

## **Testimony for the Record**

Nuclear Energy Institute

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Subcommittee on National Security, Illicit Finance, and  
International Financial Institutions  
Committee on Financial Services  
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I am Maria Korsnick, President and Chief Executive Officer of the Nuclear Energy Institute (NEI).<sup>1</sup> I appreciate the opportunity to testify before the Subcommittee and thank Chair McHenry, Ranking Member Waters, Subcommittee Chair Luetkemeyer, Subcommittee Ranking Member Beatty, and the rest of the Committee for inviting me to discuss the critical role of nuclear energy in the United States.

During my testimony, I will highlight the critical national security implications of the United States' involvement in global nuclear energy markets, and the actions necessary to ensure strong U.S. global leadership as these markets continue to expand. These actions include removing exclusions of nuclear energy projects at international finance institutions and enhancing the competitiveness of U.S. export financing agencies, particularly the Export-Import Bank of the United States (EXIM Bank), the U.S. International Development Finance Corporation (DFC), and the U.S. Trade and Development Agency (USTDA).

### **1. National Security Interests in the Global Nuclear Energy Market.**

The United States' presence in the global nuclear energy market is instrumental for advancing several of our nation's key national security interests.

*Nuclear safety, security and nonproliferation.* U.S. commercial exports are a primary vehicle for promoting world-leading U.S. standards on nuclear safety, security, and nonproliferation. It is crucial to understand that U.S. trade controls become relevant in the U.S. supply of nuclear technology, reactors, major components, fuel, and services. The

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<sup>1</sup> NEI's mission is to promote the use and growth of clean nuclear energy through efficient operations and effective policy. NEI has more than 300 members, including companies that own or operate nuclear power plants, reactor designers and advanced technology companies, architect and engineering firms, fuel suppliers and service companies, consulting services and manufacturing companies, companies involved in nuclear medicine and nuclear industrial applications, radionuclide and radiopharmaceutical companies, universities and research laboratories, labor unions, and international electric utilities.

trade controls that attach to U.S. exports can have far-reaching effects, extending indefinitely to any reexports of U.S. technology. U.S. industrial partnership reinforces U.S. trade controls. Typically, the selection of a U.S. supplier to supply a nuclear reactor starts a century-long relationship, including the supply of fuel, components, operational support, and other services for the life of the host nation's nuclear power program. Deep institutional and person-to-person contacts fostered by these activities reinforce U.S. nuclear safety, security and nonproliferation requirements.

*Energy security and foreign policy interests.* The energy security of the United States and our partners worldwide depend on competitive U.S. nuclear energy export options. Nuclear energy enables reliable and abundant generation of power at an affordable cost. As countries around the world retire fossil generation, firm, clean sources like nuclear power are becoming increasingly vital to grid stability.

Reliance on a malign supplier for nuclear energy creates an even greater vulnerability than counting on the supplier for fossil fuel, potentially turning the long-term supply relationship into a trap. The construction of a nuclear power plant is a complex and costly endeavor, creating dependence of the host country on the supplier nation from the earliest phase of construction. Fuel and components are proprietary and subject to specific licensing requirements, making the original supplier difficult to replace. Under build-operate-transfer (BOT) and build-own-operate (BOO) financing models offered by some suppliers – especially appealing to developing countries – the vulnerability to supplier leverage extends to plant operation and control.

Despite these risks, many nations, including U.S. partners and allies, including Turkey and, even for a time, the United Kingdom, have turned to Russia and China for nuclear energy because of the attractiveness of the financing offered. Russia and China have both designated nuclear energy exports a strategic priority for the geopolitical influence that they confer on the supplier. Since its invasion of Ukraine, Russia has demonstrated its readiness to coerce other nations by withholding energy exports. Central and Eastern European operators of Russian-supplied power plants have scrambled to secure alternative supplies of fuel and components. Even before Russia's invasion of Ukraine, multiple European countries, including the Czech Republic and Romania, had already excluded Russian and Chinese suppliers from commercial nuclear projects on national-security grounds. Following the invasion, Finland immediately canceled Russian participation in a large reactor project and other European countries ruled out Russia and China from their nuclear-energy expansion plans. But elsewhere, the events in Ukraine

have had no discernable impact on the commercial strength of Russia and China in nuclear energy.

