Saudi Arabia Nuclear Market Size & U.S. Export Analysis

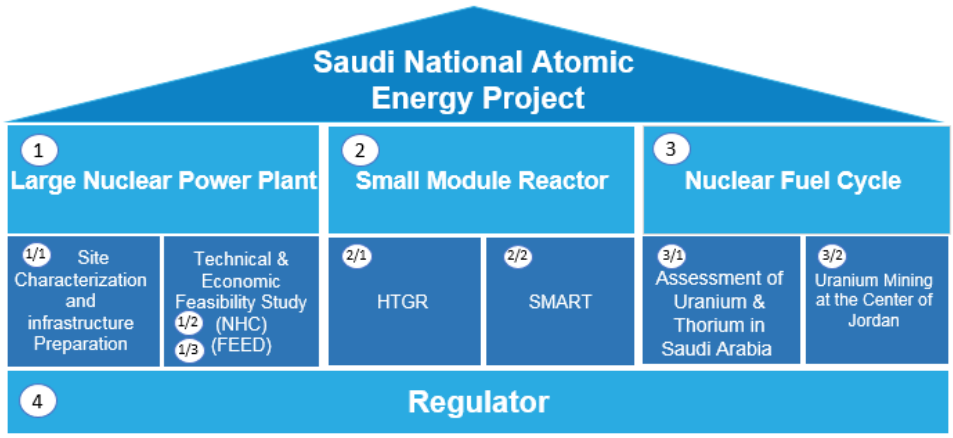
UxC, LLC (UxC), a global leader in nuclear market research and analysis, has prepared this special analysis for the Nuclear Energy Institute (NEI) focused on Saudi Arabia's nuclear market outlook and market size projections based on multiple scenarios. This report's primary objective is to analyze the prospects for nuclear power development in the Kingdom of Saudi Arabia (KSA) through 2050. Based on this analysis, UxC has extrapolated projections for the country's nuclear market size and assessed the implications for export opportunities for U.S. nuclear suppliers and potential U.S. job creation.

Saudi Arabia Nuclear Development Plans and Status

The quest for nuclear energy development in the KSA started in earnest around 2010, when the government issued an energy policy promoting the need to decrease the role of fossil fuels in electricity generation. One of the first steps toward a nuclear energy program was the establishment of the King Abdullah City for Atomic and Renewable Energy (K.A. CARE), which oversees the promotion and development of both nuclear and renewable energy sources. The government has been refining its nuclear energy plans since 2010, resulting in adjustments to its nuclear capacity targets and the types of reactor designs it intends to pursue.

There are multiple reasons behind Saudi Arabia's interest in developing nuclear energy, including enhancing national energy security, meeting environmental and climate policy targets, extending the life of its oil and gas reserves, improving electricity generation and desalination, as well as supporting domestic job creation and technological advancement. In 2017, the Saudi National Atomic Energy Project (SNAEP) was approved with four main components. As seen in Figure 1, these components included deployment of a first large nuclear power plant, development of small modular reactors (SMRs), efforts to extract the country's uranium resources, and establishment of a nuclear regulator.

Figure 1. Overview of the Saudi National Atomic Energy Project



Source: K.A. CARE

Since the 2017 SNAEP, several goals have been achieved, including the approval of a national policy and passage of relevant legislation related to the nuclear energy program, as well as the establishment of a national nuclear regulator (Nuclear and Radiological Regulatory Commission - NRRC). In addition, as an important achievement for the country, construction of the Low Power Research Reactor at King Abdulaziz City for Science and Technology was completed in 2018. Moreover, the Saudi Nuclear Energy Holding Company (SNE) was created in 2020 to handle all aspects of the country's first large NPP. In 2022, the Duwaiheen Nuclear Energy Company (DNEC) was established as a subsidiary to SNE. DNEC will be the owner/operator of all future Saudi NPPs. Notably, the site for KSA's first NPP was also selected at Khor Duwaiheen located on the Persian Gulf coastline between Qatar and the UAE.

