AI Accelerators

ANMD-MRS7-062 · Advanced Semiconductor 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

AI accelerators are the compute engines of the artificial-intelligence economy — the GPUs, ASIC/TPU dataflow engines, FPGAs, edge inference chips and wafer-scale systems that train and run modern models. This decision-grade study sizes the global market three ways — value, unit volume and TOPS/TFLOPS delivered — across architecture, deployment 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 raw throughput, AI accelerators are assessed on performance-per-watt, datacenter energy and water intensity, and the lifecycle carbon of leading-edge fabrication.

Mapped Sustainable Development Goals:

SDG 7	SDG 9	SDG 12	SDG 13
Affordable & Clean Energy	Industry, Innovation & Infrastructure	Responsible Consumption	Climate Action

Measurable sustainability outcomes assessed:

- Performance-per-watt and compute-efficiency gains
- Datacenter energy and water intensity reduction
- Lifecycle carbon of leading-edge fabrication
- Hardware turnover, e-waste and embodied carbon 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	**4** 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 design and deployment; Asia Pacific is the scale and packaging engine; Europe focuses on sovereign and edge AI; other regions assessed on their own merits.

MARKET OVERVIEW

From insatiable compute demand to performance-per-watt — where AI silicon meets energy scrutiny.

AI silicon is the fastest-growing segment in semiconductors. Demand is driven by hyperscale training clusters, the inference build-out and the spread of edge AI, with architecture competition intensifying between GPUs, custom ASIC/TPU engines and dataflow startups. The market is read three ways — value, unit volume and TOPS/TFLOPS — and forecast under four scenarios, each region reported separately.

- **North America leads design and deployment** — United States and Canada, on hyperscale cloud build-out and CHIPS-Act incentives
- **Asia Pacific is the scale and packaging engine** — Taiwan, South Korea, China and Japan, on advanced-node foundry and HBM supply
- **Europe focuses on sovereign and edge AI** — United Kingdom and Germany, on a sovereign-compute agenda and edge inference
- **Performance-per-watt is the differentiator** — power, HBM bandwidth and interconnect increasingly gate hyperscale deployment

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 Markets & Drivers
North America	Design leader	United States, Canada — hyperscale capex, CHIPS incentives
Asia Pacific	Scale & packaging engine	Taiwan, South Korea, China, Japan — foundry, HBM, sovereign chips
Europe	Sovereign & edge	United Kingdom, Germany — sovereign-compute agenda, edge AI
Latin America	Emerging	Brazil, Mexico — cloud-region build-out, inference demand
Africa	Frontier	South Africa, Kenya — cloud access, AI-for-development
Middle East	Accelerating	Saudi Arabia, UAE — sovereign AI clusters, sovereign investment

KEY MARKET DRIVERS & RESTRAINTS

Drivers	Restraints
• Generative-AI training & inference demand • Hyperscale cloud capex build-out • Edge-AI & on-device inference growth • Performance-per-watt & efficiency pressure • Sovereign-compute & CHIPS-Act incentives	• Datacenter energy & water footprint • HBM & advanced-packaging supply constraints • Export controls & geopolitical fragmentation • Software-ecosystem lock-in (CUDA) • Capital intensity & rapid obsolescence

SEGMENTATION SNAPSHOT

By Architecture	GPU · ASIC/TPU · FPGA · edge AI · wafer-scale / dataflow engines
By Deployment	Datacenter training · datacenter inference · edge AI · hyperscale cloud
By Application	LLM training · inference serving · computer vision · recommendation · scientific HPC
By End User	Hyperscalers · cloud providers · enterprises · OEMs · research labs
By Node	Leading-edge (≤5 nm) · advanced · mature
By Business Model	Chip sale · IP licensing · foundry · cloud-instance / as-a-service

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.

COMPETITIVE & INVESTMENT SNAPSHOT

The competitive field spans GPU leaders, hyperscaler silicon teams and a wave of dataflow and edge-AI startups. Deal activity — foundry-capacity reservations, HBM supply agreements and startup funding rounds — signals a market consolidating around a few high-bandwidth platforms while edge and inference fragment.

Representative players profiled in the full report:

NVIDIA Corporation · Advanced Micro Devices, Inc. · Intel Corporation · Broadcom Inc. · Amazon Web Services, Inc. · Cerebras Systems Inc. · Graphcore Limited · and 18+ 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 AI accelerators market, and how fast will it grow to 2032?
- Which regions, countries and segments offer the strongest risk-adjusted opportunity?
- How does performance-per-watt change value versus raw-FLOPS comparisons?
- 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, datacenter energy 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 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

Investors, OEMs, system designers, foundries, hyperscalers, lenders and policymakers, 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.