Executive Summary

The convergence of climate crises, increased regulations, and AI's surging energy demand is compelling companies to fundamentally transform their approach to sustainability.

Once merely a "nice-to-have" sustainability has evolved into a business priority. This report spotlights tech companies harnessing environmental initiatives to secure long-term competitive advantages.

Drawing from in-depth conversations with one hundred B2B technology leaders—primarily from mid-market companies with revenues between $50M-$2B—this groundbreaking report uncovers proven strategies and actionable insights shaping business success.

Based on exclusive executive interviews conducted throughout 2023-2024, *Decisions That Define: Executive Strategies and Innovations Driving Corporate Sustainability* reveals how visionary leaders are deploying cutting-edge technologies and ambitious initiatives to achieve both environmental stewardship and market leadership.

Key Findings

Rather than relying on surveys or secondary data, this report offers direct access into the minds of dynamic leaders who are driving eco-friendly innovation within their organization.

1 Data Center Optimization

Vultr improves energy efficiency by 40% with GPU infrastructure over CPUs, QiO Technologies reduced a UK telecom's power consumption by 35.5% with six-month ROI, Dell's advanced liquid cooling systems deliver up to 50% energy savings over traditional air-cooling methods.

2 Green Cloud Incentives

Platform.sh offers a 3% discount for using low-carbon cloud regions across six data centers in five countries. The company fully funds this program to help customers achieve both cost savings and reach sustainability targets.

3 AI-Powered Infrastructure Protection

Buzz Solutions reduced power line inspection analysis time from eight months to days and lowered inspection costs by 50% through its AI-powered platform, which automates the analysis of millions of drone and helicopter images for utilities.

4 Wildfire Detection Technology

Chooch AI's advanced computer vision and generative AI platform reduces false fire alerts, providing real-time notification, aiding firefighters' rapid response to wildfires. The frequency of extreme wildfires globally has more than doubled during the past two decades.

5 Supply Chain and Carbon Management

Palo Alto Networks addresses Scope 3 (external) emissions, which make up 75% of its carbon footprint, by enhancing monitoring and engaging suppliers. They aim for 65% to adopt science-based targets. IBM, Dynatrace and others' solutions are highlighted in the report's "Carbon Intelligence Tool Kit."

6 Energy-Efficient AI Development

Hugging Face's open-source model promotes sustainability, with small language models achieving 95% of typical performance while using 70% less energy. New Relic uses AI to analyze 11.3 million data points monthly, identifying inefficiencies and automating adjustments to cut energy use without affecting performance.

7 Circular Economy Integration

Pure Storage extends hardware viability through its "Evergreen" architecture. HP works toward 75% circularity by 2030 through refurbishment programs and recycled materials integration. Military-grade testing ensures 92% device performance in HP refurbished gear. Human-I-T provides discarded hardware (desktops, laptops, tablets), along with internet access, training, and support to students, low-income families, veterans, and nonprofits.

Critical Challenges

Fragmentation of Carbon Measurement Methodologies

45% of executives interviewed cite lack of standardized methodologies and tools as a primary obstacle to effective carbon emission measurement.

Evolving Regulations for in Emissions Tracking

The EU's Corporate Sustainability Reporting Directive (CSRD) is now active, mandating environmental reporting for EU organizations and their business partners.

Reshaping Workforce Development

Organizations like Women in Climate Tech and MIA AI address representation gaps in tech, where women currently comprise only 22% of AI professional roles.

Investment Implications

Many organizations are finding that sustainability initiatives can yield tangible financial returns, lower energy costs and increased operational productivity. Achieving these results while also meeting regulatory requirements and stakeholder expectations is critical.

In my analysis, the findings below underscore how sustainability has evolved from being a cost center to a pivotal asset for growth:

- **ROI on Sustainability**: Efficiency-focused solutions, including AI-driven tools that reduce power consumption, have demonstrated short payback periods and high returns on investment.
- **Market Differentiation**: Strong sustainability strategies enhance talent acquisition, improve brand positioning, and increase resilience in regulated markets.
- **Carbon Counting:** Early adopters of carbon accounting systems can navigate the challenges of unorganized carbon data, using it for better decision-making to outpace less prepared competitors.
- **Regulatory Readiness**: With mandates like the EU's CSRD and similar regulations expanding globally, companies that integrate sustainability measures early may avoid costly retrofits and potential compliance issues.

Strategic Performance Indicators

Environmental Risk Management

Companies demonstrating robust sustainability strategies show superior ability to manage climate-related disruptions.
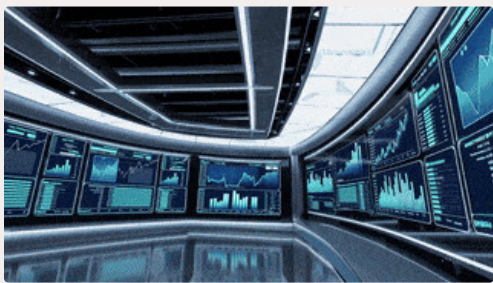
Supply Chain Optimization

AI-driven operations show the benefits like reducing Scope 3 emissions to build resilient supply chains.