*Climate goals.* Shared climate goals also depend on nuclear energy, and the United States should be the supplier in order to advance our national interests. As governments around the world examine pathways to decarbonizing their economies, they are increasingly reaching the same conclusion: clean and dispatchable nuclear energy, combined with renewables like wind and solar, is the most cost-effective, efficient way to achieve climate targets. The cost-reducing function of nuclear power in a clean-energy system is driving demand for nuclear energy worldwide, including in developing countries in Asia, Africa and South America.

Most international finance institutions, including multilateral development banks such as the World Bank, have excluded nuclear energy projects or focused on renewable energy projects. These policies ignore that developing countries should need have access to nuclear power to achieve a low-cost clean energy system.

For this reason, I strongly believe the International Nuclear Energy Financing Act is an important step toward enabling access to reliable and resilient net-zero technologies as recognized in the COP28 First Global Stocktake.

*Technology leadership.* U.S. companies, with support from the U.S. government, have developed the world's most innovative advanced nuclear technologies. Maintaining and extending U.S. technological leadership requires continued private investment in research and development, which can be sustained only with success in growing global commercial markets.

The U.S. military has long relied on a nuclear supply chain that overlaps substantially with the civil nuclear industry. As nuclear energy assumes increased defense applications – both stationary and mobile – the national-security imperative to maintain U.S. nuclear technology leadership is becoming even more critical.

*Economic security.* Finally, U.S. nuclear energy exports promote our vital interests in the continued economic growth of the United States and our partners. Abundant, dispatchable electricity is essential for growing economies at every stage. Developing economies need reliable power to provide electricity to homes and to enable the growth of their industry. As the supplier of nuclear energy to these markets, the United States will create hundreds of thousands of high-paying American jobs.

## **2. The Global Commercial Nuclear Market is Large and Growing**

The global commercial nuclear energy market has seen a rapid expansion of interest on every continent. Driving this interest are energy security, climate goals, economic security and the smaller, simpler reactor designs coming to the market.

Near-term commercial opportunities for U.S. suppliers are concentrated in Europe, where energy security and decarbonization imperatives have converged.<sup>2</sup> The most immediate opportunities are for large plants. But in Europe and beyond, the commercialization of small and advanced reactors is creating significant new demand for nuclear power.<sup>3</sup> About 30 nations, one third of which are in Africa, are now considering, planning or starting nuclear power programs for the first time.<sup>4</sup> For nations that never considered developing a gigawatt-scale nuclear power plant because of size, cost, or complexity, there is strong appeal in a smaller design that is compatible with a small grid, scalable to growing power demand, and simpler to license, construct, and operate.

As nuclear energy expands to dozens of countries in regions where it has not yet been established, the United States must use its role as supplier to advance its critical national-security interests.

## **3. Financing is a decisive factor in procurement decisions**

Financing is often the decisive criterion in the selection of a nuclear energy supplier. Once operational, nuclear power plants can have low and predictable operational costs for 80 years or more. But like other large infrastructure projects, nuclear power plants have high initial capital costs and a long construction period, followed by a lengthy payback period. These characteristics mean that the cost of financing is a key determinant of the cost of electricity produced. Suppliers who can offer favorable financing terms, including financing of early-phase activities, low interest rates, long repayment periods,

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<sup>2</sup> The energy price crisis of 2020, followed by the Russian invasion of Ukraine in 2021, triggered a pronounced policy shift in favor of nuclear energy across the European Union (EU) and in the United Kingdom. Nations that had already planned to build new nuclear reactors, like the Czech Republic and France, are planning to build even more. Sweden, which had planned to phase out nuclear power, has reversed and now plans to build additional reactors. Multiple EU member states are planning nuclear energy programs for the first time or, in the case of Italy, to revive its discontinued program. Many of the 22 signatory nations that pledged at COP28 to triple nuclear energy generation belong to the EU.

