13-19. https://pircenter.org/wp-content/uploads/2022/11/21-06-28-INF-SI-INT-%E2%84%968-23-2021.pdf

22 Proekty i slushateli Novovoronezhskogo filiala Tekhnicheskoy akademii Rosatoma [Projects and Students of Rosatom's Technical Academy Novovoronezh Branch]. October 18, 2022. https://www.atomic-energy.ru/articles/2022/10/18/129393

23 Adlan Margoev, *"Russian-U.S. Dialogue on the Iranian Nuclear Program: Lessons Learned and Ignored,"* Security Index Occasional Paper Series (PIR Press, 2021), https://pircenter.org/wp-content/uploads/2022/11/21-06-28-INF-SI-INT-%E2%84%968-23-2021.pdf

24 P5+1 is used interchangeably with E3+3.

25 *"Timeline of Nuclear Diplomacy With Iran, 1967-2023,"* Arms Control Association, https://www.armscontrol.org/factsheets/timeline-nuclear-diplomacy-iran-1967-2023

26 Nikolay Kozhanov, *"Russia's S-300 Sale to Iran: An Expected Surprise,"* Carnegie Russia Eurasia Center, April 17, 2015, https://carnegieendowment.org/posts/2015/04/russias-s-300-sale-to-iran-an-expected-surprise

facility in December 2019, abandoning its JCPOA commitments following the US withdrawal.[27] While Iran provided the IAEA with design information about modifying the Fordow enrichment cascade,[28] the extent of interactions between Russia and Iran regarding this project is unclear. There is a risk that interactions between Russian and Iranian centrifuge experts could lead to the intentional or unintentional sharing of knowledge about centrifuge operations, potentially enabling Iran to improve its enrichment capabilities.

After the United States withdrew from the JCPOA, Russia rhetorically supported restoring the JCPOA, but placed blame on the United States and European parties of the JCPOA while defending Iran's escalatory actions to depart from JCPOA provisions, including increased uranium enrichment, and lack of cooperation with the IAEA. When the Biden administration assumed office in January 2021, Russia tried to mediate the renewal of the nuclear deal with Iran, managing to insulate the JCPOA from the broader conflict with the West.[29] However, in early March 2022, immediately after Russia's invasion of Ukraine in February 2022, and the imposition of the first sanctions on Moscow, Russia's Foreign Minister Sergey Lavrov demanded guarantees that these sanctions would not affect Russia's trade with Iran, effectively dismantling the compartmentalization of JCPOA and other issues. Any attempts to revive JCPOA stopped entirely at the end of 2022, following Iran's crackdown on domestic opposition protests and revelations of its supply of drones to support Russia's war on Ukraine.

3. Political Environment for Nuclear Cooperation between Russia and Iran

Russia and Iran have a long history of disagreements, controversies, and even conflicts. Their relationships changed from suspiciousness and animosity toward cooperation only in the early 1990s, after the end of the Iran-Iraq war, the Soviet withdrawal from Afghanistan, and the collapse of the Soviet Union. During this period, Iran sought advanced weaponry that it could no longer procure from the West, leading Tehran to appeal to Russia. With its economy in poor shape, and its weapons industry struggling, the Kremlin was eager to fulfil Tehran's needs.[30] Still, Russia tried to balance its relationships with Iran and the West. However, Russia shifted closer to Iran after Vladimir Putin resumed the presidency of Russia in 2012, while Russia's invasion of Ukraine brought the two countries even closer together.

The main driver of the current rapprochement between Russia and Iran is their mutual confrontation with the United States and the liberal world order. However, this relationship is not yet a strategic partnership based on shared values. Instead, it is a "partnership of defiance,"[31] where a shared enemy unites parties. Given the current geopolitical environment, this partnership will likely endure for some time. Nonetheless, the development of this partnership of defiance into a genuine strategic alliance is not certain.

Even now, the relationship is not perfect. Historical grievances and the challenges posed by the current situation could lead to tensions or even a rupture in their relationship.[32] Key factors include:

- → Despite cooperation with Iran in Syria, Russia still tries to balance its relationship with Israel and to some extent take Israel's security concerns into account. For example, Russia turned a blind eye to Israel's attacks on Iranian outposts in Syria.[33]

- → Both Russia and Iran control some of the world's largest reserves of natural gas and oil, key sources of their wealth. Yet, as Russia and Iran are the two most sanctioned countries in the world, they compete against each other in a restricted market and for supplies that they have to import.