Workforce Development

Climate tech-focused talent acquisition, training programs, and skill development are integral to adopting to ESG demands.

Circular Economy Progress

Product lifecycle extension, material recycling, and resource recovery can be leveraged for additional value creation.

This report analyzes these trends and examines how sustainability influences technical innovation and business strategy. Readers will find actionable insights for integrating sustainability into their operations while driving measurable returns on investment.

2025 ECOTECH REPORT

Decisions That Define:

Executive Strategies and Innovations Driving Corporate Sustainability

Table of Contents

Table of Contents

(continued)

Decisions That Define:

Executive Strategies and Innovations Driving Corporate Sustainability

Introduction

As the host of **EcoTechInsights.com**, I've had the privilege of interviewing more than 100 enterprise leaders at the forefront of sustainability and technology. Over the course of these candid conversations in 2023-2024, three external forces converged:

Climate-Driven Weather Events

Increasing in frequency and intensity.

AI and Data Centers Energy Demands

Skyrocketing demands for energy.

2025 Deadline for EU's CSRD

Fast-approaching reporting directive deadline.

Executive Focus

Effective leadership in corporate sustainability serves as a beacon, guiding organizations to champion eco-friendly initiatives. This includes establishing a framework for environmental data collection to meet new emissions reporting requirements.

One of the biggest hurdles in that effort is tackling Scope 3 emissions—as they are hard to measure, and even harder to control. This report reveals strategies for mitigating organizations' carbon footprint across the supply chain.

Tech-Driven Solutions

At the same time, IT sustainability and AI-driven energy efficiency are gaining momentum as critical tools for reducing environmental impact.

Plus, emerging technologies in climate risk mitigation and circular economy solutions are reshaping how resources are managed. They are also influencing how products are optimized throughout their lifecycle.

In the workplace, representation gaps are being addressed to expand sustainability and tech-focused teams for the future.

Global Perspectives Featured

65 %
U.S. Companies

Leading in AI and circular economy innovation.

28%
European Companies

Focusing on carbon accounting and open-source initiatives.

7%
Global Companies

Prioritizing resource efficiency.

Startups, Partnerships, and Action-Oriented Solutions

Over **60%** of the startups interviewed are **founder-led**, showing how leadership stability and long-term vision are key drivers of innovation. Partnerships between large enterprises and climate tech startups are also emerging as critical to scale solutions systemically.

In my observation, what stands out with these leaders is their focus on getting things done. From implementing circular economy solutions like refurbished, high-performance hardware, to deploying AI tools to reduce energy use. This report benchmarks measurable outcomes.

Sustainability Embedded for Growth

Offering a comprehensive guide to how today's technology companies are implementing sustainability into their core business models, this report illuminates techniques to drive both resilience and competitive advantage.

[Disclaimer: Images featured in this report are AI-generated, as opposed to stock photos. They are featured for relevance; they do not represent specific people or companies.]

Green Returns

Traditional assumptions about the costs of environmental initiatives are being challenged. The financial implications of this shift are becoming increasingly evident through tangible results.

At QiO Technologies, a UK firm specializing in AI-powered energy optimization and greenhouse gas emissions, Director of Data Center & Telecoms David McGuirk points to the notion that sustainability is primarily a cost burden to be a misconception.

> "We have market-leader ROIs, and in some cases, we're also seeing payback within a matter of months," shares McGuirk.

One UK telecom client of QiO achieved a 35.5% reduction in power consumption using QiO's ServerOptix™ solution, according to their case study. This was accomplished by optimizing power supply and potentially supporting more servers without additional grid capacity.

More samples of sustainability driving savings in energy efficiency will be discussed throughout this report.

Sustainable Storage, More Savings

> "One unique ability of the Delphix platform is how it virtualizes data and ultimately reduces storage footprints, which is good news for sustainability and operational costs."
>
> — Jim Cassens, CEO, Perforce

In March, 2024, Minneapolis-based Perforce, a leading provider of software development and version control solutions, acquired Delphix, a data virtualization company renowned for its innovative approach to managing enterprise data.

Delphix's technology creates virtual database replicas that share underlying storage, eliminating the need for full physical copies.

Here's an example of how this works in practice: rather than requiring five complete copies of a 10TB database (which would total 60TB), only 10TB is needed. Delphix's sophisticated copy-on-write mechanism ensures storage allocation occurs only when actual data modifications happen.

Financial Benefit

Data virtualization technology for storage optimization extends beyond basic storage savings. While traditional enterprise storage costs range from $0.50 to $2.00 per gigabyte monthly, Delphix customers typically achieve a 70-82% reduction in overall storage expenses.

Environmental Improvement

⊘ **Optimized Storage:** Delphix's solution captures and stores only incremental changes. The result? Less power and lower cooling needed.

⊘ **Efficient Workflow:** Environment provisioning cuts deployment times from hours to minutes. This shrinks the period energy-intensive hardware is active.

A Holistic Solution

By integrating Delphix's virtualization technology, Perforce enables organizations to handle increasing data needs without building out massive infrastructure. This streamlined approach drives innovation while keeping environmental impact in check.

