Saudi Arabia

Market Type: Newly Emerging

Saudi Arabia has ambitious plans to diversify its energy sources by 2040, possibly including the construction of large nuclear reactors. Since 2010, Saudi Arabia has expressed interest in nuclear power for electricity generation, desalination and long-term R&D, as well as small and advanced reactor designs. Goals for nuclear energy, however, have not progressed beyond the planning stage, and the lack of a 123 Agreement hinders U.S. exports.

U.S. Ambassador to Saudi Arabia: Joseph W. Westphal
U.S. Commerce Attaché to Saudi Arabia: Douglas Wallace (Riyadh)

Saudi Arabia currently has no nuclear reactors in operation or under construction but is considering building an unspecified number of reactors and adding nuclear power to its power generation mix by 2040. The King Abdullah City for Nuclear and Renewable Energy (KA-CARE) has stated that the country’s goals for developing a civil nuclear program are to meet its growing electricity requirements, produce desalinated water and reduce reliance on hydrocarbons. The Saudi Arabian government’s Power Sector Generation Strategy calls for 3 GW of nuclear energy by 2040.

Saudi Arabia hired WorleyParsons in 2011 to conduct an analysis of potential sites and assist with preparing a tender. Three potential sites were short-listed in September 2013.

Saudi Arabia’s nuclear build plans have attracted significant interest internationally. In September 2013, GE-Hitachi and Toshiba-Westinghouse signed contracts with Exelon to pursue reactor construction in Saudi Arabia. In January 2014, Areva and EdF signed agreements with Saudi Arabia’s Global Energy Holding Company (GEHC) to conduct a feasibility study for an EPR.

Saudi Arabia has expressed interest in cooperation on small reactors and Generation IV designs. In March 2015, KA-CARE signed a memorandum of understanding with the Korea Atomic Energy Research Institute (KAERI) to investigate co-developing and building two 100 MWe SMART reactors. In September 2015, the two partners further signed a cooperation agreement and contracts to start a three-year preliminary study to review the feasibility of constructing SMART reactors in Saudi Arabia. In January 2016, KA-CARE and China Nuclear Engineering Corporation (CNEC) signed a memorandum of understanding on the construction of a high-temperature gas-cooled reactor, although no agreements or contracts have yet been signed.
Commercial Opportunities

**Services (front- and back-end):** Possibilities for additional site selection and feasibility studies, regulatory assistance, infrastructure development, human resource development.

**Legal and Consulting Services:** Potential for pre-construction services.

**Licensing Support:** Potential for pre-construction services.

**Design, Construction, and Operation:** First tender is expected in the next few years. Currently, GE-Hitachi, Toshiba-Westinghouse, Areva/EdF, Rosatom, KEPCO and CNNC have shown interest in competing for this project.

**Components:** Opportunities once reactor technology has been chosen.

**Fuel Management:** None currently.
**Waste Management:** None currently.

Challenges and Barriers to Exports

Market access is a challenge due to the strength of foreign competition. France, China, the Republic of Korea and Russia have shown interest in Saudi Arabia’s expected tenders and have signed cooperation agreements for feasibility studies, regulatory assistance, training and R&D. Saudi Arabia’s plans for nuclear power could be scaled up quickly depending on how it pursues its goal of diversifying its energy mix.

The government is committed to establishing a nuclear regulatory authority. This effort is headed by KA-CARE, which works with the Finnish safety authority, STUK, as its strategic partner.


Nuclear Infrastructure

**Research reactors:** None at present, although KA-CARE has agreed to buy a small research reactor from Argentina.

U.S. Government Collaboration

**123 Agreement:** Saudi Arabia does not have a 123 Agreement with the United States.

**Bilateral Engagement:** Interest in exports and cooperation in the nuclear sector date to 2008, when the U.S. and Saudi Arabia signed a MOU on Civil Nuclear Energy Cooperation. In November 2012, the U.S. Chamber of Commerce and the U.S.-Saudi Business Council sent a delegation to Saudi Arabia to discuss nuclear and solar technology developments.

**Figure 1: Saudi Arabia Electricity Mix**

- **Capacity, Millions Kilowatts, 2012**
  - Total: 53.6

**Figure 2: Additional Agreements**

<table>
<thead>
<tr>
<th>Agreement</th>
<th>Status</th>
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<tbody>
<tr>
<td>Non-Proliferation Treaty</td>
<td>✔</td>
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<tr>
<td>IAEA Comprehensive Safeguards Agreement &amp; Additional Protocol</td>
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</tr>
<tr>
<td>Joint Convention on Safety of Spent Fuel Management</td>
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<tr>
<td>Convention on Nuclear Safety</td>
<td>✔</td>
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<tr>
<td>Convention on Early Notification of a Nuclear Accident</td>
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<tr>
<td>Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency</td>
<td>✔</td>
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<tr>
<td>Paris Convention on Third Party Liability in the Field of Nuclear Energy</td>
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<tr>
<td>Vienna Convention on Civil Liability for Nuclear Damage</td>
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<tr>
<td>Joint Protocol Relating to the Application of the Vienna Convention and Paris Convention</td>
<td>✔</td>
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<tr>
<td>Convention on Supplementary Compensation for Nuclear Damage</td>
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**Organization Membership**

- IAEA
- Nuclear Suppliers Group
- OECD/NEA
- IFNEC
- GenIV International Forum (GIF)
**International Engagement**

Saudi Arabia is cooperating with Argentina on a small scale reactor for research and desalination. It has signed cooperation agreements with France, China, Finland, Hungary and the Republic of Korea and is pursuing agreements with Russia, Czech Republic and the UK.

**Resources**

For more information on the commercial opportunities in Saudi Arabia, contact: Mr. Jesse Lapierre (Principal Commercial Officer in Dhahran, Jesse.lapierre@trade.gov); Fred Aziz (Principal Commercial Officer in Jeddah, Fred.Aziz@trade.gov); I&A Civil Nuclear Team: Jonathan Chesebro (jonathan.chesebro@trade.gov)


**Sources**

CIA Factbook, United Nations, World Nuclear Association, Asian Development Bank, and our contacts at the U.S. Embassy in Riyadh and U.S. Consulates in Dhahran and Jeddah.