- → Iran has not formally acknowledged the annexation of Crimea, Donetsk, and Luhansk regions to Russia.[34]

- → In an interview with CNN in late September 2024, Javad Zarif, Iran's vice president for strategic affairs, former minister of foreign affairs, and chief negotiator of the JCPOA, said that Iran's supply of drones, missiles, and

27 *"TVEL company statement regarding Fordow Project, Iran,"* December 6, 2019, https://www.tvel.ru/en/press-center/news/?ELEMENT_ID=8138
28 See, for example, *"Verification and monitoring in the Islamic Republic of Iran in light of the United Nations Security Council resolution 2231 (2015),"* GOV/2017/48, footnote 20, November 13, 2017, https://www.iaea.org/sites/default/files/documents/gov2017-48.pdf
29 Hanna Notte, "Russia's Invasion of Ukraine: The Iran Nuclear Price Tag," Friedrich-Ebert-Stiftung, February 2023, https://library.fes.de/pdf-files/international/20083.pdf
30 Shine, Citrinowicz, Mil-Man, and Druyan Feldman, *"Global Power Shifts."*
31 Karim Sadjadpour and Nicole Grajewski, *"Autocrats United: How Russia and Iran Defy the U.S.-Led Global Order,"* October 10, 2024, https://carnegieendowment.org/research/2024/10/russia-iran-oil-gas-ukraine-syria
32 Michelle Grisé and Alexandra T. Evans, *"The Drivers of and Outlook for Russian-Iranian Cooperation,"* Santa Monica, CA: RAND Corporation, 2023, https://www.rand.org/pubs/perspectives/PEA2829-1.html
33 Karim Sadjadpour and Nicole Grajewski, *"Autocrats United: How Russia and Iran Defy the U.S.-Led Global Order,"* October 10, 2024, https://carnegieendowment.org/research/2024/10/russia-iran-oil-gas-ukraine-syria
34 Vladimir Sazhin, *"Iran ne priznaet rossiiskimi Krym, LNR i DNR. Pochemu?,"* [Iran does not acknowledge Russian Crimea, Luhansk People's Republic, and Donetsk People's Republic. Why?] February 8, 2023, https://russiancouncil.ru/analytics-and-comments/analytics/iran-ne-priznayet-rossiyskimi-krym-lnr-i-dnr-pochemu/
Grisé and Evans, *"The Drivers of and Outlook for Russian-Iranian Cooperation."*

other munitions to Russia is just business, emphasizing Iran's need to "earn currency," while trade with the United States and Europe is on hold. He also expressed Iran's willingness to negotiate a return to the nuclear deal.[35]

→ Iranian elites are divided in their attitude toward Russia, and there is no uniform support for the partnership.[36]

→ Both countries have demonstrated a readiness to use their relationships with each other as leverage in negotiations with third parties.

The election of Donald Trump as US president could add a new dynamic. Iran's administration has expressed a willingness to negotiate with the West, while Vladimir Putin has signaled that he is open to dialogue with Trump.[37] Trump's advisors have indicated that the new US administration plans to reimpose maximum pressure on Iran, aiming to isolate it diplomatically, and weaken it economically, without pursuing regime change or military action.[38] These policies could either push Russia and Iran closer together or lead to the collapse of their partnership.

In addition, the current level of relations between Russia and Iran is, to a large extent, shaped by the war in Ukraine. The war's protraction or resolution, including the specifics of how it is resolved, will likely have a substantial impact on the partnership between the two countries.

4. Balance between Demand and Supply

The risks of Russia's support for Iran's nuclear program must be assessed in light of Iran's needs, its ability and willingness to seek Russian assistance, the availability of Russian resources that meet Iran's needs, and Russia's readiness to provide them, considering its cost-effectiveness. This analysis also needs to consider Iran's nuclear program within the broader picture of Russia's and Iran's capabilities and security interests.

Both Russia and Iran have their own motivations and constraints driving their nuclear cooperation. These factors are shaped by their perceptions of the costs and benefits of such cooperation.[39] Iran's drivers and constraints for nuclear cooperation are outlined in *Table 1*.