Dissolving the Sustainability Silo

It's safe to say that somewhere out in the global corporate world there is a sustainability team passionately working to reduce waste and emissions, yet their efforts go virtually unnoticed by the rest of the organization.

This unintended consequence is known as the "sustainability silo." How does this isolation occur? It typically happens when eco-initiatives are confined to a single department, rather than being integrated across the entire organization. As you might imagine, this siloed stance can greatly hinder the effectiveness and impact of environmental efforts on overall business operations.

Breaking down sustainability silos isn't easy, but it's essential for any company serious about reducing their ecological footprint and affecting lasting change. According to the experts interviewed for this report, this change starts with engaged leadership setting the tone from the top and implementing initiatives like these:

Systemic Sustainability

IBM's data-driven approach embeds sustainability across business units, moving beyond isolated functions to create integrated environmental strategies.

Tangible Measurement

Leverage IoT sensors, AI, and data analytics to monitor and optimize resource consumption in real-time. Share this data transparently across the organization.

Gamify Eco-Initiatives

Reward employees for sustainable behaviors. One CEO interviewed suggests creating a friendly competition to see who is the "best citizen" in the company.

Sustainable Tech Momentum

Michael Berthold, CEO of Zurich-based KNIME, an open-source platform for data analytics, believes that once you start looking deeper into sustainability, you realize that it "helps build a more healthy business." KNIME provides tools and workflows to calculate and monitor CO_2 emissions.

In 2024, KNIME secured a $30 million investment from its longtime backer, Invus, bringing its total funding to $50 million since its initial Series A round in 2017.

The $30M funding round's timing in 2024 reveals critical market dynamics: while many tech companies faced valuation pressures and funding challenges, KNIME secured significant capital by positioning sustainability analytics as an integral part of enterprise operations rather than a standalone compliance tool.

The size of the round implies expected market expansion as regulations around sustainability reporting become stricter and more standardized globally.

The Next Seven Generations
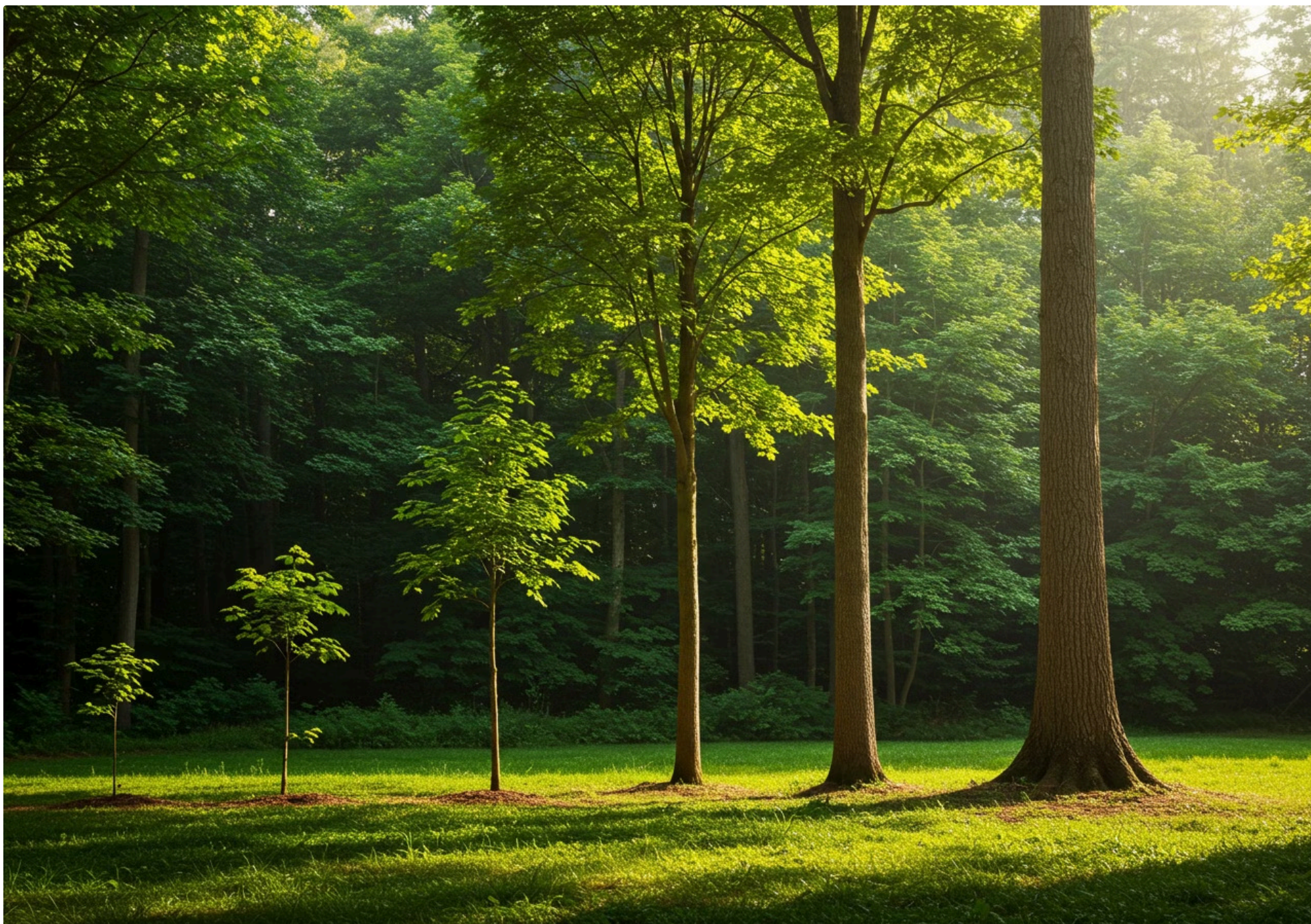
Green choices not only impact an organization's day-to-day operations. Sustainability efforts can influence how success is evaluated, where resources are allocated, and how plans are made for the future.

