

U.S. and South Korean Cooperation in the World Nuclear Energy Market: Major Policy Considerations



A South Korean consortium recently signed a contract to provide four commercial nuclear reactors to the United Arab Emirates (UAE), signaling a new role for South Korea in the world nuclear energy market. The \$20 billion deal indicates that South Korea has completed the transition from passive purchaser of turn-key nuclear plants in the 1970s to major nuclear technology supplier, capable of competing with the largest and most experienced nuclear technology companies in the world. The South Korean government reportedly has established a goal for South Korea to capture 20% of the world nuclear power plant market during the next 20 years, and the importance placed by Seoul on the UAE contract was underscored by South Korean President Lee Myung-baks presence at the signing ceremony in the UAE. In the 1970s, South Korea launched its nuclear power program through the government-owned Korea Electric Company (now Korea Electric Power Corporation, KEPCO), which purchased the countrys first nuclear power units from Westinghouse. In the early years of the Korean nuclear program, Westinghouse and other foreign suppliers delivered completed plants with minimal Korean industry input. After the first three units, Korean firms took over the construction work on subsequent plants, although the reactor systems, turbine-generators, and architect/engineering services continued to be provided primarily by non-Korean companies. In 1987, KEPCO embarked on an effort to establish a standard Korean design, selecting the System 80 design from the U.S. firm Combustion Engineering as the basis. Combustion Engineering won the competition for the Korean standard design contract by agreeing to full technology transfer, according to KEPCO. The technology transfer program resulted in the

development of the APR- 1400 power plant, which is the design purchased by the UAE. In the UAE deal, the South Korean consortium is headed by KEPCO and includes other major Korean industrial companies that are involved in Korea's rapidly growing domestic nuclear power plant construction program. The consortium also includes Pittsburgh-based Westinghouse Electric Company, which currently owns the U.S. design on which the Korean design is based, and the Japanese industrial conglomerate Toshiba, which now owns most of Westinghouse. Because the AP-1400 is based on a U.S. design, U.S. export controls will continue to apply. U.S.-Korean nuclear energy cooperation is conducted under a 123 agreement required by Section 123 of the Atomic Energy Act of 1954. The current agreement was signed in 1973 and will expire on March 19, 2014. A new 123 agreement does not require congressional approval, but it must lie before Congress for 90 days of continuous session before going into effect. As with most U.S. 123 agreements, the existing U.S.-Korean agreement requires U.S. consent for any reprocessing or enrichment activities related to U.S.-supplied materials and technology. Korea is requesting that the new 123 agreement include U.S. advance consent for future Korean civilian reprocessing and enrichment activities. The United States has opposed the idea, on grounds of general nonproliferation policy and the complications that such activities might pose for other security issues on the Korean peninsula. To comply with the 90-day congressional review requirement, a new agreement probably needs to be submitted to Congress by spring 2013. Any lapse in the agreement could affect exports of U.S. nuclear materials and reactor components to Korea, potentially affecting ongoing construction of the UAE project.

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