



Updated April 9, 2019

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

## Overview

U.S. companies have provided proposals to Saudi authorities in relation to a planned 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 expressed hopes of signing contracts for reactor construction in 2018, but did not do so. 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) is considering proposals for the construction of two reactors to generate 2.9 GWe of 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 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."

## U.S. Nuclear Cooperation Requirements

Section 123 of the Atomic Energy Act of 1954, as amended (AEA, 22 U.S.C. 2011 et seq.), requires nuclear cooperation agreements for significant nuclear cooperation with foreign governments. Such cooperation includes 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.

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.

**Table 1. Saudi Nuclear Cooperation Developments**

March 2015	Argentina-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 signs a nuclear energy cooperation agreement with state-owned Rosatom of Russia. 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 – August 2017	Agreement signed for Chinese-Saudi feasibility study of HTGR construction in Saudi Arabia. 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.
November 2018	KA CARE signs contract with WorleyParsons to provide project management consultancy services for the National Project for Atomic Energy.
January 2019	KA CARE announces it has received reactor bid proposals from entities in the United States, Russia, France, South Korea, and China.
April 2019	Argentina's IAEA Envoy said "Saudi Arabia will have to move to a full scope comprehensive safeguards agreement with subsidiary arrangements" before an Argentinian-designed research reactor is fueled.

**Source:** Official statements and media reports.

The Department of Energy (DOE) in 2017 expeditiously granted a “Part 810 authorization” (per 10 C.F.R. 810) for U.S. companies to engage in discussions, including marketing, with the Saudi government regarding its civil nuclear program. 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. A March 2019, DOE press statement confirmed that the Administration has approved seven 810 authorizations related to Saudi Arabia.

### 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. KA CARE is considering low-enriched uranium fuel 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.” However, 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 2018 and issued a final report in January 2019. In March 2019, IAEA Director General Yukiya Amano said, “We’re encouraging all countries to conclude and implement an additional protocol and that includes Saudi Arabia.” 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.

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,” a presumed reference to Iran. 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.”

### 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.

---

**Christopher M. Blanchard**, Specialist in Middle Eastern Affairs

**Paul K. Kerr**, Specialist in Nonproliferation

IF10799

---

## Disclaimer

This document was prepared by the Congressional Research Service (CRS). CRS serves as nonpartisan shared staff to congressional committees and Members of Congress. It operates solely at the behest of and under the direction of Congress. Information in a CRS Report should not be relied upon for purposes other than public understanding of information that has been provided by CRS to Members of Congress in connection with CRS's institutional role. CRS Reports, as a work of the United States Government, are not subject to copyright protection in the United States. Any CRS Report may be reproduced and distributed in its entirety without permission from CRS. However, as a CRS Report may include copyrighted images or material from a third party, you may need to obtain the permission of the copyright holder if you wish to copy or otherwise use copyrighted material.