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Prospects for Enhanced U.S.-Saudi Nuclear Energy Cooperation

Overview

U.S. companies have provided proposals to Saudi authorities in relation to a planned 2018 tender for nuclear reactor construction in Saudi Arabia in conjunction with the kingdom's nascent nuclear energy program. In recent years, Saudi Arabia has entered into agreements concerning possible civil nuclear cooperation with several countries (**Table 1**, right). In July 2017 the Saudi cabinet approved a National Project for Atomic Energy, including plans to build large and small nuclear reactors for electricity production and desalination amid a larger effort to diversify the Saudi economy and expand the use of renewable energy. Saudi authorities express hopes of signing contracts for reactor construction in 2018. Depending on its nature and extent, future U.S.-Saudi nuclear cooperation may require executive branch authorizations and/or congressional approval of bilateral agreements. Saudi plans also are fueling debate in Congress over regional nuclear proliferation and security dynamics.

Saudi Arabia holds 16% of the world's proven reserves of crude oil, has the world's fourth-largest reserves of natural gas, and is the largest oil consumer in the Middle East, with oil consumption for electricity generation projected to increase. Oil and natural gas generate 40% and nearly 60% of the kingdom's electricity, respectively. The Saudi Ministry of Energy, Industry, and Mineral Resources and the King Abdullah City for Atomic and Renewable Energy agency (KA CARE) envision generating up to 17.6 gigawatts of nuclear energy from as many as 16 reactors by 2040, which could generate 20% of Saudi Arabia's electricity.

U.S.-Saudi Nuclear Cooperation

In May 2008, the United States and Saudi Arabia signed a Memorandum of Understanding (MOU), which stated the countries' intentions to cooperate on a variety of nuclear activities in the fields of medicine, industry, and electricity production. Previous Administrations had explored a civil nuclear energy agreement with Saudi Arabia. Trump Administration officials have stated that discussions with Saudi Arabia about a nuclear cooperation agreement are "underway." Saudi Crown Prince Mohammed bin Salman bin Abd al Aziz visited the United States in March 2018 and consulted with U.S. officials on related issues.

U.S. Nuclear Cooperation Requirements

Nuclear cooperation agreements under Section 123 of the Atomic Energy Act of 1954, as amended (AEA, 22 U.S.C. 2011 et seq), are required for significant nuclear cooperation such as the transfer of certain U.S.-origin nuclear material subject to licensing for commercial, medical, and industrial purposes; the export of reactors and critical reactor components; and other commodities under Nuclear Regulatory Commission export licensing authority.

Table 1. Recent Nuclear Cooperation Developments Involving Saudi Arabia

March 2015	Argentine-Saudi joint nuclear R&D venture agreed.
	Saudi-South Korean mutual nuclear cooperation agreements signed, including an MOU on building two small reactors for Saudi water desalination.
June 2015	KA CARE officials sign a nuclear energy cooperation agreement with Rosatom (Russia's state-run nuclear company).
	Agreements signed with France on cooperation, including EPR reactor feasibility studies.
January 2016	Saudi Arabia and China memorandum of understanding signed regarding cooperation in the possible future construction of a high-temperature gas-cooled reactor (HTGR) in the kingdom.
October 2016	Saudi Arabia and Kazakhstan sign a nuclear cooperation agreement focused on nuclear fuel.
March 2017	Agreement signed for Chinese-Saudi feasibility study of HTGR construction in Saudi Arabia.
March-August 2017	KA CARE officials and experts visit China to begin HTGR study implementation planning. China National Nuclear Corporation (CNNC) and the Saudi Geological Survey sign agreements on cooperation on uranium exploration.
December 2017	Russia's Rosatom and KA CARE sign implementing agreement related to small and medium reactors, personnel and fuel management.

Source: Official statements and media reports.

So-called "123 agreements" must include the terms, conditions, duration, nature, and scope of cooperation, as well as meet several nonproliferation criteria. The President must make a written determination "that the performance of the proposed agreement will promote and will not constitute an unreasonable risk to, the common defense and security." The AEA requires Congress to review a 123 agreement for two time periods totaling 90 days of continuous session. If the President has not exempted the agreement from any requirements of Section 123(a), it becomes effective at the end of the second period unless, during that time, Congress adopts a joint resolution disapproving the agreement and the resolution becomes law.

Separately, the Department of Energy in 2017 expeditiously granted a "Part 810 authorization" for U.S. companies to engage in discussions, including marketing, with the Saudi government regarding its civil nuclear program (per 10 C.F.R. 810). Section 57(b)(2) of the AEA allows for limited cooperation related to the "development or production of

any special nuclear material outside of the United States" if that activity has been authorized by the Secretary of Energy following a determination that it "will not be inimical to the interest of the United States." A 123 agreement is not necessary for such authorizations, which mostly involve unclassified nuclear technology transfer and services, such as nuclear reactor designs, nuclear facility operational information and training, and nuclear fuel fabrication. Part 810 authorizations are not subject to congressional review.