As of 2026, prospects for nuclear power deployment in the KSA are rapidly improving as the country's government is leaning into nuclear power from an energy security perspective. In this regard, the KSA has also been working closely with the U.S. government to conclude a Peaceful Nuclear Cooperation Agreement per Section 123 of the U.S. Atomic Energy Act. Reports emerged in November 2025 that a U.S.-KSA 123 Agreement had been concluded, with expectations that the Trump administration will forward this agreement to the U.S. Congress in 2026 for consideration and approval. A U.S.-KSA 123 Agreement will be crucial to allow U.S. companies to compete for nuclear business in the KSA as it is a prerequisite to export related U.S. products and services to the Kingdom.

Nuclear Technologies Under Consideration

Since 2017, Saudi Arabia has been evaluating different international nuclear reactor suppliers for the country's first large NPP, which is intended to be a two-unit site. Several steps have already been taken to advance this project at the Khor Duwaiheen site, although a lead reactor vendor has yet to be selected. UxC understands that vendors from the following five countries have participated in the tender process:

- United States
- Russia
- South Korea
- France
- China

All companies are believed to still be in the running for the KSA's first NPP. Moreover, it is expected that the winner of the first NPP tender will be in a very strong position to be selected for any follow-on NPP projects in the Kingdom.

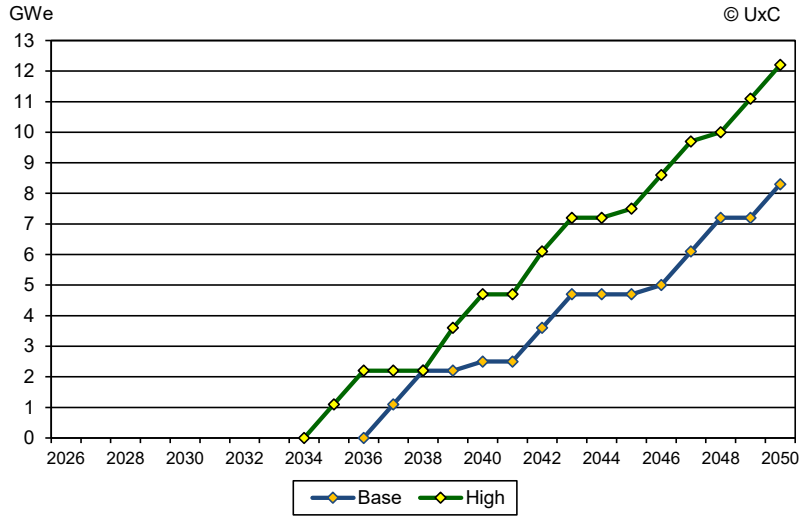
In addition to large NPPs, Saudi Arabia has also evaluated several SMRs. The most effort has gone into a joint project with South Korea's KAERI on the SMART small PWR design. However, as of 2026, it appears that all past efforts on the SMART project have ended. In addition, K.A. CARE has also had some interactions with China's CNNC on that country's HTR-PM pebble-bed reactor technology as well as with Argentina's INVAP on that country's CAREM small PWR design.

Finally, K.A. CARE and other KSA domestic companies, including the Saudi Arabian Mining Co. Ma'aden, have engaged in preliminary work on uranium exploration in the Kingdom. One known project involved an agreement between China's CNNC and the Saudi Geological Survey (SGS) to explore and assess uranium and thorium resources in Saudi Arabia.

