

# A GLOBAL GLIMPSE OF ADVANCED NUCLEAR ENERGY

A partial snapshot of advanced nuclear energy projects around the world.

## BUDGET OVERRUNS

The Carbon Free Power Project, a partnership between SMR developer NuScale and public utility agency **Utah** Associated Municipal Power Systems, was terminated in 2023 after losing utility subscriptions due to cost overruns. NuScale's SMR design is the first to be certified by the NRC.

## SMR DESIGN OVERHAUL

**France** is developing an SMR through NUWARD, a subsidiary of French state-owned utility company EDF, with primary funding from the French government and aid packages from the European Commission. The NUWARD SMR design was simplified in 2024 over concerns from potential EU customers about meeting budgets and project deadlines, leaving its production timeline uncertain.

## RUSSIA'S FIRST SMR EXPORT

Rosatom has signed its first binding SMR export deal with former Soviet state **Uzbekistan** to build a six-unit RITM-200N plant, with additional Russian MOUs signed with Kyrgyzstan and the Philippines. The RITM-200N plant is to be primarily funded by the Uzbek government, with construction led by Rosatom.

## A FLOATING REACTOR

Rosatom's Akademik Lomonosov, launched in 2010, is the world's first floating nuclear power plant. It primarily supplies heat and electricity to **Russia's** Chukotka region. More FNPPs are in development, with plans to support mining operations and offshore oil rigs in the Arctic.

## THE FIRST COMMERCIAL GEN IV REACTOR

**China's** Shidao Bay-1 demonstration reactor, a joint venture of the Chinese government, Tsinghua University, and the Huaneng Shandong Shidao Bay Nuclear Power Company, came online in 2023 as the world's first commercially operating Generation IV advanced nuclear reactor.

## SMRS FOR DATA CENTERS

Amazon has committed over \$500 million to X-energy to develop its Xe-100 SMRs, and Google has partnered with Kairos Power to deploy 500MW of SMR-generated electricity, both as part of a broader Big Tech goal to power energy-intensive hyperscale data centers.

## HALEU PRODUCTION

Nuclear fuel supplier Centrus Energy has built the American Centrifuge demonstration project in **Ohio**, the only U.S. facility licensed to produce high-assay low-enriched uranium. With Russia currently the sole global commercial supplier of HALEU for advanced reactors, the United States aims to reduce its reliance on Russian uranium fuel by strengthening domestic production and export capabilities.

## COAL TO SMALL NUCLEAR

**Romania** plans to build a NuScale VOYGR-12 SMR at a former coal-fired power plant in a joint venture between state-owned Nuclearelectrica and private energy firm Nova Power & Gas. Funded primarily by the U.S. Exim Bank with backing from Japan, South Korea, and the UAE, the project reflects Romania's coal phase-out and the United States' efforts to compete with Russia and China in SMR exports.

## CHINA'S STRATEGIC SMR COOPERATION

**China** and **Thailand** have signed an MOU on nuclear knowledge and technology cooperation, one of many such agreements through which China is sharing its SMR expertise internationally. While Thailand's Office of Atoms for Peace will lead SMR development, China Atomic Energy Authority will support training, capacity building, and potential technology transfers.

## SMRS FOR PROCESS HEAT

Some industries hope to generate process heat and electricity for manufacturing using SMRs, such as chemical giant Dow Chemical, which received over \$1 billion from the U.S. Department of Energy's Advanced Reactor Demonstration Program to collaborate with X-energy to build Xe-100 SMRs at one of its plants in **Texas**.

## GHANA-US SMR PARTNERSHIP

**Ghana** plans to become the first African nation to deploy an SMR, partnering with U.S. nuclear tech company Regnum Technology Group to use NuScale's VOYGR-12 SMR design. The project is primarily funded through the U.S. Department of State's Foundational Infrastructure for Responsible Use of Small Modular Reactor Technology (FIRST) Programs

## A COLLABORATIVE SMR EXPORT

**South Korea's** Nuclear Safety and Security Commission has approved the standard design of the SMART100 SMR, a joint project by the Korea Atomic Energy Research Institute, Korea Hydro & Nuclear Power, and **Saudi Arabia's** King Abdullah City for Atomic and Renewable Energy, with plans to export it to Saudi Arabia and possibly broader Middle Eastern and Southeast Asian markets.

## AN ARGENTINIAN SMR

The CAREM SMR, developed by the **Argentina** National Atomic Energy Commission with government funding, is the only domestically developed SMR in South America. Initially expected to come online in 2028, its operational timeline is uncertain due to frequent construction and funding delays, worker layoffs, and fluctuating political commitments.

## AN SMR TO MODERNIZE INDIA

The Bharat Small Modular Reactor, a redesign of **India's** pressurized heavy water reactor, is jointly being developed by the Bhabha Atomic Research Centre, the Nuclear Power Corporation of India Limited, and Tata Consulting Engineers. Tata Group subsidiaries, such as Tata Power and Tata Steel, aim to use BSMRs to decarbonize electricity generation and manufacturing under the government's Viksit Bharat@2047 plan, which envisions India as a developed nation by the centennial anniversary of its independence.

## AN SMR FOR REMOTE REGIONS ACROSS AFRICA

**South Africa** is currently the only African nation developing its own SMR design, the HTMR-100 pebble-bed modular reactor, backed by South African private nuclear developer Stratek Global and tech consultancy group Koya Capital. It is marketed as ideal for remote regions and mining or desalination applications on the African continent.

Lewis, N., Sibley, T., Stubblefield, N., Redmond, M., Kleinman, M., Parthasarathy, S., & Djokić, D. (2025). *The Reactor Around the Corner: Understanding Advanced Nuclear Energy Futures*. Technology Assessment Project, University of Michigan. <https://doi.org/10.7302/25887>