

Nuclear Small Modular Reactors (SMRs) Global Market 2025-2045

<https://marketpublishers.com/r/NDD3EE50329CEN.html>

Date: September 2024

Pages: 300

Price: US\$ 1,600.00 (Single User License)

ID: NDD3EE50329CEN

Abstracts

Nuclear Small Modular Reactors (SMRs) are emerging as potential game-changers in the global energy landscape, offering a compact and flexible alternative to traditional large-scale nuclear power plants. These innovative reactors, designed to produce up to 400 megawatts of electricity, are garnering significant attention due to their enhanced safety features, lower investment costs, and ability to be deployed in various settings. With over 80 commercial SMR designs currently under development worldwide, the market is witnessing rapid innovation led by established nuclear companies and supported by government initiatives in countries like the United States, United Kingdom, China, and Russia.

The growing interest in SMRs is driven by global efforts to decarbonize energy systems while maintaining reliable baseload power. Their compact size allows for integration into existing grid infrastructure, and their potential applications extend beyond electricity generation to include industrial process heat, hydrogen production, and powering data centers amidst the artificial intelligence boom. As countries increasingly adopt safe and sustainable energy sources, analysts expect SMRs to be commercialized within the next five to ten years, with several first-of-a-kind projects set to demonstrate their viability on a commercial scale.

Despite their promise, the SMR market faces challenges, including first-of-a-kind costs, regulatory hurdles, and the need for public acceptance. However, ongoing technological advancements, efforts to streamline licensing processes, and international cooperation are paving the way for SMRs to play a significant role in the clean energy transition. The success of SMRs will depend on continued research and development, cost reductions through standardization, robust supply chain development, and effective public engagement. As the global energy landscape continues to evolve, SMRs are positioned

to become an integral part of the diverse and sustainable energy mix of the future, offering a flexible and low-carbon solution to meet growing energy demands.

The Nuclear SMR Global Market 2025-2045 provides an in-depth analysis of the rapidly evolving Small Modular Reactor (SMR) industry. This report offers valuable insights into market trends, technological advancements, and growth opportunities in the global nuclear SMR market over the next two decades. This report examines various types of SMR technologies, including Light Water Reactors (LWRs), High-Temperature Gas-Cooled Reactors (HTGRs), Fast Neutron Reactors (FNRs), and Molten Salt Reactors (MSRs).

Key highlights of the report include:

Market Overview and Forecasts: The report provides detailed market size estimates and projections from 2025 to 2045, segmented by reactor type, application, and geographical region. It offers a comprehensive analysis of market drivers, restraints, opportunities, and challenges shaping the industry's future.

Technology Analysis: An in-depth examination of current and emerging SMR technologies, including Light Water Reactors (LWRs), High-Temperature Gas-Cooled Reactors (HTGRs), Fast Neutron Reactors (FNRs), Molten Salt Reactors (MSRs), and microreactors. The report evaluates the strengths, weaknesses, opportunities, and threats (SWOT) for each technology.

Application Insights: The study explores various applications of SMR technology across multiple sectors, including:

Electricity Generation: Grid-connected power plants and load-following capabilities

Industrial Applications: Process heat for manufacturing, desalination, and hydrogen production

Remote and Off-Grid Power: Energy solutions for isolated communities and industrial sites

Marine Propulsion: Naval applications and potential for commercial shipping

Competitive Landscape: A comprehensive analysis of key players in the SMR market, including their reactor designs, market strategies, and recent developments. The report profiles leading companies and emerging startups shaping the industry's future. Companies profiled include ARC Clean Technology, Blue Capsule, Blykalla, BWX Technologies, China National Nuclear Corporation (CNNC), Deep Fission, EDF, GE Hitachi Nuclear Energy, General Atomics, Hexana, Holtec International, K?rnfull Next, Korea Atomic Energy Research Institute (KAERI), Last Energy, Moltex Energy, Naarea, Nano Nuclear Energy, Newcleo, NuScale Power, Oklo, Rolls-Royce SMR, Rosatom, Seaborg Technologies, Steady Energy, Stellaria, Terrestrial Energy, TerraPower, The Nuclear Company, Thorizon, Ultra Safe Nuclear Corporation, Westinghouse Electric Company, and X-Energy.

Future Outlook and Emerging Trends: Insights into technological advancements, potential disruptive technologies, and long-term market predictions extending to 2045 and beyond. The report identifies key growth areas and innovation hotspots in the SMR industry.

Regional Analysis: A detailed examination of SMR market dynamics across North America, Europe, Asia-Pacific, and other regions, highlighting regional adoption trends and growth opportunities.