<sup>3</sup> In Poland, Czech Republic, and Slovakia, as examples, SMRs are planned for the sites of retiring coal-fired power plants in order to reuse existing infrastructure and local workforces. Small and advanced reactors are also planned to decarbonize industrial processes such as steel production.

<sup>4</sup> “Emerging Nuclear Countries,” World Nuclear Association, Updated October 2023, last accessed January 10, 2024, <https://world-nuclear.org/information-library/country-profiles/others/emerging-nuclear-energy-countries.aspx>.

and innovative financing structures, gain an often overwhelming competitive advantage. International financing institutions have a critical role to play in leveling the playing field among supplier nations and especially in financing early-phase activities in which Russia and China have enjoyed a strong advantage.

#### **4. Ending Russian and preventing Chinese domination of the nuclear energy market**

Russia and China have emerged as dominant global suppliers of nuclear energy. Both nations have capitalized on favorable financing to gain market share at the expense of U.S. and other OECD-member suppliers. For both countries, these decisions are tied to their pursuit of geopolitical influence through nuclear energy supply.

##### ***Russia***

Russia is the world's dominant global nuclear supplier. Rosatom, Russia's state-owned nuclear energy conglomerate, currently has 70 percent of the global export market for new reactor construction and an order book amounting to \$200 billion over the next decade, according to its disclosures.<sup>5</sup> The company represents a key piece of Russia's strategy to leverage energy exports for geopolitical influence. Rosatom markets a wide range of nuclear reactor designs, from proven conventional, large light-water plants to small and advanced designs, to floating nuclear power plants. All are backed by full fuel-cycle services.

Rosatom has multiple commercial advantages not enjoyed by U.S. suppliers, including strong state financial support and promotion, an integrated supply chain and the ability to take back used fuel from most customers.

But Russia has gained its market dominance principally through favorable financing. These include equity contributions as well as debt financing. In most cases, debt and equity are combined through innovative structures such build-own-operate (BOO) and build-own-transfer (BOT) models.

More fundamentally, Russia offers terms and conditions that U.S. and other OECD-member supplier nations cannot match. U.S. EXIM Bank can offer long-term direct finance or guarantees with an expanded repayment term of up to 22 years post-plant

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<sup>5</sup> Szulecki, Kacper; Overland, Indra, "Russian nuclear energy diplomacy and its implications for energy security in the context of the war in Ukraine," Nature Energy, Feb. 27, 2023, <https://www.nature.com/articles/s41560-023-01228-5>, last accessed January 15, 2024.

construction. In addition, EXIM can finance up to 85% of the total U.S. export contract value; up to 40% (in some cases 50%) of local cost support; and, consistent with the updated terms of the OECD's Arrangement on Officially Supported Export Credits, 100% of the premia plus interest during the construction period. Such terms and conditions require a creditworthy borrower or guarantor, usually involving a sovereign government guarantee from the host country.

Leveraging Russia's Wealth Funds, Rosatom extends generous financial support to international nuclear projects. A few examples highlight the significant advantage that Russian financing provides to its global nuclear energy exports:

- *Bangladesh.* Rosatom's financing covers 90 percent of the Rooppur nuclear power plant's total cost of \$12.65 billion with an \$11.85 billion credit. The scale this loan is noteworthy, as it accounts for about half of Bangladesh's total outstanding external debt.
- *Hungary.* Rosatom initially proposed to fund the entire estimated investment of \$12 billion for the Paks II plant. Although the agreement has been amended to a \$10.8 billion loan, the terms remain favorable.
- *Egypt.* Russia has provided a loan of \$25 billion for the El Dabaa nuclear power plant, which is estimated to cost \$60 billion in total, with half of this amount allocated for construction.