Donal Daly, CEO of FuturePlanet, a Dublin-based firm that provides AI-powered sustainability planning software to Fortune 500 companies, frames the issue historically:

> "Sustainability is the greatest challenge of our generation. We see the extreme weather and climate change impacts around us, and it's evolving from an inconvenience to a necessity for survival. We need to start measuring and thinking deeply about our actions."

Drawing on indigenous wisdom, Daly adds: "Companies need to embed sustainability by making decisions not just for today, but for future generations. The Iroquois had a principle to think about the next seven generations when making decisions. Today, unless we take the right actions, we won't have seven generations."

Key Insights:

1 **Sustainability ROI Reshapes Investment Priorities**

QiO's rapid payback periods challenge traditional assumptions. Eco-friendly outcomes can drive financial performance.

2 **Driving Efficiency Through Modernization**

Perforce, through it's acquisition of Delphix, enables organizations to handle increasing data needs without building out massive infrastructure.

3 **Breaking the Silo**

The "sustainability department" should not be siloed within an organization. Connecting eco-initiatives to company-wide business processes, as IBM does, intertwines sustainable interests across operations.

4 **Energy Efficiency as Profit Driver**

Delphix's Data virtualization technology for storage optimizations solution captures and stores only incremental changes. The result is less power and cooling needed.

5 **KNIME's Successful Funding Raise**

KNIME's successful $30M raise during a tech downturn demonstrates that investors now view sustainability analytics as a core business driver rather than just a compliance requirement.

6 **Executive Vision Shapes Enduring Outcomes**

Leaders who adopt long-term frameworks, like Donal Daly's citing of the "seven generations" principle, push sustainability from a reactive effort to a generational imperative.

Global Mandate: The New Era of Environmental Reporting

The tech industry's voluntary foray into sustainability is over. 2025 marks a decisive shift to mandated environmental accountability, spearheaded by the EU's Corporate Sustainability Reporting Directive (CSRD).

These global regulations compel large and listed companies operating within the EU including non-EU firms with significant European revenue—to provide detailed and standardized disclosures of their environmental, social, and governance (ESG) performance.

The CSRD's reach, amplified by its alignment with the European Sustainability Reporting Standards (ESRS), extends accountability beyond European borders. Any company with substantial EU business will be affected.

The table below distills the CSRD's key implications for businesses in 2025. It provides a quick-reference guide to understanding who is affected, what changes are happening, and the immediate actions required.

Navigating the New ESG Landscape

Who's Impacted	What Changes	What to Do Now
Companies with EU business	Mandatory ESG reporting	Audit EU revenue, operations & supply chains for compliance
Global corporations	Standardized sustainability metrics	Develop ESG tracking systems
Suppliers & partners	Increased transparency requirements	Prepare detailed environmental data
Investors	ESG performance becomes critical	Evaluate & align business with sustainability goals

Carbon Counting: The Rise of Environmental Mathematics

> "If you're a company, you're going to publish your books, right? You're also going to publish your carbon books, basically, so that's how it's evolving...The future is all about carbon transparency. "
>
> — Alexi Normand, CEO of Greenly

Greenly, founded in 2019 in Paris, provides carbon management solutions that help businesses track and reduce emissions through accessible data and analytical tools for sustainability and compliance.

While much discussion focuses on the policy and environmental aspects of carbon reporting, Greenly CEO, Alexi Normand's point highlights the intensely quantitative challenge ahead. Companies must now develop the same rigor in measuring molecular emissions as they do in tracking cents and euros – a task that requires new forms of measurement, verification, and mathematical modeling that many organizations have yet to master.

My research reveals that **nearly 45% of surveyed tech company leaders identify the lack of standardized methodologies and tools as a primary obstacle to effective carbon measurement.** This capability gap represents not just a critical challenge, but also a strategic opportunity for organizations poised to innovate.

Carbon's New Math: Understanding Emission Scopes

From turning on office lights to using microwave ovens in the breakroom, everyday work activities add up when calculating a company's carbon footprint. These expected actions may seem easy to measure, but when you're evaluating external emissions, across a company's entire supply chain, that's when things get complicated.

