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Global and Domestic Nuclear Energy Outlook

<Summary>

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Overseas Nuclear Energy Outlook for 2022

1. During a televised speech he gave on November 9, 2021, French President Emmanuel Macron confirmed his intent to relaunch the construction of new nuclear reactors in France for the first time in decades. This is illustrative of the increasing focus on nuclear energy in the face of rising energy prices.
2. Despite President Macron's message, EDF, a French energy group, has yet to formulate a plan for new facility construction as of December 2021. The nuclear outlook internationally hinges on whether a concrete plan is hammered out.
3. Five commercial nuclear power plants went operational around the world in 2021: two in China, and one each in Pakistan, India, and the UAE, which are all non-OECD countries. China currently has more than 10 plants being built, while India has five and the UAE, Russia, South Korea, and other countries each have several. Although several of these plants are slated to commence operations in 2022, several facilities in developed nations such as the UK, U.S., and Germany will shut down. Consequently, global nuclear power generation capacity will either increase slightly or stay flat.
4. Without question, the international nuclear energy company garnering the most attention for its nuclear strategy and international expansion is Russian state-owned firm Rosatom. The company's strengths once lay primarily in uranium concentrates and uranium enrichment, and it supplied its plant technologies only to companies in Russia, Eastern Europe, and China. In recent years, however, the company has begun

business talks with more than 30 countries around the world, including countries in the Middle East, Africa, and Latin America, and is developing businesses in areas outside of nuclear power that include hydrogen and advanced materials. With its continual efforts to gradually acquire experience in constructing new facilities while honing its technical prowess, Rosatom is likely to attempt things like hydrogen production and using renewable energy alongside nuclear, which is something that nuclear power producers in developed countries are doing. Future developments here bear watching.

5. On December 2, 2021, Canadian electric utility Ontario Power Generation (OPG) made the decision to use the BWRX-300 small modular reactor (SMR) for a new reactor it will build at its Darlington Nuclear Power Plant. With BWRX-300 vendor GE Hitachi Nuclear Energy as a technology partner, OPG is doing design and engineering work for SMR construction while formulating plans and preparing to apply for permits. The SMR is slated to be completed in 2028 and will be Canada's first commercial SMR.

Nuclear Energy Outlook in Japan for 2022

1. On June 29, 2021, unit 3 at Kansai Electric Power Company's Mihama Nuclear Power Plant went online for the first time in 10 years and one month (2011). This is now the 10th plant to resume operations under new regulatory standards. Mihama's unit 3 was shut down on October 23, 2021 after the deadline to take transitional measures for a specialized safety facility came and went. The reactor is expected to be restarted in 2022 after the facility is completed and approval is obtained.
2. Such deadlines are also coming in 2022 for units 3 and 4 at the company's Oi and Genkai plants (four units total). However, the probability of these plants shutting down due to the transitional measures is considered to be low. Kashiwazaki-Kariwa Nuclear Power Plant's unit 7 and Tokai No. 2 Power Station, which are BWRs that have been approved for construction, could be restarted in 2022.
3. More than a year has passed since a "literature survey" (the first phase of the process for selecting a final disposal site for high-level radioactive waste) was begun in November 2020. In Suttsu and Kamoenai in Hokkaido, where the Nuclear Waste Management Organization of Japan (NUMO) is conducting literature surveys, NUMO has held four "dialogue

sessions" with residents where it has reported on its findings from the surveys and answered questions from attending residents. NUMO has also posted all its findings on its own and other websites.

4. Past reports have mainly focused on subjects such as the age of geological layers, volcanic activity, and mineral resources in the two regions. Going forward, NUMO will assess final disposal site suitability as it gathers more such data, ultimately submitting its results to local authorities for final decisions. It will not proceed to preliminary investigations in defiance of such decisions. As most of the results of the literature surveys are expected to be revealed by 2022, local authorities' decisions and subsequent steps taken will be something to watch.

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