## *China*

Applying a strategy from other industrial sectors, China seeks to leverage an unmatched domestic supply chain to achieve dominance of the global nuclear energy market. Chinese nuclear industry officials have said that China could build as many as 30 nuclear reactors abroad worth \$145.5 billion by 2030.<sup>6</sup>

Like Russia, China has designated nuclear energy exports as a strategic priority to increase its geopolitical influence and industrial capabilities.<sup>7</sup> China draws on growing experience from the operation of 55 reactors of various designs, including the world's first fourth-generation SMR that came online in late 2023. With 22 units under

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<sup>6</sup> "China could build 30 'Belt and Road' nuclear reactors by 2030: official," Reuters, June 20, 2019, <https://www.reuters.com/article/idUSKCN1TL0HY/>, last accessed January 15, 2024.

<sup>7</sup> McNicholas, Aaron, "China's Nuclear-Powered Future," The Wire – China, October 1, 2023, <https://www.thewirechina.com/2023/10/01/chinas-nuclear-powered-future-nuclear-energy-power/>, last accessed January 15, 2024.

construction and a further 42 units planned, the Chinese nuclear energy supply chain has an unmatched scale.

China has adapted U.S. and other Western technology to become largely self-sufficient in reactor design and construction. China's two principal nuclear energy companies, CNNC and CGN, market a range of reactor types, including a jointly developed large plant, an SMR now under construction, and a Generation IV design that has just entered operation. China recently supplied Pakistan with two large light-water reactors and has broken ground on an additional unit. China has plans to export both large and small reactor designs to countries in South America, Asia, and Africa. All of China's reactors are backed by full fuel-cycle capability.

China has dedicated strong state financial aid and state promotion to gain a foothold in the export market. Nuclear energy exports have been included in China's Belt and Road Initiative (BRI) since its launch in 2017. CNNC and CGN have offered generous and flexible financing structures, such as:

- *Argentina*. CNNC has agreed to contribute finance 85 percent of the cost of a Canadian reactor design at Atucha 3 on the condition that the next Argentine reactor uses the CNNC Hualong One design.
- *United Kingdom*. Similarly, CGN agreed a deal with the United Kingdom to contribute equity for construction of a French EPR reactor at Sizewell C on the condition that China later provide the Hualong One at the Bradwell site. In response to rising national-security concerns, the British bought out the Chinese stake in 2022.

China has also offered the BOT and BOO models.<sup>8</sup> As nuclear energy plans move forward in the many nations outside the OECD where China has supplied infrastructure projects, China is well positioned to win business.

## 5. Priority Actions

NEI has identified multiple ways for Congress to strengthen the United States' position in international nuclear energy markets. The bipartisan Civil Nuclear Export Act of 2023, introduced in the Senate by Sen. Joe Manchin and Sen. Jim Risch and in the House of

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<sup>8</sup> "Nuclear Power in China," World Nuclear Association, updated December 2023, <https://world-nuclear.org/information-library/country-profiles/countries-a-f/china-nuclear-power.aspx>, last accessed January 15, 2024.

Representatives by Rep. Byron Donalds and Rep. James Clyburn, would implement many of these measures.

### ***Strengthen the Role of International Finance Institutions in Nuclear Energy Projects***

- Direct the Executive Branch to use U.S. influence to enhance the role of key international finance institutions (IFIs), including ending the prohibition against supporting nuclear energy projects at institutions like the World Bank, International Finance Corporation, and Asia Development Bank.

### ***Increase coordination of federal agency support for nuclear energy exports.***

- Direct the Executive Branch to designate a senior-level director to coordinate U.S. support for nuclear exports across U.S. federal agencies and industry. A whole-of-government approach is critical to U.S. competitiveness against Russia and China. A Director for Nuclear Energy Policy is necessary to coordinate and focus U.S. government efforts.