Value Chain Analysis: An overview of the SMR industry value chain, from fuel suppliers to reactor manufacturers and end-users, providing a holistic view of the market ecosystem.

Regulatory Landscape: An examination of relevant regulations and standards affecting the development and deployment of SMRs across different regions and applications.

This report is an essential resource for:

Nuclear technology developers and manufacturers

Utility companies and power plant operators

Government agencies and policymakers

Industrial companies seeking clean energy solutions

Investment firms and financial analysts

Market researchers and consultants

Environmental organizations and clean energy advocates

Key features of the report include:

Over 100 tables and figures providing clear, data-driven insights

Detailed company profiles of more than 30 key players in the SMR industry

Comprehensive market size and forecast data segmented by technology, application, and region

In-depth analysis of emerging technologies and their potential impact on the market

Expert commentary on market trends, challenges, and opportunities

The global nuclear SMR market is poised for significant growth, with increasing demand for clean, reliable, and flexible energy sources across various industries. This report provides a thorough understanding of the current market landscape, emerging technologies, and future growth prospects, making it an invaluable tool for decision-makers looking to capitalize on opportunities in the SMR sector.

By leveraging extensive primary and secondary research, including interviews with industry experts and analysis of proprietary data, The Nuclear SMR Global Market 2025-2045 offers unparalleled insights into this dynamic and rapidly evolving industry. Whether you're a technology provider, utility company, investor, or policymaker, this report will equip you with the knowledge and understanding needed to navigate the exciting future of small modular reactor technologies.

Contents

1 EXECUTIVE SUMMARY

1.1 Market Overview

- 1.1.1 The nuclear industry
- 1.1.2 Renewed interest in nuclear energy
- 1.1.3 Nuclear energy costs
- 1.1.4 SMR benefits
- 1.1.5 Decarbonization

1.2 Market Forecast

1.3 Technological Trends

1.4 Regulatory Landscape

2 INTRODUCTION

2.1 Definition and Characteristics of SMRs

2.2 Established nuclear technologies

2.3 History and Evolution of SMR Technology

2.4 Advantages and Disadvantages of SMRs

2.5 Comparison with Traditional Nuclear Reactors

2.6 Current SMR reactor designs and projects

2.7 Types of SMRs

2.7.1 Light Water Reactors (LWRs)

2.7.1.1 Pressurized Water Reactors (PWRs)

2.7.1.1.1 Overview

2.7.1.1.2 Key features

2.7.1.1.3 Examples

2.7.1.2 Pressurized Heavy Water Reactors (PHWRs)

2.7.1.2.1 Overview

2.7.1.2.2 Key features

2.7.1.2.3 Examples

2.7.1.3 Boiling Water Reactors (BWRs)

2.7.1.3.1 Overview

2.7.1.3.2 Key features

2.7.1.3.3 Examples

2.7.2 High-Temperature Gas-Cooled Reactors (HTGRs)

2.7.2.1 Overview

2.7.2.2 Key features

- 2.7.2.3 Examples
- 2.7.3 Fast Neutron Reactors (FNRs)
 - 2.7.3.1 Overview
 - 2.7.3.2 Key features
 - 2.7.3.3 Examples
- 2.7.4 Molten Salt Reactors (MSRs)
 - 2.7.4.1 Overview
 - 2.7.4.2 Key features
 - 2.7.4.3 Examples
- 2.7.5 Microreactors
 - 2.7.5.1 Overview
 - 2.7.5.2 Key features
 - 2.7.5.3 Examples
- 2.7.6 Heat Pipe Reactors
 - 2.7.6.1 Overview
 - 2.7.6.2 Key features
 - 2.7.6.3 Examples
- 2.7.7 Liquid Metal Cooled Reactors
 - 2.7.7.1 Overview
 - 2.7.7.2 Key features
 - 2.7.7.3 Examples
- 2.7.8 Supercritical Water-Cooled Reactors (SCWRs)
 - 2.7.8.1 Overview
 - 2.7.8.2 Key features
- 2.7.9 Pebble Bed Reactors
 - 2.7.9.1 Overview
 - 2.7.9.2 Key features
- 2.8 Applications of SMRs
 - 2.8.1 Electricity Generation
 - 2.8.2 Process Heat for Industrial Applications
 - 2.8.3 Desalination
 - 2.8.4 Remote and Off-Grid Power
 - 2.8.5 Hydrogen and industrial gas production
 - 2.8.6 Space Applications
- 2.9 Market challenges
- 2.10 Safety of SMRs