While traditional emissions reporting focused on direct operations, known as Scope 1, companies must now account for their *entire* environmental impact across three categories:

Scope 1

Direct emissions from company-owned facilities and vehicles

Scope 2

Indirect emissions from purchased electricity, heating, and cooling

Scope 3

All other indirect emissions throughout the value chain—from raw material sourcing to product disposal

Can you guess which scope number represents a company's largest carbon footprint? That's right - it's Scope 3, which is also the most difficult to manage. As explained earlier in this report, the European Union is requiring comprehensive Scope 3 reporting in environmental, social, and governance (ESG) disclosures. California is also implementing similar transparency requirements for organizations to examine their entire supply chain's environmental impact.

Leading tech organizations are already in the midst of contending with the Scope 3 challenge.

Palo Alto Networks, one of the world's biggest cybersecurity companies, with a market value over $70 billion, is headquartered in Santa Clara, California.

The company's Scope 3 emissions make up approximately 75% of their total carbon footprint, with a significant portion coming from the use of sold products, according to Vince Digneo, Head of Sustainability. He shared details on their multi-pronged Scope 3 strategy:

> "We're working to address this by engaging with suppliers to adopt science-based targets and committing to renewable energy.... Rather than relying on offsets, we are building partnerships with utilities and data centers to boost clean energy adoption, aiming for a 90% emissions cut by 2040."

For Palo Alto Networks, with its vast global reach in cybersecurity, cutting emissions is not an isolated effort. It demands deep collaboration with suppliers and partners across the entire value chain. Digneo emphasizes that supplier engagement is essential for meaningful emissions reduction.

Environmental Data as Corporate DNA

Every human has a distinct genetic code. Could a company's carbon report card reveal its unique corporate genome? Detailed sustainability data may provide a distinctive and fresh perspective for competitive analysis, revealing strengths, inefficiencies, or innovations that set companies apart in the market.

For example, evaluating changes in emissions over time, like notable drops in a company's Scope 1 emissions could suggest they made new investments in their internal infrastructure. Noting a rival's rise in their Scope 3 findings might reflect a meaningful change in the behavior of an outside supplier.

Key analysis or mere speculation? As with any data source, an organization's carbon emissions reporting offers only one aspect of the full story.

Meaning it's valuable intelligence, but requires careful interpretation. Even when patterns do emerge, emission fluctuation might have resulted from a variety or reasons, like changes in worker production shifts.

Despite this uncertainty, many companies are thinking strategically about carbon data, using it to benchmark performance and spot efficiency opportunities. As reporting standards and data quality improves, carbon disclosures will likely become an increasingly important part of how organizations evaluate their competition - marking it as a unique aspect of corporate DNA.

How to Start Measuring Emissions

IBM's Chief Sustainability Officer, Christina Shim emphasizes the importance of integrating the multitude of disparate data sources and systems to gain a holistic view of a company's environmental footprint. She cites this task as the initial challenge:

> "Fragmented data lacks the clarity needed to drive meaningful action. You need to ensure the data is accurate, actionable, and evaluable."

Determine Your Baseline

Establishing an accurate emissions baseline has evolved from a routine compliance task into the foundation of a data-driven sustainability strategy that informs and guides decision-making at every level.

Andrew Diaz, (former) Chief Strategy Officer at Israeli startup, Granulate, offers a three-part framework:

Access Current Output — 1

"What is your carbon footprint today, and is it actionable data? If the data isn't actionable, it's just another number on a spreadsheet."

2 — **Formulate a Plan**

"Data needs to be evaluable—meaning it can inform decisions and trade-offs based on concrete actions."

Execute for Efficiency — 3

"Clear focus on improving efficiency and reducing emissions must permeate every level of operations."

The Carbon Intelligence Toolkit

"It's about creating visibility into overlooked inefficiencies. Addressing them saves costs and reduces carbon simultaneously."

— Klaus Enzenhofer, Principal Product Manager for Digital Business Analytics, Dynatrace

Here's how leading tech innovators are transforming carbon management through specialized solutions:

Company	Solution	Core Function
CAST	Highlight Green Software Insights	Code analysis tool that identifies resource-intensive patterns and provides sustainability scores
DELL	End-to-End Sustainability	Energy-efficient data center solutions with advanced liquid cooling, CloudIQ for real-time carbon monitoring, and IT asset lifecycle services
Dynatrace	Carbon Impact	App Monitoring tool that tracks carbon footprint across cloud infrastructure and identifies server inefficiencies
Earthly	Nature-based Investment	Helps businesses support high-quality projects in carbon removal, biodiversity restoration, and community support
Green Software Foundation	Carbon Aware Software Development Kit (SDK)	Open-source toolkit that helps developers create applications that reduce emissions by adjusting operations to periods of lower carbon electricity
IBM	Environmental Suite Intelligence	AI platform for carbon accounting for environmental risk management
Platform.sh	Greener Region Discount	Incentive program offering 3% discount for using cloud regions with lower carbon intensity
Pure Storage	Energy Efficiency Service Level Agreement	Service guarantee for maximum power consumption per storage unit with transparent metrics
Salesforce	Net Zero Cloud	Carbon accounting and ESG reporting platform that helps organizations track, analyze, and reduce their carbon footprint

Scope 3: Step by Step
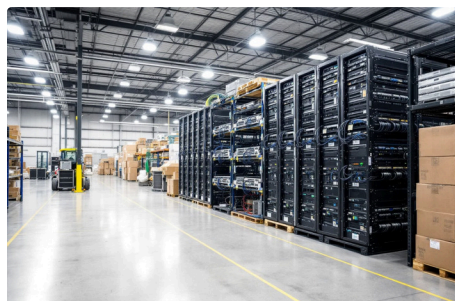
Tim Weiss, CEO of Optera, brings deep expertise from his Boulder, Colorado-based company that specializes in corporate carbon emissions management.

