



Saudi Nuclear Deal Tests U.S. Civil Nuclear Relevance, Security Interests

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By Jeffrey C. Crater

Saudi Arabian electricity and water needs for a rapidly growing population and economy have justifiably led to a decision to begin a nuclear energy program for emissions-free, reliable power. In the backdrop of the Saudi tender for construction of the country's first nuclear units, the U.S. nuclear industry has experienced steady decline, while the foreign competition has become increasingly able and assertive. Among the many challenges the U.S. faces in competing for the Saudi project is the lack of a bilateral nuclear cooperation agreement with Riyadh, which would block U.S. industry from participating in the Saudi nuclear market not only by undermining the Westinghouse bid, but also potentially hindering U.S. vendors from supplying a hypothetical Korean-led project in Saudi Arabia. Failing to conclude or obstructing a U.S.-Saudi 123 agreement essentially opens the door for Russia and China, which would not only result in the loss of U.S. business opportunities, but also undercut multiple pathways through which the U.S. could positively affect the trajectory and principles of the Saudi program at this embryonic stage.

Saudi Arabia: Growing Energy Demand Prompts Nuclear Tender

Saudi Arabia's economy and population is booming, and with it, so is its demand for energy and fresh drinking water. The population has more than doubled since 1990 from 16 to 33 million, and is expected to grow by about 500,000 people every year until 2040. The Saudis came to realize that to meet their energy and water demands, they had to do something different. After all, they have been burning oil and gas, their most precious commodities, to produce about 92% of their electricity. So in 2010, King Abdullah City for Atomic and Renewable Energy (KA-CARE) was created by royal decree in Riyadh to meet Saudi Arabia's growing need for energy and potable water

through diversification of its energy mix via nuclear energy and renewable sources, freeing up oil and gas for export and taking tangible steps towards meeting the country's Paris Accord climate commitment. Saudi Arabia is targeting 9.5 gigawatts (GW) of renewable energy by 2023, estimated to cost between \$30 billion and \$50 billion. Longer-term, KA-CARE is also expected to spend approximately \$80 billion on 16 large reactors to generate 20% of Saudi Arabia's electricity by 2040. To kickoff its efforts to spur growth in carbon-free electricity, Saudi Arabia has invited major global reactor vendors to bid on its first two large reactor units. Initial FEED, or Front End Engineering Design, meetings with the five respondents from the United States (Westinghouse), Republic of Korea (KEPCO), France (EDF), China (CNNC), and Russia (Rosatom) occurred in November 2017. KA-CARE, expected to down select to about 3 vendors this spring, is also expected to make a final vendor decision by the end of 2018.

U.S. Nuclear Shrinks While Foreign Competition Grows

What is notable is that 30 years ago, China, Korea, and Russia would not have been at the table. In fact, the United States, now reduced to one vendor, may then have had two: Westinghouse and General Electric. In fact, Americans are likely seeing some of the last large reactors built in the United States, certainly for the foreseeable future, by the same company seeking to build the Saudi reactors, Westinghouse. U.S. utility Southern Company has taken management control of the construction of the last two new reactors, the Westinghouse-designed AP1000, and is handing the day-to-day construction activities over to Bechtel. The Pittsburgh-based reactor company filed for bankruptcy, and its Japanese parent, Toshiba, is considering a purchase bid from a Canadian investment firm that has promised to continue the export business. The construction of two other AP1000s at V.C. Summer, owned by the South Carolina-based utility SCANA, was halted. Both of these U.S. projects have witnessed significant cost escalations. The Tennessee Valley Authority brought back a nearly completed, but 1980s mothballed, Westinghouse unit at Watts Bar 2 just last year, leaving the United States with 100 operating units down from 104 a short while ago. This is not the build-rate it once was in the United States, where the startup of several plants in a given year was common. In fact, ten reactors came online in 1974 alone.

In contrast to the U.S., a number of foreign nuclear vendors are on the upswing. Russia is on a domestic nuclear building spree and is pushing global exports with attractive used fuel take back provisions. Comparably, China is growing its nuclear industry exponentially, with 35 plants online and installing new plants at the rate the United States did in the 1970s and 1980s. China is planning 150GW of nuclear by 2030, close to double the U.S. capacity, and is developing its own indigenous design for export, the HPR1000. China's colossal manufacturing base is up to the task, backed by plenty of capital for

nuclear project finance in the United Kingdom and a dozen others in Africa, Asia, and South America. China is well-positioned for global export, capable of manufacturing at a jaw-dropping rate of eight reactors annually, with the potential to increase this rate to twenty reactors annually, which would surpass the manufacturing base of Japan, Republic of Korea, and the United States combined.

