

Nuclear SMR (Small Modular Reactor) Market Forecasts to 2034 – Global Analysis By Reactor Type (Light-Water SMRs, Heavy-Water SMRs, Fast Neutron SMRs, High-Temperature Gas-Cooled SMRs and Molten Salt SMRs), Power Capacity, Deployment Mode, Application, End User and By Geography

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Abstracts

According to Statistics MRC, the Global Nuclear SMR (Small Modular Reactor) Market is accounted for \$6.1 billion in 2026 and is expected to reach \$7.7 billion by 2034 growing at a CAGR of 3.0% during the forecast period. Small Modular Reactors (SMRs) are an innovative nuclear power solution offering compact, scalable, and safer electricity generation options. They are engineered to be significantly smaller than traditional nuclear plants and are often produced in factory settings before being transported for on-site assembly. Their design incorporates advanced safety features such as passive cooling and simplified reactor cores, reducing operational risks. SMRs are well suited for isolated regions, industrial energy needs, and enhancing grid reliability. They lower initial investment requirements and shorten construction schedules, improving feasibility. Modular expansion enables gradual capacity addition aligned with future energy demand and strategic planning requirements globally.

According to the International Energy Agency (IEA), global installed capacity of Small Modular Reactors (SMRs) could reach nearly 200 GW by 2050 under the Net Zero Emissions scenario, highlighting their growing role in decarbonization pathways.

Market Dynamics:

Driver:

Decarbonization policies and net-zero targets

The expansion of SMR technology is strongly driven by worldwide climate action policies and net-zero emission goals. Governments are encouraging cleaner energy systems to reduce reliance on fossil fuels and limit carbon emissions. SMRs support these objectives by offering stable, low-emission electricity generation. Their operational output produces very little greenhouse gas, making them compatible with environmental regulations. International climate agreements and carbon reduction frameworks are further motivating energy companies to explore nuclear alternatives. As climate concerns intensify, SMRs are becoming an increasingly important part of long-term sustainable energy strategies adopted by various nations across global energy markets.

Restraint:

High regulatory complexity and licensing delays

A major limitation for SMR adoption is the complicated regulatory environment and slow licensing systems. Even though SMRs are designed with improved safety and compact structures, they still undergo strict nuclear approval processes. These include detailed safety evaluations, environmental impact studies, and multiple government inspections. The time required for approvals often delays project execution and increases uncertainty for investors. Furthermore, differences in regulatory standards across countries make global deployment more difficult. The absence of unified SMR-specific regulations adds further complexity. As a result, regulatory challenges remain a key obstacle slowing down the widespread commercialization of SMR technology worldwide.

Opportunity:

Rising demand for clean and reliable baseload power

A major opportunity for SMRs is the increasing global need for dependable and low-carbon electricity. As nations move toward cleaner energy systems, there is rising demand for consistent power sources that can support variable renewable energy like wind and solar. SMRs offer steady electricity generation with very low emissions, making them suitable for sustainable power networks. Their reliability regardless of environmental conditions improves energy security and grid stability. Additionally, growing electricity consumption in transport, industrial, and urban sectors is boosting

demand. This trend creates significant long-term growth potential for SMR technologies across global energy markets.

Threat:

Geopolitical and nuclear proliferation risks

Geopolitical tensions and nuclear security concerns represent a serious threat to SMR development. Because nuclear technology is highly sensitive, many countries enforce strict rules on its transfer and use. There are ongoing worries that nuclear materials could be misused for non-energy purposes, including weapon development. Political instability and international disputes can also disrupt fuel supply chains and manufacturing networks. These issues limit global cooperation and slow down deployment efforts. Increased security regulations further complicate project approvals in certain regions. As a result, geopolitical and proliferation risks remain a key barrier to smooth international SMR expansion.

Covid-19 Impact:

The COVID-19 pandemic had a notable impact on the SMR market by causing delays in supply chains, construction schedules, and regulatory procedures. Small Modular Reactor Restrictions on movement and shortages of skilled labor slowed down engineering work and project execution. Investment in nuclear energy projects declined temporarily as governments focused on healthcare systems and economic stabilization. Research activities were also affected due to limited access to facilities. Despite these challenges, the pandemic emphasized the need for dependable and clean energy infrastructure, which strengthened long-term interest in SMRs as a resilient and sustainable energy solution for future global energy systems.

