

# Air Quality Sensors

## ANMD-MRS18-171 · Environmental AI Applications

### 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

Air quality sensors measure pollutants — particulate matter, NO<sub>x</sub>, ozone and other gases — across outdoor networks, indoor spaces, industrial sites and wearables. Spanning electrochemical, optical particulate, NDIR and metal-oxide low-cost sensors alongside reference-grade instruments, they turn invisible pollution into actionable data. The pay-off is measurable: dense real-time air-quality intelligence for public health, regulation, smart cities and personal exposure. This report is a comprehensive, decision-grade study of the air quality sensor market across sensor technology, deployment, application, end-user, scale, ownership and business model, spanning history 2020–2024, a 2025 base year, a 2025–2032 forecast and long-term outlooks to 2035, 2040 and 2050. This decision-grade study sizes the global market three ways — value, deployed units and monitoring coverage — across segmentation, seven regions and four scenarios to 2032, with outlooks to 2050.

## SUSTAINABILITY & SDG IMPACT — THE ANMD LENS

The sustainability case here is public health and environmental. Air-quality data enables exposure reduction, regulation and cleaner cities, while raising data-quality and equity questions. The analysis applies double materiality, maps outcomes to GRI, SASB, ISSB, TCFD, TNFD, CSRD and the EU Taxonomy, and Data-quality and misinformation risk, sensor electronic-waste, and monitoring-equity gaps are treated as material risks — with greenwashing and SDG-washing screens applied throughout.

### Mapped Sustainable Development Goals:

<b>SDG 3</b> Good Health & Well-being	<b>SDG 11</b> Sustainable Cities	<b>SDG 13</b> Climate Action
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### Measurable sustainability outcomes assessed:

- Reduced pollution exposure and health protection
- Regulatory monitoring and cleaner cities
- Dense, validated air-quality intelligence
- Data quality, calibration and equity of coverage 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. North America and Europe lead regulatory and smart-city deployment; Asia Pacific scales dense low-cost networks; other regions assessed on their own merits.

## MARKET OVERVIEW

### From sparse reference stations to dense, validated, IoT-connected networks.

Air quality sensing is moving from sparse reference stations to dense, low-cost, IoT-connected networks. Demand is driven by health awareness, smart-city programmes and tightening air-quality regulation across North America, Europe and Asia Pacific. The market is read three ways — value, deployed units and monitoring coverage — and forecast under four scenarios (conservative, base, accelerated and disruption), each region reported separately.

- **North America leads adoption** — supported by regulatory monitoring, smart-city deployments and a strong sensor-technology vendor base.
- **Asia Pacific drives volume** — led by China and India, where severe air pollution and government programmes fund large monitoring networks.
- **Europe scales on regulation** — anchored by EU air-quality directives and dense urban and industrial monitoring.
- **Sensor technology segments the value** — across electrochemical, optical, NDIR, metal-oxide and reference-grade designs, each with distinct accuracy and cost 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
North America	Adoption leader	United States, Canada — regulation, funding, tech-vendor base
Asia Pacific	Volume driver	China, India, Japan — severe pollution, monitoring programmes
Europe	Regulation-led	Germany, France, UK, Netherlands — environmental rules, CSRD, climate funding
Middle East	Strategy-led	Saudi Arabia, UAE — environmental strategy, sovereign investment
Latin America	Emerging	Brazil, Chile — biodiversity, deforestation, climate risk
Africa	Frontier	South Africa, Kenya — conservation, climate adaptation, blended finance

## KEY MARKET DRIVERS & RESTRAINTS

Drivers	Restraints
<ul style="list-style-type: none"> <li>• Health awareness &amp; exposure concern</li> <li>• Smart-city &amp; dense-network demand</li> <li>• Tightening air-quality regulation</li> <li>• Low-cost &amp; IoT sensor advances</li> <li>• Indoor air-quality &amp; wearable growth</li> </ul>	<ul style="list-style-type: none"> <li>• Low-cost-sensor accuracy &amp; drift</li> <li>• Calibration &amp; data-quality burden</li> <li>• Standardisation &amp; validation gaps</li> <li>• Sensor lifetime &amp; maintenance</li> <li>• Data-management &amp; integration complexity</li> </ul>

## SEGMENTATION SNAPSHOT

<b>By Sensor Technology</b>	Electrochemical · optical (PM) · NDIR · metal-oxide (MOS) · reference-grade
<b>By Deployment</b>	Outdoor networks · indoor air quality · industrial · wearable
<b>By Application</b>	Outdoor networks · indoor air quality · industrial · wearable
<b>By End User</b>	Cities · industry · buildings · researchers · consumers
<b>By Business Model</b>	Hardware sale · SaaS · data · managed service
<b>By Scale</b>	Pilot · deployment · enterprise / national-scale

## 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 — Air Quality Sensors
- › 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
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- › 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
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- › Chapter 32. Carbon, Net-Zero and Climate-Mitigation Intelligence
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- › 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
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- › 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 dedicated air-quality specialists, instrumentation and automation majors, and low-cost-sensor innovators.

### Representative players profiled in the full report:

Aeroqual Limited · TSI Incorporated · Honeywell International Inc. · Siemens AG · Thermo Fisher Scientific Inc. · and 20+ further profiled players across instrumentation majors and low-cost-sensor 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 air quality sensors market, and how fast will it grow to 2032?
- ? Which regions, countries and segments offer the strongest risk-adjusted opportunity?
- ? How does low-cost dense sensing change air-quality value versus reference-grade stations alone?
- ? 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, deployed units and monitoring coverage) 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 climate-tech / PE funds, cities and environmental agencies, instrumentation OEMs and integrators, industrial and building operators, regulators and standards bodies, 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](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.