Deployment of SMRs: A pathway for Nuclear Energy Expansion

21 January 2026, VCDNP

IAEA Activities on SMRs

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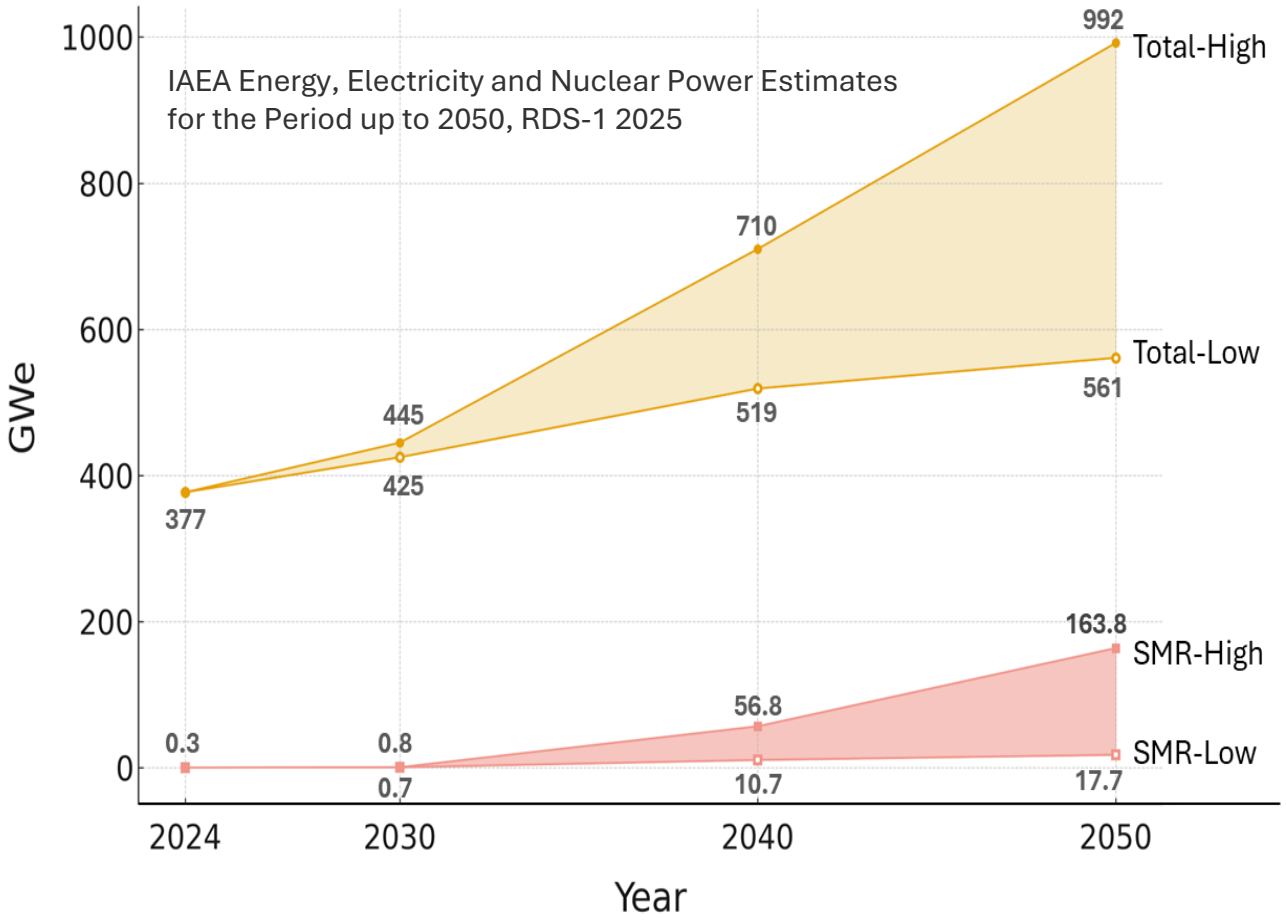
SMR Platform Coordinator