Table 1 | Iran's Drivers and Constraints

	IRAN'S DRIVERS	IRAN'S CONSTRAINTS
1	Long-term nuclear weapons capacity building and decreasing lead time from breakout to the bomb, while remaining under the threshold	Risk of revealing too much information about the nuclear weapons program
2	Diplomatic support to mitigate pressure in the IAEA and UN	Desire to keep open options for cooperation with the West
3	Conventional arms support for protection of nuclear sites and regional deterrence	Interest in maintaining leverage over Russia, while not overreaching
4	Nuclear energy development	

Analysis based on open sources does not reveal specific gaps in Iran's nuclear weapons program. As discussed above, Iran has likely achieved the level of development that allows it to produce nuclear weapons, including sufficient amounts of weapons-grade nuclear material, warhead designs, and ballistic missile delivery systems, within a relatively short period,

35 Christiane Amanpour (@amanpour), *"With Iran arming Russia in Ukraine, I asked Iranian Vice President…"* X, September 26, 2024, https://x.com/amanpour/status/1839360742308376753?s=46

36 Sazhin, *"Iran ne priznaet rossiiskimi Krym, LNR i DNR. Pochemu?"*

37 Valdai Discussion Club Meeting, November 7, 2024, http://kremlin.ru/events/president/news/75521

38 Warren P. Strobel, Benoit Faucon, and Lara Seligman, *"Trump to Renew 'Maximum Pressure' Campaign Against Iran,"* Wall Street Journal, November 7, 2024, https://www.wsj.com/world/middle-east/trump-to-renew-maximum-pressure-campaign-against-iran-f0db5fd5; Lauren Sforza, *"JD Vance Says He Would Not Support Authorizing Military Action in Iran,"* The Hill, October 29, 2024, https://thehill.com/policy/international/4282057-jd-vance-says-he-would-not-support-authorizing-military-action-in-iran/

39 The authors thank Hanna Notte and Jim Lamson for the drivers and constraints framework. Their work also provides a detailed overview of the drivers and constraints applicable to defense cooperation between Russia and Iran, many of which also apply to nuclear cooperation. See Hanna Notte and Jim Lamson, *"Iran-Russia Defense Cooperation: Current Realities and Future Horizons,"* CNS Occasional Paper, no. 61, August 2024, https://nonproliferation.org/op61-iran-russia-defense-cooperation-current-realities-and-future-horizons/

relying on its own resources. Moreover, given Iran's indigenization strategy, it is likely that in a breakout scenario, Iran would prefer to rely on capabilities and resources it has already developed rather than seeking external assistance.

Iran may also be cautious about requesting highly specific assistance, as doing so could expose weaknesses in its nuclear weapon designs and overall program. In addition, Iran would not want to overreach or make excessive demands because of the risk of pushback from Russia, leading to a strain in their cooperation.[40] Still, Iran remains interested in long-term capacity-building to improve its nuclear-weapons design and decrease the lead time from a breakout decision to an operational weapon. Nuclear cooperation with Russia could help Iran achieve these goals while maintaining a careful balance between its drivers and constraints.

Beyond the nuclear program, Iran may prefer to have Russian support in other areas, such as conventional weapons and defense technologies. These capabilities would increase Iran's regional deterrence capability against Israel and the United States or could be transferred to Iran's proxies in the region. In fact, since February 2022, Russia has supplied many advanced equipment and technologies from Iran's wishlist, although it has delayed the supply of Su-35 fighter jets, which Iran desires. Cooperation in these areas has also been enhanced by mutual visits, exhibitions, and technical exchanges.[41] This conventional arms supply indirectly supports Iran's nuclear weapons program. For example, air defense systems can be used to protect Iran's nuclear sites. This will also improve Iran's conventional deterrence capability, reducing pressure on Iran's nuclear weapon program and allowing it to remain under the nuclear threshold for a longer period.

Russia, in turn, has a highly advanced nuclear weapons program and, hypothetically, could help Iran significantly improve its nuclear weapons system design. However, the norm of nonproliferation is still strong in Russia. It is highly unlikely that Russia would provide Iran with any assistance that could unambiguously violate its commitment to Article 1 of the NPT to "not in any way assist" in acquiring nuclear weapons. Nonetheless, the strength of this norm could decline depending on future geopolitical developments. While such a scenario seems highly unlikely, similar to how the potential for war in Ukraine was perceived in 2020-2021, it cannot be entirely ruled out. In its pursuit of a new world order, Russia might ultimately choose to sacrifice its nonproliferation commitments. Russia's drivers and constraints for nuclear cooperation with Iran are outlined in *Table 2*.