He shared his strategy on addressing Scope 3 emissions.

Action	Key Focus
Risk Assessment	Identify high-impact suppliers to target material risks, concentrating efforts where they will have the greatest operational effect.
Supplier Collaboration	Engage key suppliers to collect detailed emissions data and develop actionable decarbonization strategies.
Implementation	Execute decarbonization plans with suppliers, focusing on renewable energy adoption and reducing emissions in critical processes.

Optera's 2024 update to its Supply Chain Manager provides new capabilities for tracking Scope 3 emissions, leveraging supplier data to support emissions reporting and analysis.

IT Sustainability: From Theory to Action

Measuring environmental impact is just the beginning. Real change happens when metrics translate into meaningful business action.

SustainableIT.org, a nonprofit launched in Redwood City, CA, fosters collaboration among technology executives to advance global sustainability through standardization, best practices, and education. Its cofounders bring proven track records of innovation.

Jedidiah Yueh

As founder of Avamar and Delphix, Yueh let billion-dollar technology transformations. The bestselling author of "Disrupt or Die" holds over 30 patents, and is the founder of Software.com.

Josh Harbert

President of SustainableIT.org, Senior VP, CMO at Couchbase, and former CMO at Delphix, Harbert has driven significant growth across multiple technology companies.

SustainableIT's Jedidiah Yueh, Dave Best, and Josh Harbert at their annual Impact Awards Ceremony in Austin, Texas in October, 2024. Recipient organizations were recognized for their outstanding achievements as tech leaders advancing ESG sustainability.

Since its founding in 2022, SustainableIT.org has grown to include a diverse range of members, from global corporations like PepsiCo and Mastercard to leading healthcare institutions like Stanford Health Care. This expansion reflects the broad commitment across industries to advancing sustainability in IT.

Bridging the Implementation Gap

SustainableIT.org has become a leader in addressing the gap between ambitious sustainability goals and the actionable strategies needed to achieve them. Their goal is to enable IT organizations to track and improve their sustainability efforts.

The organization's open standards include 240 metrics across environmental, social, and governance dimensions specifically tailored for IT.

"Initially, our mandate was to share stories, but it became clear we needed to establish a standard and build a framework for technology departments and businesses."

— Josh Harbert, President, Co-Founder Sustainable IT, CMO Couchbase

Harbert outlined Sustainable.IT's comprehensive strategy:

Fostering a community for organizations to share sustainability initiatives safely, inspiring others

Providing webinars and educational programs to enhance sustainability skills

Establishing benchmarks for measuring and improving corporate sustainability efforts

Catalyzing Change

The role of IT leaders extends far beyond traditional technology management. Jedidiah Yueh explains why information technology managers are in the ideal spot to implement eco-friendly practices:

"IT leaders are perfectly positioned to spearhead sustainability efforts in IT. They can assess not only IT's environmental resource consumption but also the broader footprint of their entire company and industry."

Key Insights

1 **Mandatory Milestone**

2025's CSRD regulations mark the end of voluntary environmental reporting. Global companies with EU operations must provide detailed ESG disclosures regardless of their home country.

2 **Data Disconnect**

45% of C-suite executives interviewed report challenges with environmental data. Their main point of contention: it can sit fragmented across disparate systems, preventing the holistic view needed for meaningful action.

3 **Software-Driven Sustainability**

From CAST's code analysis to Dynatrace's cloud monitoring, tech companies are building specialized tools that turn abstract environmental goals into measurable metrics and actionable insights.

4 **Supply Chain Mathematics**

Palo Alto Networks' 75% Scope 3 footprint showcases how collaborating with suppliers is critical to reducing overall emissions. Scope 3 emissions are difficult to track and control, but evolving regulations mandate they are addressed.

5 **Carbon Intelligence**

Environmental data is emerging as a potential source of competitive intelligence, offering insights into operational efficiency, supplier relationships, and corporate strategy—if interpreted effectively.

6 **IT-Led Eco-Action**

IT leaders can use their expertise to connect sustainability efforts with clear organizational goals, turning ideas into real action. SustainableIT's creation of 240 standardized metrics shows how the industry is moving from broad frameworks to strategies IT leaders can implement.

