

Quantifying ESG

Moving beyond marketing to audit the carbon footprint of AI and data centers

Artificial intelligence has quickly become the defining technology of our time. It is transforming the way businesses operate, how decisions are made, and even how knowledge itself is created and distributed. From financial forecasting to healthcare diagnostics, AI promises speed, insight, and efficiency on a scale we have never experienced before.

Artificial intelligence is often presented as a clean technology. It helps companies optimize supply chains, reduce energy waste, improve climate forecasting, and accelerate scientific discovery. In sustainability discussions, AI is frequently framed as part of the solution.

Yet behind every AI system lies a vast and energy-intensive infrastructure.

AI models run in data centers filled with servers and specialized chips that operate continuously. Training advanced models can require thousands of processors working simultaneously for weeks. Cooling these machines requires water and electricity. Manufacturing the hardware involves energy-intensive supply chains and rare materials. In other words, intelligence at scale has a physical footprint.

As organizations rapidly integrate AI into operations, ESG leaders are beginning to confront an uncomfortable reality: while companies measure emissions from travel, buildings, and logistics, the environmental impact of their digital infrastructure often remains largely invisible.

This is where ESG must move beyond storytelling and into measurement. The real question is no longer whether AI can support sustainability. The question is whether organizations are measuring the sustainability of AI itself. And that begins with auditing its footprint.

Mapping the footprint

The first step in auditing the environmental impact of AI is understanding where computation actually happens. Many companies rely on a mix of internal servers and cloud providers, often spread across different regions. Sustainability teams need visibility into where AI models are trained, where they are deployed, and how frequently they run. Without mapping these activities, it is almost impossible to estimate their environmental impact.

A portrait of Melina Taprantzi, a woman with long, wavy brown hair, wearing a dark red button-down shirt under a black jacket. She is smiling slightly and looking towards the camera. The background is a solid light green.

Melina Taprantzi

Founder of the Consulting
Company Earth and Co



Once this digital map exists, organizations can begin measuring energy consumption. Most cloud platforms now provide tools that estimate emissions associated with computing workloads. Platforms from Google Cloud, Microsoft, and Amazon Web Services offer dashboards that translate cloud usage into carbon estimates based on the energy mix of the data centers involved. These tools provide an initial baseline, allowing companies to understand how much carbon is associated with their AI operations.

But auditing AI goes deeper than simply reviewing cloud dashboards. A meaningful audit also examines the lifecycle of AI models. Training models typically consumes far more energy than running them in production. Organizations should therefore track how frequently models are trained or retrained, how long training processes run, and how much computing power they require. Surprisingly, many teams retrain models more often than necessary, creating unnecessary energy consumption.

Another critical part of the audit focuses on model efficiency. Larger models are not always better models. In many cases, optimized or smaller models can deliver similar results with significantly lower computational demand. Evaluating model size, architecture, and performance relative to energy consumption allows companies to identify opportunities to reduce emissions without sacrificing functionality.

Infrastructure choices also matter. The same AI workload can have very different environmental impacts depending on where it runs. Data centers powered by renewable energy produce far fewer emissions than those relying on fossil fuels. As part of an audit, organizations should examine the geographic location of their computing resources and the carbon intensity of the electricity powering them.

Utilization rates provide another important insight. Many servers run at partial capacity, consuming energy even when not performing meaningful work. Improving workload scheduling, consolidating computing resources, and eliminating idle capacity can significantly reduce unnecessary energy use.

An often overlooked dimension of AI audits involves hardware itself. High-performance chips and GPUs have significant embodied carbon due to complex manufacturing processes. Organizations should assess how frequently hardware is replaced, how equipment is recycled, and whether longer life cycles could reduce environmental impact.

What makes auditing AI particularly challenging is that the relevant data is often scattered across departments. Sustainability teams may track emissions, but IT departments manage infrastructure, while data science teams control model development. A credible AI footprint

assessment therefore requires collaboration across these functions.

This cross-functional approach is increasingly becoming part of what some experts call Green AI—the idea that energy efficiency should become a design principle for artificial intelligence systems. The companies that lead in this area are beginning to integrate environmental metrics directly into AI development. Engineers track energy consumption alongside model accuracy. Large training jobs are scheduled when renewable electricity is available. Infrastructure decisions are made with both performance and sustainability in mind.

For ESG leaders, this represents a new frontier. Digital infrastructure is no longer invisible. It is

rapidly becoming one of the fastest-growing sources of energy demand in the modern economy.

Auditing the carbon footprint of AI does not require perfect data from the beginning. What matters is starting the process: mapping digital operations, measuring compute usage, evaluating model efficiency, and understanding the energy sources behind data centers.

Once organizations begin measuring these impacts, they can start managing them.

And in the era of artificial intelligence, that may become one of the most important steps toward truly sustainable innovation.



IIA India Hyderabad Chapter

“The President of IIA India, Krishnan Venugopal, along with Madhuri Krishnaswamy (President, IIA Hyderabad Chapter) and Mukundan K V KV (CEO, IIA India), were invited to address the State Bank of India Internal Audit Conclave held in Hyderabad on 14th–15th March 2026.

The sessions covered two critical themes shaping the future of the profession:

- Internal Audit: Current Landscape — including emerging developments, the role of AI, and the evolving vision of internal audit
- Global Internal Audit Standards (GIAS) — certification process and implementation roadmap for SBI

While internal auditors are often invited to business forums, what stood out in this conclave was the unprecedented presence of SBI’s top leadership, including:

Chairman Challa Sreenivasulu Setty

Managing Directors Ashwini Tewari, rana ashutosh kumar singh, Rama Mohan Rao Amara, Ravi Ranjan Deputy Managing Director & CAE Rajeev K. along with other senior leaders.

The presence of the entire leadership team strongly underscores the strategic importance of the Internal Audit function as a key pillar of corporate governance. Such visible commitment from the top sets a powerful benchmark for institutions across both public and private sectors.

Special appreciation to the leadership of Ravi Ranjan (Managing Director) and Rajeev K. (Deputy Managing Director & CAE) for driving this initiative. We are also pleased to note the participation of George Kalliath and Venkata Chaitanya, FCA, CISA, CFE, PGDCLCF (Sr. VP & BOG Member, IIA Hyderabad Chapter, respectively) in the panel discussions, contributing valuable perspectives.

Our best wishes to the Internal Audit team at State Bank of India for continuing to uphold the highest standards of governance. IIA India remains committed to supporting such impactful initiatives that strengthen the profession.”