Table 2 | Russia's Drivers and Constraints

	RUSSIA'S DRIVERS	RUSSIA'S CONSTRAINTS
1	Reward Iran for support and maintain Iran's interest in cooperation	Strong (but potentially eroding) non-proliferation norm
2	Maintain oversight of Iran's nuclear weapons program	Avoid overcommitment and risks associated with potential Iranian military conflicts with Israel and the United States[42]
3	Promote an alternative world order and increase global uncertainty	Risks of sharing critical information that could undermine Russia's competitive advantage in nuclear weapons and nuclear fuel cycle technology
4	Use cooperation with Iran as a bargaining chip with the West	Deep mistrust
5	Market for Russian nuclear energy goods and services	

In addition, Russia has always been hesitant to share its most valuable secrets, which form the foundation of its competitiveness. Nuclear weapons information and advanced nuclear technologies, such as the latest generations of uranium enrichment centrifuges, fall firmly into this category. Russia is unlikely to share such sensitive information or technologies, unless it sees no alternative. Additionally, given the history of Russian-Iranian relations, Russia likely views a nuclear-armed Iran as a threat regardless of its current relationship with either Iran or the West. At the same time, Russia now benefits from Iran's threshold status, as it increases regional and global uncertainty.[43]

40 Grisé and Evans, *"The Drivers of and Outlook for Russian-Iranian Cooperation."*
41 Notte and Lamson, *"Iran-Russia Defense Cooperation."*
42 Nikita Smagin, *"Iran Shouldn't Expect Russia to Come Riding to Its Rescue,"* Carnegie Politika, October 14, 2024, https://carnegieendowment.org/russia-eurasia/politika/2024/10/iran-russia-military-aid
43 Hanna Notte, *"Russia's Invasion of Ukraine: The Iran Nuclear Price Tag,"* Friedrich-Ebert-Stiftung, February 2023, https://library.fes.de/pdf-files/international/20083.pdf

5. Options for Russia's Nuclear Cooperation with Iran

This section outlines a range of options for Russia's support of Iran's nuclear program, focusing on what Russia could and might be willing to provide. These options do not address Iran's willingness to seek or accept such support if offered but are based on each side's perception of the associated costs and benefits.

Several of these options are already a reality, such as Russia's diplomatic support for Iran, the supply of conventional arms, and the continuing nuclear energy cooperation.

Some of them are likely in the near term, including Russia's support to Iran in obtaining dual-use technologies or leasing nuclear-powered submarines to Iran. In the 1990s, Russia discussed cooperation in uranium enrichment with Iran but abstained out of a desire to maintain its relationship with the United States. At the current level of relations, Russia might be more inclined to create trouble and supply Iran with proliferation-sensitive technologies. The situation in this area will become clearer in the next two years, after the expiration of the JCPOA in October 2025 and the completion of the NPT Review Conference in 2026.

Most radical options, such as direct support for Iran's nuclear weapons program, extending the nuclear umbrella over Iran, or placing Russian tactical nuclear weapons, are unlikely. However, they could become plausible if relations between Russia and the West deteriorate further and Russia-Iran cooperation evolves into a genuine strategic partnership with a strong defense component. Even if these options remain improbable, there is value in considering them to maintain vigilance and prevent surprises.

Lastly, in the event of a collapse in Russia, options would not be strictly "Russia's support" but rather opportunities that could become available to Iran following the loss of control over the Russian nuclear complex. A similar situation occurred after the collapse of the Soviet Union in the early 1990s, raising significant proliferation concerns.

An optimistic scenario is not entirely excluded. It could result from a combination of positive developments, such as a ceasefire and the end of the war in Ukraine, de-escalation between Israel and Iran, and return to the JCPOA in its original or revised form. Such a scenario would likely mirror the JCPOA framework, when Iran is willing to cooperate and accept intrusive inspections of its nuclear program. At the same time, Russia would continue its nuclear energy cooperation, limiting it to the construction of nuclear power plants and associated services, while leveraging its relationships with Iran to ensure compliance with nonproliferation norms.

Diplomatic Support

→ **Diplomatic Cover in International Fora**. Russia continues to provide diplomatic support for Iran in international forums such as the IAEA and UN, while rhetorically supporting a return to the JCPOA. Russia has already backed Iran during the IAEA Board of Governors vote against the resolution condemning Iran on several occasions. Insight into Russia's potential diplomatic support to Iran can be drawn from its approach to North Korea. For example, in March 2024, Russia used its veto to terminate the mandate of the UN Panel of Experts on North Korea,[44] established in 2009 to serve the UN Security Council Resolution 1718 Sanctions Committee, monitor sanctions breaches, and recommend measures to close loopholes. In September 2024 Russian Minister of Foreign Affairs Sergey Lavrov implicitly acknowledged North Korea's nuclear status.[45] Russian diplomatic support for Iran could create obstacles for any concerted efforts against Iran, including more intrusive inspections or the imposition of sanctions for noncooperation with the IAEA.

