



Updated September 28, 2023

Prospects for U.S.-Saudi Nuclear Energy Cooperation

Overview

The 118th Congress may engage the Biden Administration with regard to U.S. policy toward Saudi Arabia's National Project for Atomic Energy and the potential for future U.S.-Saudi nuclear energy cooperation. In May 2022, Saudi Arabia invited technical bids related to the planned construction of two nuclear reactors, and, in January 2023, a Saudi minister restated the kingdom's intention to use its domestic uranium resources for producing low-enriched uranium (LEU) as nuclear fuel.

Congress and successive Administrations have sought the kingdom's commitment to forgo the most proliferation-sensitive nuclear facilities—those for enriching uranium or reprocessing spent nuclear fuel to obtain plutonium—and Saudi Arabia's acceptance of enhanced international safeguards on its nuclear program. Previous Administrations linked prospects for a U.S.-Saudi nuclear cooperation agreement to these conditions, and Congress has limited the use of certain funds to support possible U.S. nuclear exports to Saudi Arabia unless the kingdom makes such commitments. Depending on its nature and extent, possible future U.S.-Saudi nuclear cooperation may require Department of Energy (DOE) authorizations and/or congressional approval of U.S.-Saudi agreements.

Saudi Nuclear Plans and Policy

In July 2017, Saudi Arabia approved a National Project for Atomic Energy, including plans to build large and small nuclear reactors for electricity production and water desalination. The project is part of a broader Saudi government effort to diversify the kingdom's economy and expand the use of non-fossil-fuel-based energy. Saudi Arabia holds 16% of the world's proven reserves of crude oil, has the world's fourth-largest reserves of natural gas, and consumes the second most energy in the Middle East. Oil and natural gas generate roughly 39% and 60% of the kingdom's electricity, respectively.

Saudi authorities have worked to develop required legal and regulatory frameworks with the support of the IAEA. Agency officials completed a nuclear infrastructure review in Saudi Arabia in 2018 and issued a final report in January 2019. The kingdom established a Nuclear and Radiological Regulatory Commission in March 2018, and, in March 2022, created the Saudi Nuclear Energy Holding Company (SNEHC) to develop and operate planned nuclear facilities.

In 2017, the Saudi government solicited marketing information from potential international partner companies for reactor construction, but did not meet its original timeline for initiating a formal bidding process. In May 2022, Saudi officials invited technical bids from companies in Russia, China, and South Korea related to the planned construction of two 1.4 giga-watt electric (GWe) reactors at Khor Duweihin, a coastal area between the kingdom's borders with Qatar and the United Arab Emirates (UAE).

According to Saudi officials, the kingdom intends to develop the capacity to produce nuclear fuel using domestic resources. In 2019, Saudi Energy Minister Prince Abd al Aziz bin Salman Al Saud said, "even if we scale up [nuclear power] ... we want to go to the full cycle, to producing the uranium, enriching the uranium." The minister further stated in January 2023 that Saudi Arabia intends to use its substantial domestic uranium resources for producing LEU.

Saudi Arabia is a state party to the nuclear Nonproliferation Treaty (NPT), which requires the government to accept International Atomic Energy Agency (IAEA) safeguards on all nuclear facilities. Such comprehensive safeguards agreements (CSA) impede the development of nuclear weapons. Saudi Arabia has not concluded an additional protocol to its CSA. Such a protocol would improve the IAEA's ability to investigate undeclared nuclear facilities and activities. Saudi Arabia's CSA does include a small quantities protocol (SQP) which, according to the IAEA, "holds in abeyance" most comprehensive safeguards agreement procedures if the government neither possesses more than a specified amount of nuclear material nor has introduced nuclear material into a facility. In September 2023, Saudi officials told the IAEA they intend to rescind the SQP and "implement the full" CSA. Other international mechanisms are designed to restrict the spread of sensitive nuclear technology, including enrichment technology.

In 2020, Saudi authorities denied press reports citing unnamed Western officials claiming that Saudi Arabia, with China's help, built a facility for milling uranium oxide ore. Saudi Arabia's IAEA safeguards agreement requires the government to declare such a facility to the agency. Other press reports discussed another possible undeclared site.

Saudi state policy maintains that Saudi nuclear energy pursuits are limited to peaceful purposes. Crown Prince Mohammed bin Salman bin Abd al Aziz Al Saud said in September 2023 stated that if Iran were to obtain a nuclear weapon, the kingdom will have to follow suit.