3 GLOBAL ENERGY LANDSCAPE AND THE ROLE OF SMRS

- 3.1 Current Global Energy Mix
- 3.2 Projected Energy Demand (2025-2045)
- 3.3 Climate Change Mitigation and the Paris Agreement
- 3.4 Nuclear Energy in the Context of Sustainable Development Goals
- 3.5 SMRs as a Solution for Clean Energy Transition

4 TECHNOLOGY OVERVIEW

- 4.1 Design Principles of SMRs
- 4.2 Key Components and Systems
- 4.3 Safety Features and Passive Safety Systems
- 4.4 Cycle and Waste Management
- 4.5 Advanced Manufacturing Techniques
- 4.6 Modularization and Factory Fabrication
- 4.7 Transportation and Site Assembly
- 4.8 Grid Integration and Load Following Capabilities
- 4.9 Emerging Technologies and Future Developments

5 REGULATORY FRAMEWORK AND LICENSING

- 5.1 International Atomic Energy Agency (IAEA) Guidelines
- 5.2 Nuclear Regulatory Commission (NRC) Approach to SMRs
- 5.3 European Nuclear Safety Regulators Group (ENSREG) Perspective
- 5.4 Regulatory Challenges and Harmonization Efforts
- 5.5 Licensing Processes for SMRs
- 5.6 Environmental Impact Assessment
- 5.7 Public Acceptance and Stakeholder Engagement

6 MARKET ANALYSIS

- 6.1 Global Market Size and Growth Projections (2025-2045)
- 6.2 Market Segmentation
 - 6.2.1 By Reactor Type
 - 6.2.2 By Application
 - 6.2.3 By Region
- 6.3 Market Drivers and Restraints
- 6.4 SWOT Analysis
- 6.5 Value Chain Analysis
- 6.6 Cost Analysis and Economic Viability

6.7 Financing Models and Investment Strategies

6.8 Regional Market Analysis

6.8.1 North America

6.8.1.1 United States

6.8.1.2 Canada

6.8.2 Europe

6.8.2.1 United Kingdom

6.8.2.2 France

6.8.2.3 Russia

6.8.3 Other European Countries

6.8.4 Asia-Pacific

6.8.4.1 China

6.8.4.2 Japan

6.8.4.3 South Korea

6.8.4.4 India

6.8.4.5 Other Asia-Pacific Countries

6.8.5 Middle East and Africa

6.8.6 Latin America

7 COMPETITIVE LANDSCAPE

7.1 Market players

7.2 Competitive Strategies

7.3 Recent market news

7.4 New Product Developments and Innovations

7.5 SMR private investment.

8 SMR DEPLOYMENT SCENARIOS

8.1 First-of-a-Kind (FOAK) Projects

8.2 Nth-of-a-Kind (NOAK) Projections

8.3 Deployment Timelines and Milestones

8.4 Capacity Additions Forecast (2025-2045)

8.5 Market Penetration Analysis

8.6 Replacement of Aging Nuclear Fleet

8.7 Integration with Renewable Energy Systems

9 SUPPLY CHAIN ANALYSIS

- 9.1 Raw Materials and Component Suppliers
- 9.2 Manufacturing and Assembly
- 9.3 Transportation and Logistics
- 9.4 Installation and Commissioning
- 9.5 Operation and Maintenance
- 9.6 Decommissioning and Waste Management
- 9.7 Supply Chain Risks and Mitigation Strategies

10 ECONOMIC IMPACT ANALYSIS

- 10.1 Job Creation and Skill Development
- 10.2 Local and National Economic Benefits
- 10.3 Impact on Energy Prices
- 10.4 Comparison with Other Clean Energy Technologies

11 ENVIRONMENTAL AND SOCIAL IMPACT

- 11.1 Carbon Emissions Reduction Potential
- 11.2 Land Use and Siting Considerations
- 11.3 Water Usage and Thermal Pollution
- 11.4 Radioactive Waste Management
- 11.5 Public Health and Safety
- 11.6 Social Acceptance and Community Engagement

12 POLICY AND GOVERNMENT INITIATIVES

- 12.1 National Nuclear Energy Policies
- 12.2 SMR-Specific Support Programs
- 12.3 Research and Development Funding
- 12.4 International Cooperation and Technology Transfer
- 12.5 Export Control and Non-Proliferation Measures

13 CHALLENGES AND OPPORTUNITIES

- 13.1 Technical Challenges
 - 13.1.1 Design Certification and Licensing
 - 13.1.2 Fuel Development and Supply
 - 13.1.3 Component Manufacturing and Quality Assurance
 - 13.1.4 Grid Integration and Load Following