→ **Support in Case of NPT Withdrawal.** Similar to its current support of North Korea, if Iran decides to withdraw from the NPT, Russia is likely to back Iran's claim that "extraordinary events, related to the subject matter of [the] Treaty, have jeopardized [Iran's] supreme interests" as required three months in advance of withdrawal. Russia will also likely oppose attempts to prove Iran's violations of the Treaty before its withdrawal.[46]

→ **Pressure on Israel.** Russia may pressure Israel to refrain from bombing Iran's nuclear sites as a trade-off for limiting cooperation with Hamas, Hezbollah, and Syria.

Direct Support to Nuclear Weapons Program (Nuclear Weapons Expertise Transfer)

→ **Provision of Testing Results.** Russia has extensive experience conducting nuclear tests and has accumulated substantial data that could improve nuclear weapons design. While it is unlikely that Russia would share all the data or results of the most advanced tests, it could provide Iran with limited sets of results from older tests, which could still benefit the Iranian nuclear program.

---

44 Eric Penton-Voak, *"Imagining a Future for the DPRK Panel of Experts Monitoring Regime,"* 38 North, Stimson Center, April 29, 2024, https://www.38north.org/2024/04/imagining-a-future-for-the-dprk-panel-of-experts-monitoring-regime/

45 Reuters, *"Russia's Lavrov Says North Korea's Nuclear Status is a 'Closed Issue,'"* September 26, 2024, https://www.reuters.com/world/russias-lavrov-says-north-koreas-nuclear-status-is-closed-issue-2024-09-26/

46 Addressing Withdrawal from the Treaty on the Non-Proliferation of Nuclear Weapons. Working paper NPT/CONF.2015/WP.47 provided to the 2015 NPT Review Conference, https://www.reachingcriticalwill.org/images/documents/Disarmament-fora/npt/revcon2015/documents/WP47.pdf

→ **Access to Testing Infrastructure for "Cold" Tests.**[47] Although Russia has not conducted nuclear tests since 1991, it has maintained its testing infrastructure at the Novaya Zemlya site. Russia recently reported that the testing ground is ready to resume tests at any moment.[48]

→ **Assistance in Weapon Design.** Russia could provide direct support to Iran in improving its nuclear weapon design by responding to specific requests from Iran or through the secondment of experts with relevant expertise.

Dual-Use Technologies

→ **Export-Controlled Technologies.** Transfer of dual-use, export-controlled technologies related to sensitive elements of the nuclear fuel cycle, such as enrichment, spent nuclear fuel reprocessing, uranium conversion, nuclear materials metallurgy, or dual-use technologies that are not related to the production of nuclear materials but can be used in design and manufacturing. This could include knowledge sharing or assistance in designing and constructing facilities.

→ **Reactor Design Assistance.** Russia could assist with the design and construction of reactors for defense-related research or the production of weapons-grade plutonium. This may include the restoration of the design of the Arak research reactor that was modified under JCPOA requirements to decrease plutonium production capacity substantially.[49]

→ **Expanded Training Programs.** Russia could increase the number of Iranian students in its universities, providing training on topics beyond nuclear power plant operation, such as proliferation-sensitive aspects of the nuclear fuel cycle and other non-nuclear professions relevant to the design and manufacturing of nuclear weapons.

→ **Technical Exchanges**. Russia could facilitate technical exchanges on proliferation-sensitive topics through conferences, workshops, fairs, mutual visits, and so forth.

→ **Sanctions Evasion Support.** Russia could support Iran in evading sanctions, by supplying Russian industrial equipment and technologies that Iran cannot procure elsewhere.

Military and Security Cooperation

→ **Supply of Conventional Arms.** Russia could supply conventional arms to Iran and its regional proxies to protect nuclear infrastructure and increase regional deterrence capability. More robust conventional deterrence may reduce pressure on the nuclear program and allow it to remain below the threshold.

→ **Nuclear-Powered Submarines.** Russia could supply or lease nuclear-powered submarines, similar to the deals between Russia and India,[50] or the AUKUS agreement between the United States, United Kingdom, and Australia.

→ **Strategic Defense Partnerships.** If Russia and Iran establish a genuine strategic partnership with a strong defense component, Russia might consider extending a nuclear umbrella over Iran or deploying Russian tactical nuclear weapons in Iran, similar to those in Belarus. This option, however, may encourage Iran to remain under the nuclear threshold.

→ **Counterintelligence Support.** Russia could provide counterintelligence support specific to the nuclear program. This is critical given Iran's history of losing sensitive nuclear information through intelligence channels in the past.