Nuclear Cooperation Agreement Needed; Faces Hurdles

Given the general trajectory of its nuclear industry and the presence of heavy foreign competition, the U.S. faces a number of significant challenges in winning the Saudi tender--among them is the current lack of a bilateral nuclear cooperation agreement with Riyadh, which would present a clear legal obstacle for major civil nuclear exports to Saudi Arabia. Time is running short to act in forging an agreement and allowing Westinghouse and U.S. suppliers to compete for the initial Saudi work. Conventional wisdom says the hard part of the deal is already done, allowing flexibility on enrichment and reprocessing (ENR), but this remains speculative until the 123 Agreement is inked and sent to Congress. Flexibility on ENR would fly in the face of the "gold standard," a term that emerged following conclusion of the U.S-UAE 123 Agreement, whereby the UAE foreswore not to enrich uranium or reprocess spent fuel. The question remains: can the process be completed quickly enough to keep U.S. nuclear vendors in the game?

Once a theoretical deal is struck, the Administration would send the President's approval statement accompanying the 123 Agreement and a State Department-supplied Nuclear Proliferation Assessment Statement to the Senate Foreign Relations Committee and the House Foreign Affairs Committee. This would start the Congressionally-mandated 90 day legislative clock. Fortunately, House Speaker Paul Ryan and Senate Majority Leader Mitch McConnell have scheduled more than the usual number of legislative days in an election year which should allow ample time for the Agreement to lay with no action for 90 days for it to become effective. However, there is also the possibility that Congress may attempt to pass identical legislation to affect or, more unlikely, kill the deal altogether. Efforts to stop such an agreement in Congress may arise from narrowly-conceived notions of proliferation risk, and would affect more than just the U.S.--indeed, failure to put a completed U.S.-Saudi 123 into force would have ripple effects globally.

U.S. Vendors Supplying Korean Projects: Tied to 123 Agreement Success

What is remarkable about the 123 process is that Congress could not only theoretically stop Westinghouse, but it could also potentially impede the American supplier base from supporting a KEPCO-led consortium in Saudi Arabia, ultimately hurting U.S. jobs and creating potential rifts between the United States and its close partners and allies. The Republic of Korea

continues to move forward with nuclear exports through its APR1400 design, through which it entered the global nuclear arena in 2009 by winning the contract to build four units in the United Arab Emirates (UAE), the first of which goes online later this year. Korea has also expanded its manufacturing capability for export--for example, the heavy nuclear components for Southern Company's two AP1000s at Vogtle came from Korea's Doosan Heavy Industries, and the same can be said for the four UAE units. However, given the complexity of the global supply chain and the trust built around manufacturing quality, the Koreans also rely on U.S. suppliers. U.S. suppliers are, for the most part, not permitted to do business in a country without a 123 Agreement. So, an untimely--or even worse, non-existent--123 Agreement with Saudi Arabia could not only take Westinghouse out of the running, but also the dozens of U.S. suppliers associated with the KEPCO bid. Should Korea win the deal despite issues with the conclusion of a U.S.-Saudi 123, KEPCO could be forced to seek more reliable, non-U.S. alternatives for components and services that it would have otherwise procured from U.S. firms--this would not only lead to U.S. supplier business losses, possibly permanently, but also impact U.S. ability to exercise consent rights with respect to the budding Saudi program.

Saudi Arabia Nuclear Deal More Than Just Business

The Administration correctly perceives that the Saudi nuclear tender is a tremendous commercial opportunity to jumpstart the U.S. nuclear industry, and is sending all the correct signals that it will reach a 123 Agreement for nuclear cooperation with Saudi Arabia. However, this deal is more than just about trade, exports, and business--it is an important litmus test for U.S. influence and weight in maintaining robust international nuclear safety, security, and nonproliferation norms, particularly in a region where nuclear power development is at a nascent stage. The U.S. no longer holds a monopoly in civil nuclear technology, and consequently, can no longer dictate terms with its nuclear partners as it could in previous years and decades. Approaching the Saudi 123 with the obsolete premise of U.S. dominance and supremacy in the civil nuclear arena will paradoxically cause the U.S. to lose out on any chance of having its finger on the global nuclear nonproliferation pulse. Without a U.S.-Saudi 123, the U.S. not only loses its own opportunity to directly shape a safer, more secure future for nuclear power in Saudi Arabia, but could also compromise possible cooperation with the KEPCO-led consortium from Korea, with whom the U.S. is closely aligned in terms of standards for nuclear governance.

The end result is further opening the door for either Russia or China to take the Saudi market, which would profoundly limit U.S. ability to guide and observe Riyadh's nuclear program and activities. Congress has the power to block U.S. industry from participating in the Saudi nuclear market, but would be powerless

to curtail the arguably more significant risks arising from a Chinese and/or Russian nuclear foothold in the Middle East. In evaluating a potential agreement with Saudi Arabia, Congress must consider the greater national security implications of its actions.

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