ANMD-MRS32-318 · Sustainable Aviation & Maritime

LNG and Dual-Fuel Marine Engines

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

LNG and dual-fuel marine engines cut SOx, particulates and CO_2 as a transition fuel, with bio-LNG extending the pathway. LNG two-stroke, LNG four-stroke and dual-fuel engines let shipowners, shipyards and engine OEMs comply with emissions rules today while retaining liquid-fuel flexibility. This decision-grade study sizes the global market three ways — value, units shipped and installed MW — across engine type, sub-type 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 operational performance, LNG and dual-fuel engines deliver measurable SOx-and-particulate reduction, transition-fuel decarbonisation and bio-LNG readiness, while methane slip shapes the natural-capital story.

Mapped Sustainable Development Goals:

SDG 2	SDG 6	SDG 7	SDG 13	SDG 15
Zero Hunger	Clean Water	Affordable Clean Energy	Climate Action	Life on Land

Measurable sustainability outcomes assessed:

- Immediate SOx and particulate-matter reduction versus heavy fuel oil
- Lower CO_2 and a bridge to future zero-carbon fuels
- Bio-LNG readiness extending the decarbonisation pathway
- Methane slip and fuel-lifecycle emissions as material risks

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	**5** SDGs Mapped

REPORT COVERAGE

Geographic scope: North America, Europe, Asia Pacific, Latin America, Africa, Middle East and Rest of World — with named country intelligence. Asia Pacific dominates newbuild; Europe leads engine technology; North America is selective, pairing LNG bunkering with domestic fleets.

MARKET OVERVIEW

A mainstream transition choice for newbuilds — emissions cuts today, fuel flexibility retained.

The LNG and dual-fuel marine engine market is a mainstream transition choice for newbuilds. Demand is driven by emissions compliance, fuel-price hedging and bio-LNG potential, supported by mature LNG engine platforms. The market is read three ways — value, units shipped and installed MW — and forecast under four scenarios, each region reported separately.

- Asia Pacific dominates newbuild — South Korea, China and Japan, where LNG-capable shipyards lead
- Europe leads engine technology — Germany, Finland and Switzerland host the major engine OEMs
- Engine type and sub-type segment the value — across LNG two-stroke, LNG four-stroke and dual-fuel
- Transition-fuel flexibility is the differentiator — dual-fuel and bio-LNG readiness single-fuel engines cannot match

REGIONAL OUTLOOK

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

Region	Stage	Lead Markets & Drivers
Asia Pacific	Newbuild leader	South Korea, China, Japan — LNG-capable shipyards
Europe	Technology leader	Germany, Finland, Switzerland — engine OEMs, IMO/EU rules
North America	Selective	United States, Canada — LNG bunkering, domestic fleets
Middle East	High-growth	UAE, Saudi Arabia — LNG supply, bunkering investment
Latin America	Emerging	Brazil, Panama — fleet renewal, canal traffic
Africa	Frontier	South Africa, Egypt — bunkering nodes, shipping routes

KEY MARKET DRIVERS & RESTRAINTS

Drivers	Restraints
• SOx / particulate and emissions compliance	• Methane slip and lifecycle-emissions scrutiny
• Fuel-price hedging and dual-fuel flexibility	• LNG price and supply volatility
• Bio-LNG and future-fuel readiness	• Cryogenic-storage and system cost
• LNG-bunkering infrastructure growth	• Stranded-asset and future-fuel risk
• LNG-engine and fuel-gas technology gains	• Bunkering-availability gaps

SEGMENTATION SNAPSHOT

By Engine Type	LNG two-stroke · LNG four-stroke · dual-fuel
By Sub-Type	High-pressure · low-pressure · Otto / Diesel cycle
By Component	Engines · fuel-gas systems · cryogenic tanks · regasification · controls
By Application	Container · LNG carrier · bulk · tanker
By End User	Shipowners · shipyards · engine OEMs · operators
By Business Model	Engine sale · licensing · service contract

TABLE OF CONTENTS — PARTS & CHAPTERS

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.

Part V — Company, Competition, Patent and Project Intelligence

Part VI — Sustainability, ESG, SDG, Climate and Natural-Capital Intelligence

Part VII — Supply Chain, Policy, Legal, Economics and Finance

Part VIII — Scenario, Future Intelligence and Final Due Diligence Verdict

Part IX — Annexes, Directories and Reference Material

COMPETITIVE & INVESTMENT SNAPSHOT

The competitive field spans established engine majors, specialist fuel-gas-system providers and shipyard integrators. Deal activity — engine-licensing partnerships, bio-LNG programmes and shipyard agreements — signals a market consolidating around bankable, repeatable designs.

Representative players profiled in the full report:

MAN Energy Solutions SE · Wärtsilä Oyj Abp · Winterthur Gas & Diesel Ltd. (WinGD) · Caterpillar Inc. (MaK) · Mitsubishi Heavy Industries, Ltd. · and further profiled players across the value chain.

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

KEY QUESTIONS THIS REPORT ANSWERS

? How large is the global LNG and dual-fuel marine engines market, and how fast will it grow to 2032?

? Which regions, countries and segments offer the strongest risk-adjusted opportunity?

? Who leads, and where is the competitive and patent white space?

? Is the investment case bankable — and under what conditions?

? How does the technology align with the SDGs and emerging 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, water and natural-capital intelligence and a decision-ready bankability assessment in a single architecture.

› **Triangulated sizing —** every market read three ways (value, units shipped and installed MW) so value, volume and installed MW 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, condition-based bankability view.

WHO SHOULD BUY THIS REPORT

Investors and infrastructure / PE funds, engine OEMs, shipyards, shipowners, operators, classification societies, lenders, policymakers, and corporate strategy and ESG teams.

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.