Threats to the security of critical Saudi infrastructure may raise concerns about the security of Saudi nuclear facilities. The U.S. government notes security threats in Saudi Arabia from terrorist groups and hostile regional actors, including missile and rocket attacks on Saudi energy infrastructure and government facilities that U.S. officials attribute to Iran or Iran-backed groups. Ongoing U.S.-Saudi security cooperation seeks to mitigate these threats and others.

U.S.-Saudi Nuclear Cooperation

In 2008, the United States and Saudi Arabia signed a Memorandum of Understanding (MOU) stating bilateral intent to cooperate on nuclear activities in the fields of medicine, industry, and electricity production. The nonbinding MOU stated Saudi Arabia's intent "to rely on

existing international markets for nuclear fuel services as an alternative to the pursuit of enrichment and reprocessing.”

The Obama and Trump Administrations engaged the kingdom on the prospects for reaching a bilateral civil nuclear energy agreement, including through formal negotiations over the text of a proposed “123 agreement” (see below) in 2012 and 2018. The Government Accountability Office (GAO) reported in 2020 that the governments had “not made significant progress toward a nuclear cooperation agreement because of persistent differences ... over nonproliferation conditions, including U.S. insistence that Saudi Arabia conclude an Additional Protocol with the IAEA and that Saudi Arabia agree to restrictions on enrichment and reprocessing.” The State Department said in August 2020 that the United States would seek an agreement “with strong nonproliferation protections that will enable Saudi and U.S. nuclear industries to cooperate.”

National Nuclear Security Administration Administrator Jill Hruby and Secretary of Energy Jennifer Granholm have talked to Saudi leaders about the government’s nuclear program, Hruby told the Senate Armed Services Committee in April 2023, adding that the Administration is “asking the Saudis to be consistent with nonproliferation standards that we have for every other country that we work with.”

In June 2023, the Saudi Foreign Minister said the kingdom would “very much prefer to be able to have the U.S. as one of the bidders” for its program, noting “there are others that are bidding, and obviously we would like to build our program with the best technology in the world, and that will require a certain agreement to be in place.”

From 2017 to 2019, DOE granted seven “Part 810” authorizations (per 10 C.F.R. §810) for U.S. companies to engage in civil nuclear discussions, including marketing, with Saudi Arabia in response to the kingdom’s 2017 request for marketing information. In 2022, U.S. and Saudi officials signed an MOU on the exchange of technical information and cooperation in nuclear safety matters.

According to unnamed U.S. and Israeli officials cited in a September 2023 press report, the United States is considering a U.S.-run uranium enrichment operation in Saudi Arabia in conjunction with proposals to encourage Saudi Arabia to normalize relations with Israel.

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. Consequently, ostensibly peaceful enrichment and reprocessing facilities frequently generate concern that a government’s facilities may aid nuclear weapons programs. Conversely, a nuclear program without such facilities generally poses little proliferation risk, but may pose security and/or environmental risks.

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. Foreign entities’ nuclear exports to Saudi Arabia containing U.S.-origin technology might require U.S. consent.

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. 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.” A 123 agreement is not necessary for such cooperation, which mostly involves transfers of unclassified nuclear technology and services pursuant to “Part 810 authorizations” that are not subject to congressional review.

Section 123 agreements do not require recipient governments to forgo enrichment or reprocessing. Still, some 123 agreements contain provisions designed to discourage enrichment and reprocessing programs in the Middle East. The 2009 U.S.-UAE 123 agreement provides the United States the right to terminate nuclear cooperation with that country if the UAE “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.” 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 123 agreement with another regional government, the United States will, at the UAE’s request, consult with the government “regarding the possibility of amending” the 123 agreement with equally favorable terms.

Congress and U.S. Policy

Since FY2020, Congress annually has prohibited the use of appropriated funds for Export-Import Bank support for nuclear exports to Saudi Arabia until the kingdom has a 123 agreement “in effect”; “has committed to renounce uranium enrichment and reprocessing on its territory under that agreement”; and has “signed and implemented” an Additional Protocol with the IAEA [most recently for FY2023 in Section 7041(i), Division K, P.L. 117-328]. Since 2018, some Members have introduced bills that would have required a congressional joint resolution of approval before a 123 agreement with Saudi Arabia could take effect.

Christopher M. Blanchard, Specialist in Middle Eastern Affairs

Paul K. Kerr, Specialist in Nonproliferation

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.