13.2 Economic Challenges

13.2.1 Capital Costs and Financing

13.2.2 Economies of Scale

13.2.3 Market Competition from Other Energy Sources

13.3 Regulatory Challenges

13.3.1 Harmonization of International Standards

13.3.2 Site Licensing and Environmental Approvals

13.3.3 Liability and Insurance Issues

13.4 Social and Political Challenges

13.4.1 Public Perception and Acceptance

13.4.2 Nuclear Proliferation Concerns

13.4.3 Waste Management and Long-Term Storage

13.5 Opportunities

13.5.1 Decarbonization of Energy Systems

13.5.2 Energy Security and Independence

13.5.3 Industrial Applications and Process Heat

13.5.4 Remote and Off-Grid Power Solutions

13.5.5 Nuclear-Renewable Hybrid Energy Systems

14 FUTURE OUTLOOK AND SCENARIOS

14.1 Technology Roadmap (2025-2045)

14.2 Market Evolution Scenarios

14.2.1 Conservative Scenario

14.2.2 Base Case Scenario

14.2.3 Optimistic Scenario

14.3 Long-Term Market Projections (Beyond 2045)

14.4 Potential Disruptive Technologies

14.5 Global Energy Mix Scenarios with SMR Integration

15 CASE STUDIES

16 INVESTMENT ANALYSIS

16.1 Return on Investment (ROI) Projections

16.2 Risk Assessment and Mitigation Strategies

16.3 Comparative Analysis with Other Energy Investments

16.4 Public-Private Partnership Models

17 RECOMMENDATIONS

- 17.1 For Policymakers and Regulators
- 17.2 For Industry Stakeholders and Manufacturers
- 17.3 For Utility Companies and Energy Providers
- 17.4 For Investors and Financial Institutions
- 17.5 For Research and Academic Institutions

18 COMPANY PROFILES 249 (32 COMPANY PROFILES)

19 APPENDICES

- 19.1 12. List of Abbreviations
- 19.2 Research Methodology
- 19.3 Glossary of Terms

20 REFERENCES

List Of Tables

LIST OF TABLES

Table 1. Generations of nuclear technologies.
Table 2. Technological trends in Nuclear Small Modular Reactors (SMR).
Table 3. Regulatory landscape for Nuclear Small Modular Reactors (SMR).
Table 4. Designs by generation.
Table 5. Established nuclear technologies.
Table 6. Advantages and Disadvantages of SMRs.
Table 7. Comparison with Traditional Nuclear Reactors.
Table 8. Comparison of SMR Types: LWRs, HTGRs, FNRs, and MSR.
Table 9. Applications of SMRs.
Table 10. SMR Applications and Their Market Share, 2025-2045.
Table 11. Global Energy Mix Projections, 2025-2045.
Table 12. Key Components and Systems.
Table 13. Key Safety Features of SMRs.
Table 14. Advanced Manufacturing Techniques.
Table 15. Emerging Technologies and Future Developments in SMRs.
Table 16. Global SMR Market Size and Growth Rate, 2025-2045
Table 17. SMR Market Size by Reactor Type, 2025-2045.
Table 18. SMR Market Size by Application, 2025-2045.
Table 19. SMR Market Size by Region, 2025-2045.
Table 20. Cost Breakdown of SMR Construction and Operation.
Table 21. Financing Models for SMR Projects.
Table 22. Projected SMR Capacity Additions by Region, 2025-2045.
Table 23. Main SMR market players.
Table 24. Nuclear Small Modular Reactor (SMR) Market News 2022-2024.
Table 25. SMR private investment.
Table 26. Major SMR Projects and Their Status, 2025.
Table 27. SMR Deployment Scenarios: FOAK vs. NOAK.
Table 28. SMR Deployment Timeline, 2025-2045.
Table 29. SMR Supply Chain Components and Key Players.
Table 30. Job Creation in SMR Industry by Sector.
Table 31. Comparison with Other Clean Energy Technologies.
Table 32. Comparison of Carbon Emissions: SMRs vs. Other Energy Sources.
Table 33. Land Use Comparison: SMRs vs. Traditional Nuclear Plants.
Table 34. Water Usage Comparison: SMRs vs. Traditional Nuclear Plants.
Table 35. Government Funding for SMR Research and Development by Country.

Table 36. Government Initiatives Supporting SMR Development by Country.

Table 37. National Nuclear Energy Policies.

Table 38. SMR-Specific Support Programs.

Table 39. R&D Funding Allocation for SMR Technologies.

Table 40. International Cooperation Networks in SMR Development.

Table 41. Export Control and Non-Proliferation Measures.

Table 42. Technical Challenges in SMR Development and Deployment.

Table 43. Economic Challenges in SMR Commercialization.

Table 44. Market Competition: SMRs vs. Other Clean Energy Technologies.