World Nuclear Electrical Generating Capacity



January 2026

- 415 reactors (376 GWe) in operation
- 63 reactors (66 GWe) under construction

2050 projections, GWe

- Total generating capacity: 561-992
- Small Modular Reactors: 18-164

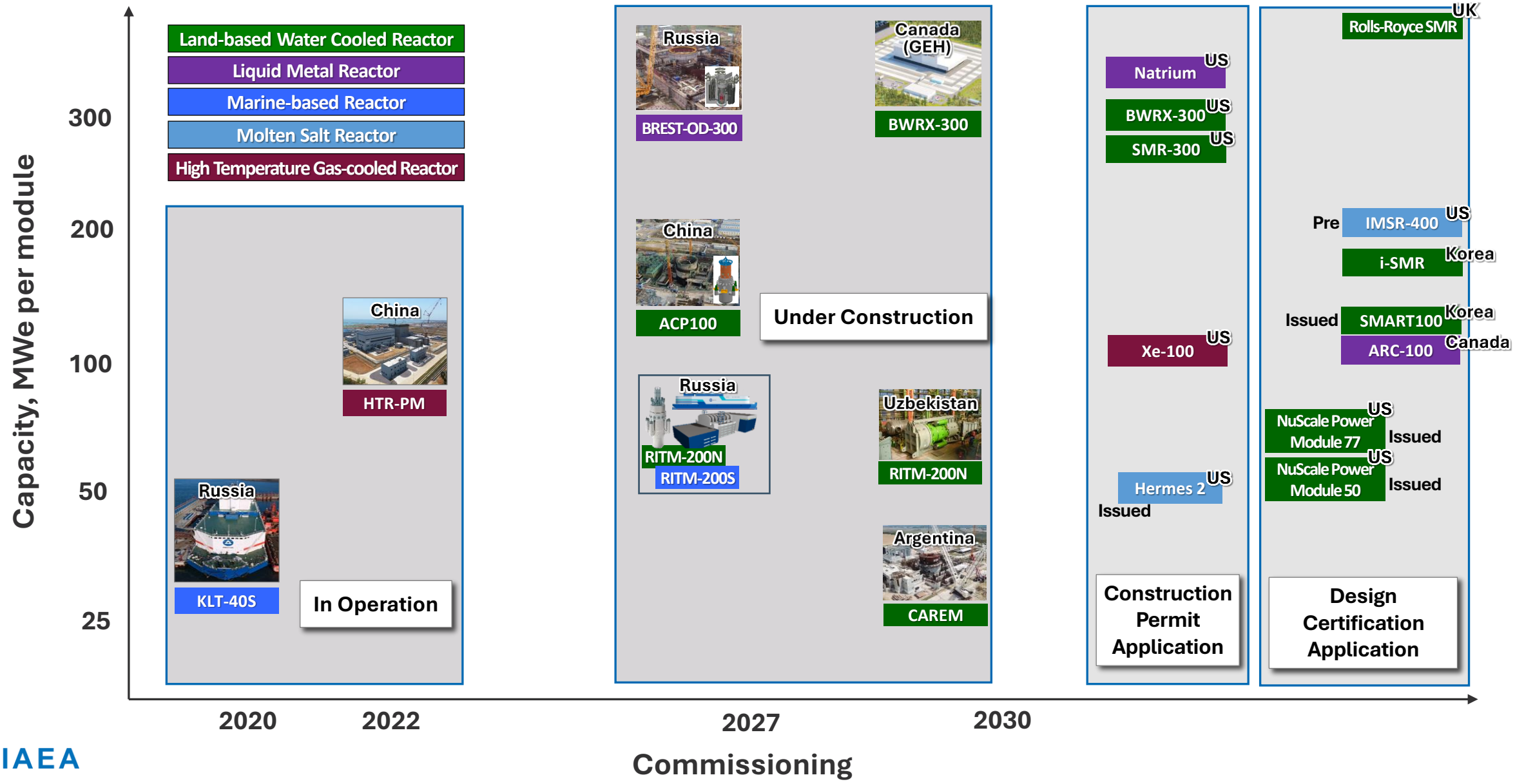
Growing interest in SMRs: Electricity, AI and Data centers, Coal to Nuclear conversion, and Non-electrical Applications

Attractive features of Small Modular Reactors:

Advanced Reactors that produce typically **up to 300 MWe**, built in factories and transported as **modules** to sites for installation.

Lower capital cost	• Smaller size • Modularization, reduced construction time • Serial construction
Flexible Siting and Operation	• Close to demand, small or off-the-grid • Load following
Scalability	• Additional reactor modules to meet increasing demands
Diverse Products	• Electricity • Heat

Near-term deployable SMRs



Challenges facing Successful Deployment of novel SMR designs

- **Demonstration of Safety and Operating Performance**
- **Secure Deployment**: physical, cyber and transport security
- **Implementation of Safeguards**
- **Demonstration of Economic Competitiveness** through modularization and serial construction
- **Harmonization of Regulatory Approaches** for global deployment
- **Harmonization and standardization of industrial approaches** for robust supply chain
- **Establishment of International Legal and Regulatory Framework** for maritime applications
- **Access to Financing** for first-of-a-kind projects that face long development timelines and perceived technology risks

Key IAEA Activities on SMR

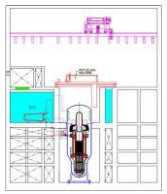
Energy planning and Economics

Technology Development and Deployment

- ARIS Database
  SMR Booklet

Reactor Technology Assessment

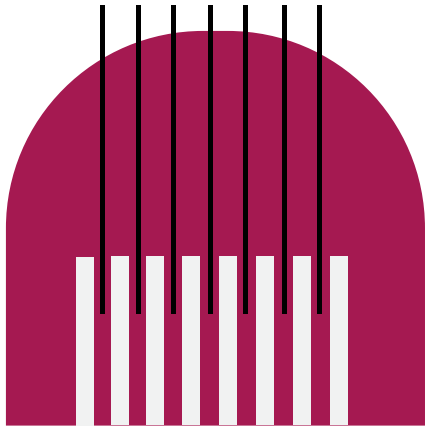
Approaches to Commissioning and Operation



Fuel, Safe management of Spent Fuel, Radioactive Waste and Decommissioning

IAEA Platform on SMRs and their Applications

SMR School



Nuclear Harmonization and Standardization Initiative

Legal Frameworks for safety, security, safeguards and civil liability for nuclear damage

Safety & Security

- Applicability of Safety Standards and Security Guides
- Emergency Preparedness and Response

Safeguards-by-Design

Infrastructure Development

Technical Cooperation

IAEA SMR School

- To raise awareness about **key aspects of SMR development and deployment** among **high-level participants** from governments, policy making organizations, NEPIOs, and regulatory bodies
- Three schools in 2025 in **Kenya, Thailand** and **Argentina** for over 100 participants from 28 countries interested in SMRs

- Upcoming SMR Schools in 2026:
  - 23-27 February, Vienna International Centre
  - 9-12 June, Argonne National Laboratory