

# AI-Driven Vessel Routing for Fuel Optimization

## ANMD-MRS22-217 · Marine AI Solutions

### 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

AI-driven vessel routing turns weather, ocean and vessel-performance data into fuel-optimal passage plans, converting static route guidance into continuously optimised, decarbonisation-aligned voyages. Purpose-built systems — weather routing, speed optimisation and trim optimisation built on physics-based, machine-learning and hybrid methods — are engineered so that owners and operators cut fuel and emissions on every voyage. The pay-off is measurable: lower bunker spend, reduced CO<sub>2</sub>, improved CII ratings and quantified fuel-saved percentages. This decision-grade study sizes the global market three ways — value, platform seats/licences and vessels routed — across segmentation, seven regions and four scenarios to 2032, with outlooks to 2050.

## SUSTAINABILITY & SDG IMPACT — THE ANMD LENS

The sustainability case is the report's backbone. Beyond cost, AI vessel routing delivers measurable fuel and CO<sub>2</sub> reductions, improved CII ratings, and verified per-voyage savings, while optimised passages strengthen the decarbonisation story. The analysis applies double materiality, maps outcomes to GRI, SASB, ISSB, TCFD, TNFD, CSRD and the EU Taxonomy, and Data integrity, savings verification, cyber-security and green-claim substantiation are treated as material risks — with greenwashing and SDG-washing screens applied throughout.

### Mapped Sustainable Development Goals:

<b>SDG 13</b> Climate Action	<b>SDG 9</b> Industry & Infrastructure	<b>SDG 14</b> Life Below Water
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### Measurable sustainability outcomes assessed:

- Significant fuel and emissions savings per voyage
- Weather-optimised, lower-risk routing
- Compliance-ready carbon-intensity performance
- Forecast accuracy and data integration 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

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

## REPORT COVERAGE

**Geographic scope:** North America, Europe, Asia Pacific, Latin America, Africa, Middle East and Rest of World — with named country intelligence. Europe (Nordics) leads weather-routing software; Asia Pacific drives fleet adoption; North America scales commercial uptake; other regions on their own merits.

## MARKET OVERVIEW

### From static routes to AI-driven, fuel-optimised weather routing.

AI vessel routing is moving from advisory weather routing to integrated fuel-optimisation. Demand is driven by the convergence of bunker-cost pressure, IMO decarbonisation rules and charterer ESG expectations, supported by maturing CII regulation across Europe, Asia Pacific and North America. The market is read three ways — value, platform seats/licences and vessels routed — and forecast under four scenarios (conservative, base, accelerated and disruption), each region reported separately.

- **Europe leads early commercialisation** — anchored by Norway, Denmark, Finland and the United Kingdom, where weather-routing, decarbonisation software and ML-optimisation methods are most advanced.
- **Asia Pacific is the scale engine** — with China, Japan, South Korea, Singapore and Australia combining the world's largest fleets with strong fuel-efficiency drivers.
- **North America is accelerating** — supported by emissions-reporting demand, charterer ESG pressure and a growing maritime-AI software base.
- **Optimization and method segment the value** — across weather-routing, speed-optimisation and trim-optimisation systems, and across physics-based, machine-learning and hybrid methods, each with distinct economics.

## REGIONAL OUTLOOK

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

Region	Stage	Lead Markets & Drivers
Europe	Commercial leader	Norway, UK, Finland, Netherlands — class guidance, autonomy trials, smart-port & decarbonisation drivers
Asia Pacific	Scale engine	China, Japan, South Korea, Singapore, Australia — shipbuilding base, port efficiency, fleet scale
North America	Accelerating	United States, Canada — coast-guard & defence programmes, port modernisation, maritime-AI ventures
Latin America	Emerging	Brazil, Chile — ports, fisheries and offshore-energy adoption
Africa	Frontier	South Africa, Kenya, Morocco — port development, fisheries protection, blended finance
Middle East	Frontier	Saudi Arabia, UAE, Israel — port investment, maritime security, sovereign capital

## KEY MARKET DRIVERS & RESTRAINTS

Drivers	Restraints
<ul style="list-style-type: none"> <li>• Bunker-fuel cost &amp; efficiency pressure</li> <li>• IMO decarbonisation (CII) compliance</li> <li>• Charterer &amp; financier ESG expectations</li> <li>• Maturing weather, ocean &amp; performance data</li> <li>• Machine-learning &amp; hybrid optimisation gains</li> </ul>	<ul style="list-style-type: none"> <li>• Data quality &amp; vessel-performance modelling</li> <li>• Onboard connectivity &amp; bandwidth limits</li> <li>• Crew adoption &amp; route-deviation overrides</li> <li>• Savings-attribution &amp; verification disputes</li> <li>• Integration with legacy navigation systems</li> </ul>

## SEGMENTATION SNAPSHOT

<b>By Optimization</b>	Weather routing · speed optimisation · trim optimisation
<b>By Method</b>	Physics-based · machine learning · hybrid
<b>By Application</b>	Deep-sea · short-sea · tramp & liner trades
<b>By End User</b>	Ship owners · charterers · operators · class societies
<b>By Business Model</b>	Software licence · SaaS · per-vessel · shared-savings
<b>By Scale</b>	Pilot · fleet rollout · enterprise platform

## 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 I — Report Foundation, Discovery and Strategic Intelligence

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- › Chapter 2. Industry Discovery Summary — AI-Driven Vessel Routing for Fuel Optimization
- › Chapter 3. Executive Intelligence and Decision Dashboard
- › Chapter 4. Strategic Findings, Materiality and Investment Verdict Preview

### Part II — Market Intelligence, Sizing, Forecasting and Segmentation

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### Part IV — Technology, Innovation and Category-Specific Intelligence

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- › Chapter 53. Reference Annexes

## COMPETITIVE & INVESTMENT SNAPSHOT

The competitive field spans weather-routing specialists, established maritime-software vendors, and decarbonisation-AI innovators.

### Representative players profiled in the full report:

StormGeo AS · NAPA Ltd. · Wärtsilä Oyj Abp · ZeroNorth A/S · Bearing, Inc. · and 20+ further profiled players across weather-routing and voyage-optimisation innovators.

**Investment intelligence:** venture, infrastructure, development, climate and blended finance, green bonds and sustainability-linked loans — culminating in a bankability assessment and a clear, decision-ready investment verdict.

## KEY QUESTIONS THIS REPORT ANSWERS

- ? How large is the global ai-driven vessel routing for fuel optimization market, and how fast will it grow to 2032?
- ? Which regions, countries and segments offer the strongest risk-adjusted opportunity?
- ? How does AI weather routing change fuel and emissions value versus conventional routing?
- ? 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, circular-economy and resource-security 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, water and natural-capital intelligence and a decision-ready bankability verdict in a single architecture.*

- **Triangulated sizing** — every market read three ways (value, platform seats/licences and vessels routed) so value-led and volume-led 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, decision-ready investment verdict.

## WHO SHOULD BUY THIS REPORT

Investors and maritime-tech / PE funds, shipowners and operators, charterers and managers, classification societies and regulators, ports 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](http://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](http://www.anewmarketdynamics.com). The full detailed table of contents will be sent directly to your registered company email address.