Small Modular Reactors

ANMD-MRS23-221 · Nuclear & Fusion Technologies

A Global Sustainability Due Diligence & Market Research Study

History 2020–2024 · Base Year 2025 · Forecast 2025–2032 · Outlooks 2035 / 2040 / 2050 · Currency US$

WHY THIS REPORT

Small modular reactors (SMRs) re-engineer nuclear power as a factory-built, scalable product rather than a bespoke gigawatt megaproject. Standardised modules in the 20–300 MWe band — light-water, high-temperature gas and molten-salt designs — are fabricated in series, shipped to site and deployed incrementally, compressing schedule and capital risk while delivering clean, firm, dispatchable power. This decision-grade study sizes the global market three ways — value, installed capacity (MWe) and unit count — across reactor type, capacity class and application, across seven regions and four scenarios to 2032, with outlooks to 2050.

SUSTAINABILITY & SDG IMPACT — THE ANMD LENS

Sustainability is this report's backbone, not an afterthought. Beyond clean generation, SMRs deliver measurable clean-firm decarbonisation, grid reliability and land-efficient low-carbon power, while passive-safety designs strengthen the safety-and-security story.

Mapped Sustainable Development Goals:

SDG 7	SDG 9	SDG 13
Affordable & Clean Energy	Industry, Innovation & Infrastructure	Climate Action

Measurable sustainability outcomes assessed:

- Clean-firm decarbonisation and grid reliability
- Land-efficient low-carbon power
- Spent-fuel management and proliferation safeguards as a material risk
- Water use and waste assessed

Framework alignment: Double materiality mapped to GRI, SASB, ISSB, TCFD, TNFD, CSRD and the EU Taxonomy, with greenwashing and SDG-washing screens applied throughout.

WHAT'S INSIDE AT A GLANCE

53 Chapters	**9** Report Parts	**7** Regions Covered	**40+** Country Markets
2025–32 Forecast Horizon	**4** Forward Scenarios	**25+** Companies Profiled	**3** SDGs Mapped

REPORT COVERAGE

Geographic scope: North America, Europe, Asia Pacific, Latin America, Africa, Middle East and Rest of World — with named country intelligence. North America leads first deployment; Asia Pacific is the scale engine; Europe is accelerating; other regions assessed on their own merits.

- Factory-built, scalable clean-firm power
- Light-water, high-temperature gas and molten-salt designs
- Lower upfront capital, faster build and load-following
- Spent-fuel management, safeguards and water use as risks

MARKET OVERVIEW

From bespoke megaproject to factory-built product — where dispatchable low-carbon power, process heat and load-following underpin value variable renewables alone cannot deliver.

SMRs are moving from licensing and first-of-a-kind builds toward commercial deployment. Demand is driven by decarbonisation mandates and surging clean-firm power needs from data centres, industry and grids retiring coal across North America, Europe and Asia Pacific. The market is read three ways — value, installed capacity (MWe) and unit count — and forecast under four scenarios, each region reported separately.

- **North America leads first deployment** — the United States and Canada, where NRC/CNSC licensing progress, DOE support and utility off-take agreements are most advanced
- **Asia Pacific is the scale engine** — China, South Korea, Japan and India, combining state nuclear programmes, manufacturing capacity and strong clean-firm power demand
- **Clean firm power is the differentiator** — dispatchable low-carbon generation, process heat and load-following underpin value variable renewables alone cannot deliver on the grid
- **Reactor type and capacity class segment the value** — light-water, high-temperature gas and molten-salt designs across micro, small and modular bands, each with distinct economics

REGIONAL OUTLOOK

Across seven reporting regions, the report separates leading markets from high-growth and emerging ones — each profiled in full rather than aggregated into Rest of World.

Region	Stage	Lead Country Markets & Drivers
North America	Deployment leader	United States, Canada — NRC/CNSC licensing, DOE support, utility off-take
Asia Pacific	Scale engine	China, South Korea, Japan, India — state programmes, manufacturing base
Europe	Accelerating	United Kingdom, France, Poland — energy security, net-zero mandates
Latin America	Emerging	Brazil, Argentina — grid stability, mining and industrial demand
Africa	Frontier	South Africa, Ghana — grid expansion, clean-firm power access
Middle East	Frontier	UAE, Saudi Arabia — sovereign nuclear programmes, desalination