Total Nuclear Market Opportunity

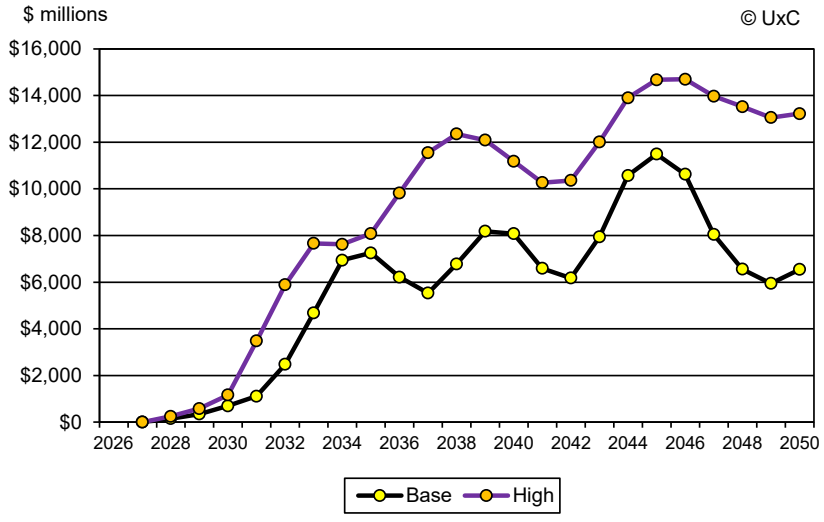
Given Saudi Arabia's significant economic size and energy needs, UxC believes that large-scale NPPs will be a focus when a nuclear program is initiated. At least one site is already being evaluated that could house up to four large 1,000 MWe-scale reactors. Several other coastal sites are also believed to be under consideration for future reactor development. UxC projects that new large LWR capacity will be deployed in the Kingdom between 2030 and 2050. As seen in Figure 2, UxC's Base Case envisions Saudi Arabia completing its first large reactor in 2037 with another six such units built by 2050, while the High Case accelerates this growth potential with the first unit completed in 2035 and another nine such units built by 2050.

Figure 2. UxC Base and High Case Saudi Nuclear Power Projections, 2026-2050



Using the above nuclear power forecasts, UxC derives anticipated market size estimates for the KSA. Including both reactor construction and services expenditures, this analysis yields a total Saudi nuclear market size range as presented in Figure 3 in current dollars. Through 2050, cumulative spending on the KSA nuclear program is estimated at $139 billion in the Base Case and $221 billion in the High Case.

Figure 3. Total Nuclear Market Size for Saudi Arabia, 2026-2050



Market Opportunities for U.S. Vendors

The U.S. is well positioned to benefit from Saudi Arabia's nuclear power ambitions given both close geopolitical ties as well as the Kingdom's strong preference for U.S. nuclear technology and knowhow. Assuming that a U.S.-KSA 123 Agreement is ratified, multiple U.S. nuclear suppliers could be engaged in the Kingdom's emerging nuclear energy program.

In the nuclear reactor supply area, Saudi Arabia is looking at large LWRs for its first reactor and appears likely to favor U.S. technology. In the SMR arena, several U.S.-based reactor developers and related vendors could participate in the Kingdom. For small and advanced reactors, Saudi Arabia may seek to focus on non-LWR technologies given its arid climate, which could result in market opportunities for U.S. advanced reactor and microreactor vendors with technologies based on gas-cooled, molten salt, or liquid metal designs.

In addition to reactor vendors, the U.S. has many companies that are actively supporting new reactor projects the world over. This includes large engineering, procurement, and construction (EPC) contractors and other engineering firms. In addition, the U.S. has multiple manufacturers and other supply chain firms that would also be involved in the export of U.S. nuclear reactors. Moreover, a variety of engineering and specialized technical services firms could also participate in a U.S.-led Saudi new reactor program.

Based on our forecasts for the total nuclear market in Saudi Arabia, we can analyze the potential impact on the U.S. economy in terms of total exports as well as the direct jobs created from such exports. This analysis assumes that Team USA is successful in its bid for the Kingdom's nuclear power plant tender, leading to the sale of large LWR reactors to Saudi Arabia. Moreover, this analysis anticipates heavy involvement by U.S. companies in the Kingdom's SMR program along with ongoing support services for future operating reactors.

Additional opportunities exist for U.S. companies in sales of products and services across the nuclear fuel supply chain, including in the areas of uranium, conversion, enrichment, and fuel fabrication.