Leveraging AI for Energy Efficiency and Innovation
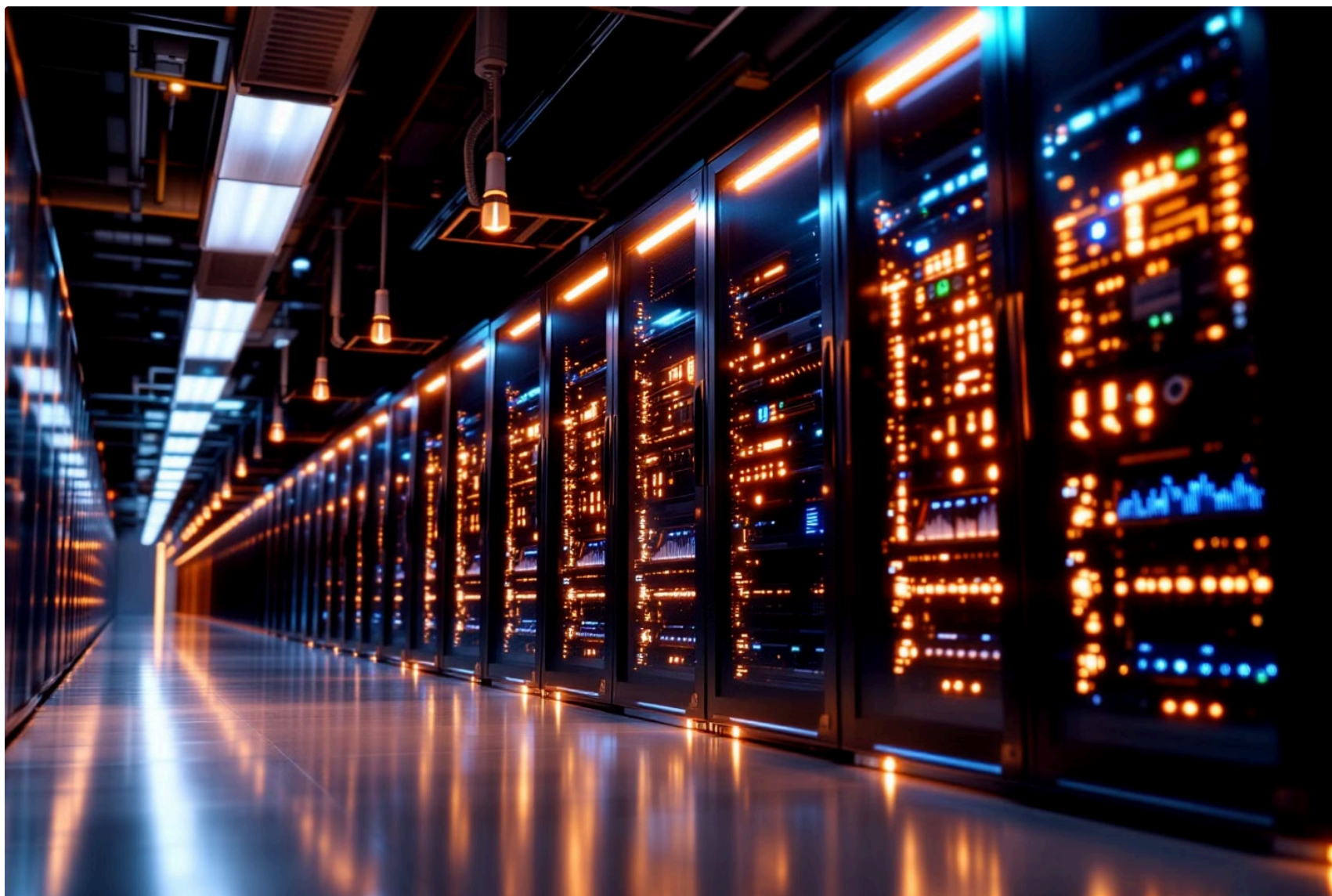
AI is known for its immense power demands. But can it also be leveraged as a tool for better energy efficiency? Surprisingly, the answer is yes. Forward-thinking organizations are deploying AI to identify patterns in their energy consumption, streamline operations, and make data-driven improvements.

By analyzing massive amounts of usage data and automating systems in real-time, AI helps companies reduce waste while maintaining their drive for innovation.

AI Identifies Inefficiencies

San Francisco-based New Relic is using its observability platform, enhanced with AI, to help businesses pinpoint and eliminate energy waste in their IT operations. Erin Dieterich, (former) Senior Director, ESG & Social Impact at New Relic, explains:

> "AI can play a big role in improving energy efficiency by helping us optimize workloads and use resources more effectively. It's really about visibility. Helping teams understand where they can reduce energy consumption and automating that process wherever possible is key. AI gives us the ability to correlate massive datasets, providing clear, actionable steps to minimize waste and improve operational efficiency," shares Dieterich.

With ML-driven automation frameworks, Dieterich says organizations can respond in real time to changing needs, without compromising performance.

> "Our goal is to help businesses see their energy use in real time, understand the environmental impact of their technology decisions, and automate optimizations to create long-term value—not just for the organization, but for the planet as well."