The light-water SMRs segment is expected to be the largest during the forecast period

The light-water SMRs segment is expected to account for the largest market share during the forecast period because they are based on well-established nuclear technology and have a long history of operational use. Small Modular Reactor These reactors utilize ordinary water for cooling and moderation, which simplifies their design and makes regulatory approval easier. Their compatibility with existing nuclear fuel systems and infrastructure supports smoother integration into current energy networks. Additionally, their proven safety record and lower technical risks make them more attractive to investors and policymakers. Due to these advantages, Light-Water SMRs

are considered the most practical and widely adopted segment in the global SMR industry.

The hydrogen production segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the hydrogen production segment is predicted to witness the highest growth rate due to the rising importance of clean hydrogen in global energy transition strategies. Small Modular Reactor SMRs can supply consistent low-carbon electricity and heat required for producing hydrogen through advanced processes like electrolysis. The increasing need to decarbonize industries such as steel manufacturing, chemicals, and heavy transport is boosting hydrogen demand. Governments worldwide are also encouraging hydrogen development through supportive policies and investments. Because SMRs provide stable and continuous energy output, they are highly suitable for scaling up hydrogen production, making this segment the fastest-growing application area.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share because of strong policy support, well-developed nuclear infrastructure, and ongoing technological advancements. Small Modular Reactor the United States and Canada are actively investing in research, development, and commercialization of advanced nuclear systems. The region also benefits from established safety regulations and experienced nuclear industry players, which help speed up project implementation. Rising demand for clean and dependable energy, along with the need to modernize aging power facilities, is further boosting SMR adoption. Collaboration between governments and private companies continues to strengthen innovation, making North America the leading region in this market.

Region with highest CAGR:

Over the forecast period, the Asia-Pacific region is anticipated to exhibit the highest CAGR due to strong energy demand growth, urban expansion, and increasing emphasis on clean energy adoption. Small Modular Reactor Major economies like China, India, Japan, and South Korea are investing heavily in advanced nuclear technologies to improve energy security and reduce carbon emissions. Supportive government initiatives, rising electricity consumption, and efforts to reduce dependence on fossil fuels are driving this growth. Additionally, space constraints and the need for

flexible energy systems are encouraging SMR deployment, making Asia-Pacific the fastest-growing region in the global market.

Key players in the market

Some of the key players in Nuclear SMR (Small Modular Reactor) Market include NuScale Power, GE Hitachi, Rolls-Royce SMR, Oklo Inc., Kairos Power, LLC, TerraPower, X-Energy, LLC, Westinghouse, Holtec, BWXT Advanced Technologies LLC, Antares Nuclear, Inc, Radiant Industries Inc., General Atomics, State Atomic Energy Corporation Rosatom, China National Nuclear Corporation (CNNC), Last Energy, Aalo Atomics and Newcleo.

Key Developments:

In March 2026, NuScale Power Corporation and Ebara Elliott Energy announced a collaborative research program to demonstrate and field test a commercial scale high-temperature steam compressor to integrate NuScale Power Modules™ (NPM) with petrochemical plants needing process heat. Under the program, EEE and NuScale will collaborate to support the development, manufacturing, and integration of critical turbomachinery and energy-conversion systems for petrochemical plants powered by NuScale technology.

In January 2026, Rolls-Royce has strengthened its foothold in the North American widebody market with a significant new order from Delta Air Lines, announced on January 28, 2026. The deal encompasses 62 engines in total: 30 Trent XWB-84 EP engines to power 15 Airbus A350-900s, and 32 Trent 7000 engines for 16 Airbus A330-900neo aircraft.

Reactor Types Covered:

Light-Water SMRs

Heavy-Water SMRs

Fast Neutron SMRs

High-Temperature Gas-Cooled SMRs

Molten Salt SMRs

Power Capacities Covered:

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