Table 45. Regulatory Challenges for SMR Adoption.

Table 46. Regulatory Harmonization Efforts for SMRs Globally.

Table 47. Liability and Insurance Models for SMR Operations.

Table 48. Social and Political Challenges for SMR Implementation.

Table 49. Non-Proliferation Measures for SMR Technology.

Table 50. Waste Management Strategies for SMRs.

Table 51. Decarbonization Potential of SMRs in Energy Systems.

Table 52. SMR Applications in Industrial Process Heat.

Table 53. Off-Grid and Remote Power Solutions Using SMRs.

Table 54. SMR Market Evolution Scenarios, 2025-2045.

Table 55. Long-Term Market Projections for SMRs (Beyond 2045).

Table 56. Potential Disruptive Technologies in Nuclear Energy.

Table 57. Global Energy Mix Scenarios with SMR Integration, 2045.

Table 58. ROI Projections for SMR Investments, 2025-2045.

Table 59. Comparative ROI: SMRs vs. Other Energy Investments.

Table 60. Risk Assessment and Mitigation Strategies.

Table 61. SMR Supply Chain Risk Mitigation Strategies.

Table 62. Comparative Analysis with Other Energy Investments.

Table 63. Public-Private Partnership Models for SMR Projects.

Table 64. Stakeholder Engagement Model for SMR Projects.

List Of Figures

LIST OF FIGURES

- Figure 1. SMR Market Growth Trajectory, 2025-2045.
- Figure 2. Schematic of Small Modular Reactor (SMR) operation.
- Figure 3. Linglong One.
- Figure 4. CAREM reactor.
- Figure 5. Westinghouse Nuclear AP300™ Small Modular Reactor
- Figure 6. Advanced CANDU Reactor (ACR-300) schematic.
- Figure 7. GE Hitachi's BWRX-300.
- Figure 8. The nuclear island of HTR-PM Demo.
- Figure 9. U-Battery schematic.
- Figure 10. TerraPower's Natrium.
- Figure 11. Russian BREST-OD-300.
- Figure 12. Terrestrial Energy's IMSR.
- Figure 13. Moltex Energy's SSR.
- Figure 14. Westinghouse's eVinci .
- Figure 15. Ultra Safe Nuclear Corporation's MMR.
- Figure 16. Leadcold SEALER.
- Figure 17. GE Hitachi PRISM.
- Figure 18. SCWR schematic.
- Figure 19. SMR Applications and Their Market Share, 2025-2045.
- Figure 20. Projected Energy Demand (2025-2045).
- Figure 21. SMR Licensing Process Timeline.
- Figure 22. Global SMR Market Size and Growth Rate, 2025-2045.
- Figure 23. SMR Market Size by Reactor Type, 2025-2045.
- Figure 24. SMR Market Size by Application, 2025-2045.
- Figure 25. SMR Market Size by Region, 2025-2045.
- Figure 26. SWOT Analysis of the SMR Market.
- Figure 27. Nuclear SMR Value Chain.
- Figure 28. Global SMR Capacity Forecast, 2025-2045.
- Figure 29. SMR Market Penetration in Different Energy Sectors.
- Figure 30. Carbon Emissions Reduction Potential of SMRs, 2025-2045.
- Figure 31. SMR Fuel Cycle Diagram.
- Figure 32. Modular Construction Process for SMRs.
- Figure 33. Power plant with small modular reactors.
- Figure 34. Cost Reduction Curve for SMR Manufacturing.
- Figure 35. Economies of Scale in SMR Production.

- Figure 36. SMR Waste Management Lifecycle.
- Figure 37. Nuclear-Renewable Hybrid Energy System Configurations.
- Figure 38. Technical Readiness Levels of Different SMR Technologies.
- Figure 39. Technology Roadmap (2025-2045).
- Figure 40. NuScale Power VOYGR™ SMR Power Plant Design.
- Figure 41. Rolls-Royce UK SMR Program Timeline.
- Figure 42. China's HTR-PM Demonstration Project Layout.
- Figure 43. Russia's Floating Nuclear Power Plant Schematic.
- Figure 44. Canadian SMR Action Plan Implementation Roadmap.
- Figure 45. Risk Assessment Matrix for SMR Investments.
- Figure 46. ARC-100 sodium-cooled fast reactor.
- Figure 47. ACP100 SMR.
- Figure 48. Deep Fission pressurised water reactor schematic.
- Figure 49. NUWARD SMR design.
- Figure 50. A rendering image of NuScale Power's SMR plant.
- Figure 51. Oklo Aurora Powerhouse reactor.
- Figure 52. Multiple LDR-50 unit plant.

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