

ANMD-MRS31-308 · Space Sustainability & Applications

Active Debris Removal Systems

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

Active debris removal (ADR) systems clean up orbit to preserve the space environment for future generations. Capture-based removal, drag-augmentation devices and laser / contactless methods deorbit defunct satellites and debris, directly reducing collision risk and Kessler-cascade potential. This decision-grade study sizes the global market three ways — value, missions and objects removed — across removal type, sub-type, component, application and end user, 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 mission performance, active debris removal delivers measurable debris reduction, collision-risk avoidance and orbital stewardship, while dual-use governance and liability shape the social-licence story.

Mapped Sustainable Development Goals:

SDG 9	SDG 11	SDG 12	SDG 13	SDG 17
Industry & Infrastructure	Sustainable Cities	Responsible Consumption	Climate Action	Partnerships

Measurable sustainability outcomes assessed:

- Debris objects removed and collision-risk reduction per mission
- Space-environment preservation and Kessler-cascade avoidance
- Dual-use governance, liability and social-licence as material risks
- Removal-hardware embodied carbon and re-entry circularity

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. North America and Europe anchor near-term value; Asia Pacific scales on national and NewSpace programmes; the Middle East, Latin America and Africa are assessed on their own merits.

MARKET OVERVIEW

From feasibility demonstrations to early missions — where removing objects, not avoiding them, defines value.

The active debris removal market is moving from feasibility demonstrations to early operational missions. Demand is driven by orbital-debris risk, regulatory pressure and constellation liability, supported by maturing capture and deorbit technology. The market is read three ways — value, missions and objects removed — and forecast under four scenarios, each region reported separately.

- Asia Pacific & Europe lead pioneering missions, anchored by Japan's Astroscale and Switzerland's ClearSpace, with ESA backing
- North America is scaling, combining defense interest with commercial removal concepts
- Removal type and sub-type segment the value — across capture-based, drag-augmentation and laser / contactless removal
- Direct debris reduction is the differentiator — removing objects underpins value where avoidance alone cannot

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
North America	Commercial leader	United States, Canada — NewSpace, commercial constellations, defense demand
Europe	Institutional anchor	France, Germany, Italy, UK — ESA, Copernicus, primes, sustainability rules
Asia Pacific	Growth engine	China, India, Japan, Australia — national programmes, NewSpace, manufacturing
Latin America	Emerging	Brazil, Argentina — EO applications, NewSpace startups
Africa	Frontier	South Africa, Egypt, Nigeria — EO for agriculture, climate, development
Middle East	High-growth	UAE, Saudi Arabia — space agencies, sovereign investment, diversification

KEY MARKET DRIVERS & RESTRAINTS

Drivers	Restraints
• Orbital-debris risk & Kessler-cascade concern • Regulatory & deorbit mandates • Constellation liability & insurance pressure • Space-sustainability & stewardship goals • Capture, drag-device & deorbit technology gains	• Mission CAPEX & business-model immaturity • Capture of uncooperative / tumbling targets • Regulatory & liability frameworks • Dual-use & geopolitical sensitivity • Cost-per-object-removed economics

SEGMENTATION SNAPSHOT

By Removal Type	Capture-based · drag-augmentation · laser / contactless
By Sub-Type	Net / harpoon · robotic-arm capture · drag sail · ground / space laser
By Application	Defunct-satellite removal · debris removal · constellation disposal
By End User	Space agencies · satellite operators · defense · regulators
By Component	Capture mechanisms · drag sails · lasers · deorbit propulsion · sensors
By Business Model	Mission contract · removal-as-a-service · disposal fee

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

- › Chapter 1. Scope, Methodology and Report Architecture
- › Chapter 2. Industry Discovery Summary — Active Debris Removal Systems
- › Chapter 3. Executive Intelligence and Decision Dashboard
- › Chapter 4. Strategic Findings, Materiality and Investment Verdict Preview

Part II — Market Intelligence, Sizing, Forecasting and Segmentation

- › Chapter 5. Industry Overview and Market Evolution
- › Chapter 6. Market Dynamics
- › Chapter 7. Global Market Size and Forecast, 2020–2032
- › Chapter 8. Market Segmentation Analysis
- › Chapter 9. End-User and Demand-Side Intelligence
- › Chapter 10. Pricing, Cost and Commercial Model Intelligence