KEY MARKET DRIVERS & RESTRAINTS

Drivers	Restraints
• Decarbonisation + clean-firm power demand convergence • Data-centre and industrial-heat load growth • Licensing progress (NRC, CNSC, ONR, IAEA) • Factory-build cost and schedule advantage • Advanced-fuel, passive-safety technology gains	• First-of-a-kind CAPEX and financing risk • Licensing timelines and regulatory uncertainty • HALEU fuel-supply and enrichment constraints • Public acceptance and siting challenges • Supply-chain, forging and workforce bottlenecks

SEGMENTATION SNAPSHOT

By Reactor Type	Light-water (LWR) · high-temperature gas (HTGR) · molten-salt (MSR) · advanced
By Capacity Class	Micro (<20MWe) · small (20–100MWe) · modular (100–300MWe)
By Application	Grid power · industrial heat · data-centre power · hydrogen / desalination
By End User	Utilities · industrial off-takers · data centres · governments
By Business Model	Hardware sale · build-own-operate · managed service · power off-take
By Scale	Pilot · first-of-a-kind · commercial fleet

TECHNOLOGY & APPLICATION FINDINGS

Where the category is differentiating fastest — the technology and application fronts that separate leaders from followers:

- **Grid power** — utilities deploy SMRs for clean-firm baseload and load-following to replace retiring coal and stabilise renewable-heavy grids
- **Industrial heat** — high-temperature designs supply process heat for chemicals, steel and hydrogen, decarbonising hard-to-abate sectors
- **Data-centre power** — behind-the-meter SMRs supply reliable carbon-free power for hyperscale and AI compute loads

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The full report is organised into nine parts across 53 chapters, listed below. Detailed sub-headings, country tables and directories are provided in the full report.

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COMPETITIVE & INVESTMENT SNAPSHOT

The competitive field spans dedicated SMR developers, established nuclear OEMs and reactor-island integrators. Deal activity — utility off-take agreements, government funding and industrial-heat partnerships — signals a market consolidating around licensable, repeatable designs.

Representative players profiled in the full report:

NuScale Power Corporation · GE Hitachi Nuclear Energy · Rolls-Royce SMR Limited · TerraPower LLC · X Energy Reactor Company, LLC · Westinghouse Electric Company LLC · and 20+ further profiled players.

Investment intelligence: venture, infrastructure, development, climate and blended finance, green bonds and sustainability-linked loans — culminating in a bankability assessment and a conditional investment view.

KEY QUESTIONS THIS REPORT ANSWERS

- How large is the global small modular reactor market, and how fast will it grow to 2032?
- Which regions, countries and segments offer the strongest risk-adjusted opportunity?
- Which technologies and platforms reshape the addressable market and the cost curve?
- Who leads, and where is the competitive and patent white space?
- Is the investment case bankable — and under what conditions?
- How does the category align with the SDGs and disclosure regulation?

WHY ANMD — THE DIFFERENCE

Most market studies stop at units and revenue. This report is built as a sustainability due diligence instrument — fusing market sizing with ESG, SDG, climate and natural-capital intelligence and a decision-ready bankability view in a single architecture.

- **Triangulated sizing** — every market read three ways so value, volume and the physical-unit views reconcile rather than conflict.
- **Region-honest forecasting** — Latin America, Africa and the Middle East reported in full, never hidden inside Rest of World, every forecast resolved to the 2025 base year.
- **Integrated evidence base** — company, patent and project databases linked to the analysis, with published-filing patents and FTO treated as an indicator, not a legal conclusion.
- **No-fabrication discipline** — every estimate carries a data-confidence rating and disclosed sources; gaps are flagged for further diligence, never filled with invented numbers.
- **Anti-greenwashing rigour** — SDG-washing and greenwashing screens plus claim-substantiation checks built into the ESG and project analysis.
- **Decision-first structure** — 9 Parts and 53 Chapters culminating in stakeholder playbooks and a clear, conditional investment view.

WHO SHOULD BUY THIS REPORT

Utilities, industrial off-takers, data centres, governments, EPCs, investors and lenders, and strategic corporate planners and decision-makers.

Access the Full Report

The complete report delivers all 53 chapters in full, with every sub-heading, country table, company and patent directory, forecast model and due diligence checklist.

Purchase at **www.anewmarketdynamics.com** · Standard & Premium licences · Single-Site (SSL) and Global-Site (GSL) options at checkout.

Want the Complete Detailed Table of Contents?

This prospectus lists the nine parts and 53 chapters. The complete detailed table of contents — every sub-heading, country table, exhibit, company and patent directory and annex — is available on request to registered users. To receive it, register with your official company email at **www.anewmarketdynamics.com**. The full detailed table of contents will be sent directly to your registered company email address.