Nuclear Energy Cooperation

→ Peaceful Collaboration. Russia could continue peaceful nuclear energy cooperation, including the construction of additional reactors, the supply of fresh nuclear fuel, the taking back of spent nuclear fuel, maintenance and repair, as well as personnel training.

Collapse and Loss of Control over Russia's Nuclear Complex

Contrary to other options, this option does not require Russia's intentional action. Instead, the developments below might become possible if Russia loses or substantially weakens control over its nuclear complex due to substantial political, social, and economic turmoil.

→ **Brain Drain.** Migration of individual Russian nuclear experts or teams to Iran to work for Iran's nuclear program.

→ **Uncontrolled Nuclear Entrepreneurship.** Individual organizations in Russia cooperate with Iran on sensitive topics without adequate export controls.

→ **Illicit Material Trafficking.** Trafficking of weapons-grade nuclear materials and non-nuclear materials necessary for Iran's weapons program.

---

47 This type of test may involve nuclear material and high explosives, similar to standard nuclear tests. However, it is designed to ensure that the critical mass of nuclear material is not achieved, thereby avoiding an actual explosion. Still, such tests generate valuable data about nuclear weapons performance. These tests are permitted under the Comprehensive Test Ban Treaty.

48 Alexander Stepanov, *"Nachalnik tsentral'nogo yadernogo poligona Rossii na Novoi Zemle Andrey Sinitsyn: Esli postupit komanda, v lyuboi moment my nachnem ispytaniya,"* [The Head of Russia's Central Nuclear Test Site at Novaya Zemlya Andrey Sinitsyn: If There is an Order, We Will Start Testing at Any Moment] Rossiiskaya Gazeta, September 17, 2024, https://rg.ru/2024/09/17/ukrotiteli-vzryvov.html

49 David Albright and Andrea Stricker, *"Parsing Iran's Claims about Quickly Reconstituting the IR-40: Are the Plutonium Pathway Restrictions Undermined?,"* Institute for Science and International Security, February 5, 2019, https://isis-online.org/isis-reports/detail/parsing-irans-claims-about-quickly-reconstituting-the-ir-40/8

50 Maya Carlin, *"Russia Leases to India Nuclear Powered Submarines (Let the Problems Begin...),"* National Interest, August 9, 2024, https://nationalinterest.org/blog/buzz/russia-leases-india-nuclear-powered-submarines-let-problems-begin-208526

6. Recommendations

The following recommendations focus on nuclear cooperation between Russia and Iran. They complement broader measures aimed at addressing the risks of a growing partnership between the two countries that provide ground for the recommendations of this paper.[51]

While these recommendations are intended for Germany and Israel, it is assumed that Germany will closely coordinate its policies with its European partners – France and the United Kingdom (the E3).

These recommendations assume that a military strike against Iran is not part of the European policy toolbox. However, any deliberations of European policy options on Iran's nuclear program should consider the potential for military action by Israel or the United States, especially in scenarios where Iran has reduced its cooperation with the IAEA and has decreased the transparency in its nuclear program. In such cases, Israel and the United States may operate on worst-case assumptions, anticipating a nuclear breakout.

This paper was completed in mid-December 2024, after Iran's posture in the Middle East was substantially weakened following Israel's ground operation in Southern Lebanon, severely curtailing Hezbollah, as well as the collapse of the Assad regime in Syria, which disrupted the flow of weapons and other resources from Iran to Hezbollah. These setbacks place Iran in a position of substantial weakness, making a breakout to the bomb an appealing strategy for Iran to upend the situation. Such a breakout would invalidate recommendations aimed at preventing it, but other recommendations that address continuing cooperation between Russia and Iran would remain valid. Recommendations specifically focusing on Iran's breakout, separate from its cooperation with Russia, are beyond the scope of this paper.

Some recommendations are intended for Germany to implement independently, while others advocate for joint action by Germany and Israel. All recommendations are given in the appropriate sections below.

Recommendation for Germany

→ **Clear messaging to Iran.** Engage with Iran to convey the negative consequences of Iran's noncompliance with its nonproliferation commitments and lack of cooperation with the IAEA. In addition, emphasize that any cooperation with Russia supporting its war in Ukraine will be considered an aggravating factor when making sanctions decisions, including both the imposition of new sanctions and the lifting of existing ones.