Proliferation, Fuel, and Policy Choices

Analysts have examined Saudi nuclear plans and proposals for decades in light of the kingdom's economic profile, energy resources, and security dilemmas. Saudi state policy underscores that the kingdom's nuclear energy pursuits are limited to peaceful purposes, but senior officials, including Crown Prince Mohammed bin Salman, also have stated in 2018 that if Iran pursues or obtains a nuclear weapon, then the kingdom also would work to do so.

> The most proliferation-sensitive nuclear technology is the capability to produce fuel for nuclear reactors, either by enriching uranium or reprocessing spent nuclear fuel to obtain plutonium. Both highly enriched uranium and plutonium can be used as fuel in some types of nuclear reactors but also are used as fissile material in nuclear weapons. Low-enriched uranium fuel is being considered for reactors in Saudi Arabia. The dual-use nature of enrichment and reprocessing facilities frequently generates concern that ostensibly peaceful facilities may aid nuclear weapons programs. Conversely, a program without such facilities generally poses little proliferation risk, but may pose security and/or environmental risks under some circumstances.

The 2008 U.S.-Saudi MOU, which is a statement of intent and is not legally binding, described the Saudi government's intent "to rely on existing international markets for nuclear fuel services as an alternative to the pursuit of enrichment and reprocessing." Nevertheless, more recent Saudi official statements have suggested that the country may pursue uranium enrichment. KA CARE has said that it may use indigenous uranium resources for fuel, and, in December 2017, Saudi Energy Minister Khalid al Falih said, "we intend to localize the entire value chain with nuclear energy... Whatever we do is going to be under strict compliance with international agreements. But we will not deprive ourselves of accessing our natural resources and localizing an industry that we intend to be with us for the long term."

International mechanisms designed to restrict the spread of sensitive nuclear technology could complicate Saudi efforts to identify suitable suppliers of enrichment technology. Saudi Arabia is a state-party to the nuclear Nonproliferation Treaty (NPT), and its nuclear facilities, including any Saudi enrichment or reprocessing facilities, would be required to be under International Atomic Energy Agency (IAEA) safeguards. IAEA officials completed a nuclear infrastructure review in Saudi Arabia in July 2018. IAEA safeguards present a significant hurdle to the development of nuclear weapons.

The U.S.-UAE Nuclear Cooperation Precedent

A commitment to forgo enrichment or reprocessing is not required for 123 agreements. Still, some 123 agreements contain provisions designed to discourage national enrichment and reprocessing programs in the Middle East. The Obama Administration debated requiring parties to forgo enrichment or reprocessing, but ultimately decided to use a case-by-case approach.

The 123 agreement reached in December 2009 with the United Arab Emirates (UAE) provides the United States the right to terminate nuclear cooperation with that country if it "possesses sensitive nuclear facilities within its territory or otherwise engages in activities within its territory relating to enrichment of uranium or reprocessing of nuclear fuel." (For more information, see CRS Report R40344, *The United Arab Emirates Nuclear Program and Proposed U.S. Nuclear Cooperation*.) An Agreed Minute to that agreement states that its terms "shall be no less favorable in scope and effect than those which may be accorded" to other countries in the Middle East. The Minute also explains that, if the U.S. government concludes a more-favorable agreement with another regional government, the United States will, at the UAE's request, consult with the UAE "regarding the possibility of amending" the agreement in order to make its terms equally favorable to the new agreement.

Assistant Secretary Ford has said that while the standard reached in the U.S.-UAE agreement would be "a preferred outcome" for future negotiations, "the international agreement to allow Iran a fissile material production capability has made it considerably more difficult" to ask U.S. partners to agree to such restrictions. Neither Saudi nor U.S. officials have publicly confirmed whether Riyadh would be willing to accept UAE-style restrictions on enrichment as part of a 123 agreement. In February 2018, Saudi Foreign Minister Adel Al Jubeir said "we want to have the same rights as other countries." In May 2018, Secretary of State Mike Pompeo said in Senate testimony, "we want a gold-standard Section 123 Agreement from them, which would not permit them to enrich." Secretary of Energy Rick Perry also told a House committee that if Saudi Arabia does not reach an agreement with the United States, "the message will be clear to the rest of the world that the kingdom is not as concerned about being leaders when it comes to nonproliferation in the Middle East."

General Security Concerns

Ongoing threats to the security of critical Saudi infrastructure could raise concerns about the security of future nuclear facilities. The U.S. government describes terrorist threats in Saudi Arabia as persistent, including ongoing instances of attempted attacks against government installations; Saudi forces have disrupted major planned attacks. The ongoing conflict in neighboring Yemen has featured ballistic missile attacks deep into Saudi territory. U.S.-Saudi security cooperation mechanisms are robust and remain focused on mitigating these threats and others.

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