Part III — Regional and Country Intelligence

- › Chapter 11. Global Regional Intelligence Framework
- › Chapter 12. North America Market Intelligence
- › Chapter 13. Europe Market Intelligence
- › Chapter 14. Asia Pacific Market Intelligence
- › Chapter 15. Latin America Market Intelligence
- › Chapter 16. Africa Market Intelligence
- › Chapter 17. Middle East Market Intelligence
- › Chapter 18. Rest of World Market Intelligence

Part IV — Technology, Innovation and Category-Specific Intelligence

- › Chapter 19. Technology Landscape and Architecture
- › Chapter 20. Emerging and Next-Generation Technology Intelligence
- › Chapter 21. Category-Specific Intelligence Module
- › Chapter 22. Research, Innovation and Funding Landscape

Part V — Company, Competition, Patent and Project Intelligence

- › Chapter 23. Competitive Landscape
- › Chapter 24. Company Profiles
- › Chapter 25. Mergers, Acquisitions, Partnerships and Ecosystem Intelligence
- › Chapter 26. Patent Landscape and Intellectual Property Intelligence
- › Chapter 27. Project, Deployment and Case-Study Intelligence

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

- › Chapter 28. Sustainability Intelligence Suite
- › Chapter 29. ESG Intelligence and Double Materiality
- › Chapter 30. ESG and Sustainability Framework Alignment
- › Chapter 31. SDG Intelligence
- › Chapter 32. Carbon, Net-Zero and Climate-Mitigation Intelligence
- › Chapter 33. Water, Biodiversity and Natural-Capital Intelligence
- › Chapter 34. Circular Economy and Resource-Security Intelligence
- › Chapter 35. Social Impact, Human Capital and Community Intelligence
- › Chapter 36. Climate Risk, Adaptation and Resilience Intelligence

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

- › Chapter 37. Value Chain, Supply Chain and Geopolitical Intelligence
- › Chapter 38. Policy, Regulation and Incentive Intelligence
- › Chapter 39. Legal, Contracting and Risk-Allocation Intelligence
- › Chapter 40. Unit Economics, CAPEX, OPEX and Return Analysis
- › Chapter 41. Investment, Sustainable Finance and Bankability Intelligence

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

- › Chapter 42. Scenario Analysis and Future Intelligence
- › Chapter 43. Sustainability Due Diligence Framework and Data-Room Index
- › Chapter 44. Risk Register, RAG Rating and Anti-Greenwashing Screen
- › Chapter 45. Bottom-Line Verdict and Strategic Recommendations
- › Chapter 46. Implementation Roadmap and Stakeholder Playbooks

Part IX — Annexes, Directories and Reference Material

- › Chapter 47. Methodology Annex
- › Chapter 48. Corporate Directory and Company Intelligence Annex
- › Chapter 49. Patent Directory and Patent Intelligence Annex
- › Chapter 50. Project Intelligence Annex
- › Chapter 51. Forecast Annex
- › Chapter 52. Sustainability KPI Annex
- › Chapter 53. Reference Annexes

COMPETITIVE & INVESTMENT SNAPSHOT

The competitive field spans established space primes, NewSpace operators and specialist technology providers. Deal activity — agency-funded missions, removal partnerships and capture-technology programmes — signals a market consolidating around bankable, demonstrable systems.

Representative players profiled in the full report:

Astroscale Holdings Inc. · ClearSpace SA · Northrop Grumman Corporation · Airbus SE · Thales Alenia Space SAS · and 20+ further profiled players across capture, deorbit and removal-service segments.

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

KEY QUESTIONS THIS REPORT ANSWERS

- ? How large is the global active debris removal market, and how fast will it grow to 2032?
- ? Which regions, countries and segments offer the strongest risk-adjusted opportunity?
- ? How do cost-per-object-removed economics change the mission business case?
- ? 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 space-sustainability 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 so value, volume and adoption 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, evidence-based investment recommendation.

WHO SHOULD BUY THIS REPORT

Investors and infrastructure / PE funds, space agencies, satellite operators, defense and primes, regulators and insurers, lenders, and corporate strategy and ESG teams, alongside 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.