→ **A new nuclear deal.** Work on developing a new nuclear deal to address the weaknesses of the original JCPOA. The new deal should preferably include the United States as a party, but if the United States is unwilling, Germany, the United Kingdom, and France should consider independent European action. This deal should exclude Russia, as it has no genuine interest in the JCPOA beyond rhetorical support, and it could prevent rapprochement between Iran and the West. Negotiations on the new deal should focus on results and not on the negotiation process. Iran has repeatedly abused the negotiation process to postpone or avoid any actual compliance measures, such as refusing to accept IAEA inspections or not providing substantive responses to IAEA information requests. Germany should engage Israel to understand its conditions for a new nuclear deal and take them into account during negotiations.

→ **Snapback.** Prepare to trigger the "snapback" provision of UNSCR 2231, which allows for the restoration of sanctions without complicated reconciliation procedures if Iran fails to comply. The snapback decision should depend on Iran's cooperation (or lack thereof) with the IAEA and potential negotiations with the E3 and the United States. This mechanism must be used before the JCPOA expires in October 2025. If sanctions are not reimposed, they will expire together with the JCPOA.

→ **Waiver for nuclear energy cooperation.** To maintain opportunities for trade-offs, avoid sanctions that do not affect Iran's nuclear weapon program and Russia's military capability to fight in Ukraine. Explicitly acknowledge the right of Russia and Iran to cooperate in peaceful nuclear energy projects, such as building additional light water reactors, supplying fresh fuel, retrieving spent fuel, and training personnel for nuclear power plant operations. Discourage cooperation in sensitive nuclear fuel cycle technologies, such as enrichment, fuel reprocessing, and heavy water reactors. Request Russia to leverage its nuclear energy cooperation to press Iran on compliance with its nonproliferation commitments and cooperation with the IAEA. Consider waiving sanctions on specialized equipment for nuclear power plants – either built in Russia or built by Russia for foreign customers – providing European manufacturers with clear guidelines for cooperation in this area. Identify equipment that cannot be repurposed for military applications and can be easily tracked when installed at the site. This approach also provides safety benefits compared to alternatives supplied by other (e.g., Chinese) manufacturers.

51 Shine, Citrinowicz, Mil-Man, and Druyan Feldman, *"Global Power Shifts."*

→ **Deterrence.** Assess Iran's approach to deterrence, including its nuclear and conventional components, use of proxies, and potential threats to Europe. Consider Europe's potential role in deterring Iran and engage with Israel and the United States on this topic. Among other things, Europe's contribution can include increased military cooperation focused on air defense and missile interception at the regional level. This recommendation assumes that, for the time being, the primary role in deterring Iran will belong to Israel and the United States.

→ **Nonproliferation norms.** Examine potential cooperation options through the framework of nonproliferation obligations and prepare to address them in the proper venues, such as the NPT Review process and the Nuclear Suppliers Group. Some scenarios of Russia's nuclear cooperation with Iran could directly violate Russia's obligations. For example, providing direct support to Iran's nuclear weapons program could breach NPT Article 1, which prohibits assistance "in any way" in acquiring nuclear weapons. Other scenarios, such as the transfer of nuclear fuel cycle technologies, might formally comply with international nonproliferation norms but could still enhance Iran's nuclear weapon capabilities. Respectively, some of these scenarios can be addressed using legal instruments where applicable, and political pressure where legal measures fall short.

→ **Engagement with China.** Engage with China on Iran's nuclear program and ensure that it is included in broader negotiations with China. While China, alongside Russia, has consistently provided diplomatic support to Iran and opposed the IAEA Board of Government resolutions condemning Iran, its cooperation with Iran is largely limited to economic issues, avoiding military cooperation.

→ **Threat reduction contingency planning.** Cooperate with the United States to analyze the experience gained from multiple technical assistance programs implemented in Russia after the collapse of the Soviet Union. These programs aimed to prevent the spread of nuclear materials, technologies, and expertise related to weapons of mass destruction. Use this analysis to develop a contingency plan addressing the social and economic collapse of Russia, which could result in renewed proliferation risks.

Recommendations for Germany and Israel

→ **Intelligence cooperation.** Maintain and enhance intelligence cooperation to monitor Russia's nuclear cooperation with Iran, developments in Iran's nuclear weapons program, and the acquisition networks of both Iran and Russia.

→ **Fissures between Russia and Iran.** Analyze historical and current tensions between Russia and Iran, including those driven by the current situation, and use this analysis in negotiations with both countries to weaken their partnership.