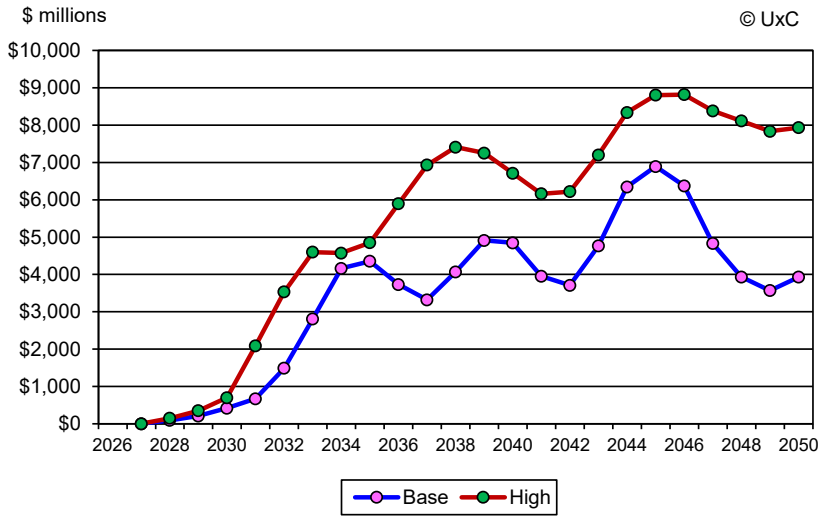
U.S. Nuclear Exports Potential

Based on our forecasts for the total nuclear market in Saudi Arabia, UxC analyzes the potential impact on the U.S. economy in terms of total exports as well as the direct jobs created from such exports. This analysis assumes that Team USA is successful in its bid for the Kingdom's nuclear power plant tender, leading to the sale of large LWR reactors to Saudi Arabia. Moreover, this analysis anticipates heavy involvement by U.S. companies in the Kingdom's SAMR program, along with ongoing support services for future operating reactors.

The total export potential for the U.S. requires assumptions regarding the share of the total nuclear power program expenditures in Saudi Arabia that will go directly to U.S. suppliers. For the purposes of this analysis, roughly 60% of the total costs are projected to go to U.S. companies involved in each project. This estimate is viewed as conservative given Saudi Arabia plans to localize a significant portion of reactor content over time, especially after completion of the initial reactor units. Moreover, since some U.S. reactor vendor supply chains are international, not all imported equipment and services would originate from the U.S. The results of our analysis are shown in Figure 4 below. Based on these

assumptions, total U.S. exports over the period from 2026 to 2050 could range between $83 billion under a Base Case and up to $133 billion under a High Case.

Figure 4. U.S. Nuclear Exports Potential for Saudi Arabia, 2026-2050



U.S. Job Creation Potential

Based on the U.S. exports data, UxC forecasts for the potential U.S. jobs that could be created by a U.S.-based nuclear power plant project in Saudi Arabia. Using a 2026 starting point of one job created by every $200,000 in exports (escalated at a rate of 2.5% throughout the study period), we arrive at the following U.S. jobs estimates for each year from 2026 to 2050 as presented in Figure 5. The results for the Base Case show jobs created will average around 12,500 per year for the period 2026-2050 with a peak of nearly 22,000 during peak export years. Under the High Case, this could increase to an annual average of around 19,750 jobs per year with a peak of over 27,500 jobs in the highest years.

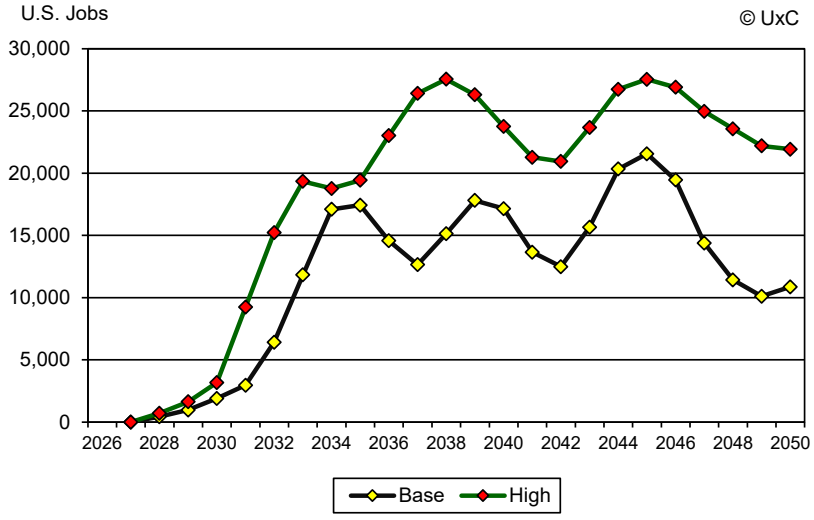



Figure 5. U.S. Jobs Potential From Nuclear Exports to Saudi Arabia, 2026-2050