### ***Enhance EXIM Bank Capabilities***

- Acknowledge and support the House Select Committee on the Strategic Competition between the United States and the Chinese Communist Party report recommendation on EXIM.
  - Mandate that EXIM’s China and Transformational Exports Program (CTEP) accept greater loan-loss risk across its portfolio and expand its transformational export areas to include cloud services and infrastructure; civil nuclear facilities, material, and technologies; and critical minerals, materials, and rare earth element mining, concentration, separation, refining, alloying, fabrication, and end-use.
  - Legislate a permanent increase of EXIM’s default rate cap from 2 percent to 4 percent to expand risk tolerance, proactively invest in key sectors, and accommodate for global portfolio turbulence.
- Name Russia as a “covered country” for purposes of Section 402(a) of CTEP. Russia matches the criteria for inclusion in the program and Russian exports pose risks to U.S. national interests similar to Chinese exports. In global nuclear energy markets, Russia has exploited favorable financing terms to become the world's dominant nuclear energy supplier.



- Exempt nuclear energy projects – and all CTEP projects – from EXIM Bank’s blanket 2-percent default rate calculation.
- Mandate EXIM to include in its annual competitiveness report to Congress a summary of how EXIM financing for nuclear energy projects compares with financing of such projects by China and Russia, and the steps EXIM is taking to close these gaps.
- Improve coverage and terms for nuclear fuel loads and other post-construction services. Nuclear fuel load, used-fuel disposal and storage should all be eligible for 10 years rather than the current maximum of 5 years. U.S. involvement in these activities would provide a long-term economic advantage for U.S. exports and American jobs. It would also advance critical U.S. national-security interests in nuclear safety, security, and nonproliferation. EXIM Bank should ensure the most competitive terms.
- Increase local cost support. EXIM should raise local cost support from 50% to 100% of the export contract. Local costs – including earthworks, drilling, and pouring concrete – constitute a large share of these projects. The local supply of these activities is an economic imperative and does not substitute for U.S. export content.
- Direct the Executive Branch to work with other Organisation for Economic Co-operation and Development (OECD) members to further liberalize financing limits in the Nuclear Sector Understanding. Despite helpful changes in 2023 to raise the maximum repayment term from 18 to 22 years, and other flexibilities, the limits remain a competitive disadvantage to U.S. suppliers against Russian and Chinese rivals.

### ***Enhance DFC Engagement in Nuclear Projects***

- Direct DFC to demonstrate the U.S. government is a project partner by facilitating equity investment required by overseas nuclear energy customers. Specifically, DFC should make available to nuclear projects a public-private insurance model to cover 50 percent of private investment, as well as its direct equity investment product.
- Because most nuclear projects abroad are developed by state-owned utilities or project-development companies, Congress should encourage DFC to use its full range of products for nuclear with state-owned project partners.
- The DFC equity product should be adequately resourced, and investments should be accounted for using standard accounting principles (e.g., net present value as

opposed to the current 1:1 cash basis) to realistically reflect the cost of the investment and encourage use for nuclear projects.

- Provide DFC with expanded authority to use its full range of products in markets of strategic importance.
- Direct DFC to support U.S. exports of nuclear plants in all sizes, including large plants.

### ***Enable Greater USTDA Capabilities to Support Nuclear Projects***

- Significantly increase appropriations to USTDA to support early project development including feasibility and front-end engineering and design studies.
- Provide USTDA with expanded authority to use its full range of tools in markets of strategic importance.

## **6. Conclusion**

The United States must place significant strategic value on nuclear energy exports and support them with the necessary financing tools to compete effectively. By taking legislative action in these areas, Congress can help ensure that the United States remains a strong and influential participant in the global nuclear energy market, safeguarding our national security interests.

I thank the Committee for its continued support for nuclear energy and allowing me to testify on policies needed to ensure a robust U.S. presence in global nuclear energy markets. Enactment of supportive legislation is vitally important to enabling financing for U.S. suppliers to compete with Russia and China, and thereby advancing U.S. national security interests in the global markets. The industry looks forward to working with the Committee on its legislative proposals.