→ **Proliferation Security Initiative.** Enhance the implementation of the *Proliferation Security Initiative* (PSI), which aim to interdict the transfer of *weapons of mass destruction* (WMD), their delivery systems, and related materials to and from states and non-state actors of proliferation concern.[52] In particular, on October 18, 2023, following the expiration of constraints on Iran's ballistic missile program under the UNSCR 2231 (which endorsed JCPOA), a coalition of PSI-endorsing states, including European countries, Israel, and the United States, issued a statement that reaffirmed their commitment "to take all necessary measures to prevent the supply, sale, or transfer of ballistic missile-related items, materials, equipment, goods, and technology, to protect peace and stability in the region and beyond."[53] While almost all regional states, including those in the Gulf, Central Asia, and the North Caucasus support PSI, only Bahrain formally endorsed this statement. Germany and Israel should collaborate to encourage more regional states to support this declaration. Also, a similar statement should be prepared in advance of the JCPOA's expiration in October 2025.

→ **Export controls.** Enhance compliance with export control requirements and develop mechanisms to identify and cope with sanction evasion and circumvention to prevent Iran and Russia from obtaining technologies, equipment, and components necessary for Russia's war in Ukraine and Iran's nuclear weapon development. Israel should support this effort by sharing intelligence obtained from the analysis of captured munitions and debris of missiles and drones.

Many of these recommendations address several scenarios of cooperation. *Table 3* below illustrates how each recommendation applies to a specific scenario. The column headings represent cooperation options, while the row headings represent recommendations for actions by Germany and/or Israel. The filled cell at the intersection indicates that a particular recommendation is relevant to a specific cooperation option. For example, intelligence cooperation between Germany and Israel addresses Russia's direct support for Iran's nuclear weapon program, the transfer of dual-use technologies, military cooperation between Russia and Iran, monitoring the peaceful character of nuclear energy cooperation, and proliferation risks from a hypothetical collapse in Russia.

52 Proliferation Security Initiative, *"The Proliferation Security Initiative,"* https://www.psi-online.info/psi-info-en/-/2075520
53 Proliferation Security Initiative, *"Joint Statement on UN Security Council resolution 2231 Transition Day,"* Press Release, October 18, 2023, https://www.psi-online.info/psi-info-en/service/aktuelles/resolution-2231-transition-day/2627742

Table 3 | Russia and Iran Cooperation Options

			Diplomatic support	Nuclear weapons expertise	Dual-use technologies	Military cooperation	Nuclear energy cooperation	Collapse in Russia
RECOMMENDATIONS	For Germany	Clear messaging to Iran	✓	✓		✓		
		New nuclear deal	✓		✓		✓	
		Snapback		✓		✓		
		Waiver for nuclear energy cooperation			✓		✓	
		Deterrence		✓		✓		
		Nonproliferation norms		✓	✓			
		Engagement with China	✓					
		Threat reduction contingency planning						✓
	For Germany and Israel	Intelligence cooperation		✓	✓	✓	✓	✓
		Fissures between Russia and Iran	✓	✓	✓	✓		
		PSI		✓				
		Export control		✓	✓	✓		

About the Authors

Dmitry Kovchegin

has a Master of Science degree in nuclear engineering with a specialization in nuclear security and nonproliferation. He also completed a course of studies in international relations and training in psychology. Dmitry works on the intersection of nuclear technology, international relations, and program management issues. For 20 years he has worked as a consultant for the US National Nuclear Security Administration, supporting its effort to improve nuclear security in Russia, Ukraine, and Belarus. He has also contributed to multiple research projects with leading American research and non-profit institutions, such as the Nuclear Threat Initiative, Harvard University, Princeton University, and many others on the issues of nuclear security, nonproliferation, and nuclear energy.

Arkady Mil-Man

is a senior researcher and the Head of the Russia Program at the Institute for National Security Studies. He was the Israeli Ambassador to Russia (2003-2006) and Israeli Ambassador to Azerbaijan (1997-2000). He began his career at the Israeli Ministry of Foreign Affairs as a Senior researcher of the Soviet Union at the Center for Political Research. He later headed the department in the Center responsible for the research of Russia and the Far East. Mil-Man also served as Deputy Head of the Group of Israeli diplomats in Moscow (1989-1990) before the renewal of diplomatic relations with the Soviet Union. He founded the Israeli Embassy in Kazakhstan (1992) and became the first Israeli Chargee d'Affairs in that country. Later he worked as a Counsellor and Minister Extraordinary and Plenipotentiary in the Israeli Embassy to Russia and held different positions in the headquarters of the Israeli Ministry of Foreign Affairs responsible for post-Soviet countries. After his diplomatic career, Mil-Man worked, among other positions, in the Israeli high-tech sector, managing a venture capital fund with his partners that invested in Israeli start-ups. Mil-Man studied at Tel Aviv University and Hebrew University (political science, international relations, and history).