



## South Korea's Role in a Post-Fukushima Nuclear Environment

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While the initial focus may be on the humanitarian and safety needs of Japan after the Fukushima nuclear accident, South Korea has a major stake in the future of nuclear power. Countries around the world are reassessing their approach to nuclear power, but it is clear that South Korea is at a crossroads in the nuclear energy debate regarding domestic energy needs, export technologies, and nuclear security. Through its current commitment to nuclear energy and proximity to known proliferators in North Korea, South Korea's actions can help guide the international community's approach to nuclear power, safety, and security.

Naturally, the disaster in Japan has caused countries to re-examine their domestic approach to nuclear energy. Germany has temporarily shut down its oldest nuclear reactors; Italy will delay a review of future nuclear programs for one year; and numerous countries, including South Korea, have ordered reviews of their safety and natural disaster plans with regard to nuclear power plants.

Despite the internal review, South Korean government officials have publicly stated plans for nuclear expansion will continue. South Korea lacks traditional fossil-based energy sources and has come to rely on nuclear power. It depends solely on imports for crude oil and almost all of its natural gas. Korea first ventured into nuclear power production in 1978. Today, South Korea operates 21 nuclear reactors that generate around 40% of South Korea's power. To meet Korea's growing energy needs, seven new reactors are currently being built, and there are plans to construct six more.

Although the South Korean government is pushing forward with nuclear expansion, some opposition lawmakers have raised concerns over safety as well as over consumption of energy. Because South Korea imports most of its energy and increasingly relies on nuclear power for its domestic energy needs, the outcomes of debates and policy changes on nuclear energy will be important signposts in a post-Fukushima environment. It is too soon to tell what requirements will be placed on nuclear plants after recommendations develop from the Fukushima investigations and if South Korea can easily deliver on

those requirements in its domestic nuclear program. However, South Korea's approach to these issues can be an example for other countries undergoing similar reflections.

South Korea is trying to use its domestic strategy for nuclear energy to reassure potential customers on the export market for civil nuclear technology. While Japan was still dealing with the initial explosions and leaks from its power plant, South Korean President Lee Myung-bak was in the United Arab Emirates (UAE) attending the groundbreaking ceremony for a nuclear power plant being built by a partnership between South Korean and UAE companies. The Korea Electric Power Corp., Hyundai Engineering & Construction, and Samsung Construction & Trade make up the consortium of Korean companies producing four nuclear reactors for the UAE. The companies believe their design for the nuclear reactors in the UAE address some of the problems that arose in Japan; moreover, the companies claim they have the ability to add any recommended safety mechanisms derived from analyzing the Fukushima disaster.

Over the next couple of years, the fallout from Japan will put more focus on nuclear safety, and consequently, add to the definition of nuclear security. Radiation leaks, cooling concerns, and access to other power sources are all now cognizant factors in nuclear security. As the host of the 2012 Nuclear Security Summit, South Korea will likely have to deal with the dichotomy of the discussion between the safety of nuclear power plants and the security of countries from nuclear weapons and proliferation. Proper nuclear plant construction, retrofitting older facilities, and solving problems with cooling and radiation systems may all be discussed. Although these are important issues, a sole focus on these topics could derail the 2012 meeting from addressing the proliferation concerns raised at the inaugural 2010 Nuclear Security Summit held in Washington, DC.

Concern over nuclear safety could dominate the next nuclear summit, but South Korea cannot let world leaders forget the proliferation concerns that stem from North Korea. Last November, North Korea

revealed a light water reactor and a small uranium enrichment facility at Yongbyon. The light water reactor and uranium enrichment facility could be converted to produce nuclear material suitable for bombs; moreover, the greater fear is the possibility of another facility for producing highly enriched uranium secretly located somewhere else in North Korea. The proliferation of fissile materials, a major focus of the 2010 summit, now includes the sophisticated centrifuge technologies from North Korea seen at Yongbyon.

The proliferation history of North Korea combined with other nuclear proliferation concerns around the world requires South Korea to focus the conversation on these issues. North Korea's connections with Syria led to a secret nuclear facility with the layout structure resembling Yongbyon. Reports also suggest North Korea is assisting Burma in building nuclear facilities. North Korea's work with Iran on missile technology, along with both countries pursuit of nuclear technology, raises fears that the two are exchanging information on nuclear weapons.

For the United States, South Korea's most important ally, nuclear proliferation is a major concern. The concentration and effort by the United States on nuclear proliferation issues at the 2010 Nuclear Security Summit illustrates this U.S. fear. This attention to nuclear proliferation, along with President Obama's praise of South Korea as the next summit host in 2012, puts pressure on South Korea to continue the emphasis from the first summit. South Korea must be a strong host, addressing the safety issues raised after Japan's disaster, but also focusing the 2012 summit participants toward better implementation of the principles and goals established at the 2010 summit.

South Korea's ability to host a successful nuclear security summit still centered on proliferation will be an important indicator of how the international community is combining safety and security issues a year after the disaster in Japan. South Korea's approach to its domestic nuclear energy program along with its success in the UAE and the export market will also be barometers of feelings toward nuclear power. Because of South Korea's connections with each of these issues, its policies can help guide the international community's response to nuclear safety and security after Fukushima.