Optimizing AI Workloads with GPUs
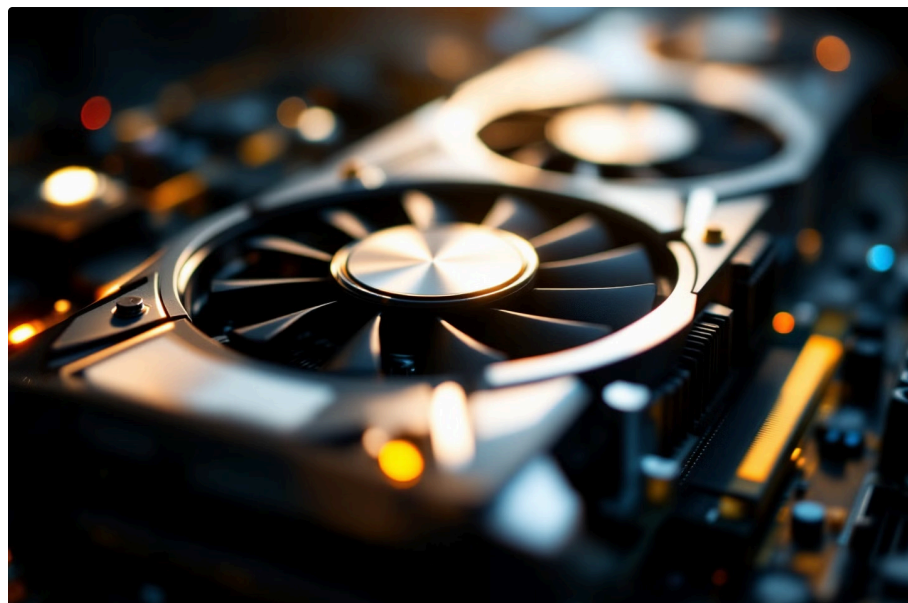
Vultr, a global cloud infrastructure provider headquartered in West Palm Beach, Florida, integrates GPUs into its cloud infrastructure to power AI workloads and improve energy efficiency.

Kevin Cochrane, Chief Marketing Officer at Vultr, says this strategy allows them to maximize processing power while minimizing resource consumption:

> "By transitioning workloads and putting them on more efficient GPU infrastructure, we can get greater power density in every single GPU and eliminate a lot of inefficient CPUs to also save energy."

Central Processing Units (CPUs) handle general-purpose tasks one at a time, while Graphics Processing Units (GPUs) multi-task, making them more efficient and scalable for power hungry AI demands.

By combining GPUs with AI-driven optimization, Vultr supports scalable, high-performance computing while reducing energy consumption—a critical step in creating more efficient cloud infrastructure.

Strategic Location and Resource Optimization

The choice of AI architecture translates directly into real-world implementation strategies, as exemplified by Platform.sh, a Paris-based company offering a unified platform for building, running, and scaling web applications.

Platform.sh combines AI optimization and targeted geographic locations for its data centers to increase eco-friendlier outcomes.

> "We're migrating to greener data center regions that are powered by renewable energy, like hydropower in Quebec," explains Leah Goldfarb, Environmental Impact Officer.

By tapping into Quebec's extensive network of hydroelectric dams and reservoirs, the company powers its data center with a sustainable and virtually emission-free energy source.

"Over 80% of our emissions are in the cloud. By moving our infrastructure to these regions, we are targeting our biggest impact area." Goldfarb further notes that by choosing cleaner regions and optimizing code, clients can also lower their own carbon footprint.

Goldfarb underscores that this commitment reflects a broader dedication to environmental responsibility across all aspects of their operations. Platform.sh aims to achieve a 50% reduction in carbon emissions by 2030.

AI's Expanding Role in Industrial Efficiency

Think about the last thing you threw in the trash. Now multiply that by millions - that gives you a rough idea on the amount of waste factories deal with every day. AI is quietly solving this massive problem in manufacturing, and it's working better than expected.

Smart algorithms now spot tiny defects that human eyes miss. Predictive systems flag potential machine failures before they pile up into massive heaps of scrapped materials. AI helps manufacturers to catch flaws early. This can prevent entire batches from being squandered. The advanced technology finds new ways to use materials more efficiently from the start.

Nanotronics, a New York City-based AI-powered manufacturing solutions provider, demonstrates how AI spans multiple sectors. "Right now, AI is being applied in factories across the US, from pharmaceutical plants to automakers to semiconductors and everything in between," says Alice Globus, a physicist and Nanotronics' former CFO.

The impact goes beyond just saving materials. Every piece of scrap avoided means less environmental damage, lower costs, and safer working conditions.

Globus says Nanotronics aim to help their clients achieve "reduction of waste scrap [and] improve efficacy of the humans that are actually working there," which also reduces the risk of injuries and accidents.

Holistic Supply Chain Optimization

Building on the factory-level sustainability gains outlined by Nanotronics, Heavy.AI extends the application of AI to a broader scope.

This San Francisco-based company offers a spatial intelligence platform that optimizes entire supply chains, utility operations, and other sectors.

Dr. Mike Flaxman, Product Lead, explains: "AI plays a huge role in helping companies better manage their supply chains and operations, particularly when it comes to minimizing environmental impact."

For example, Heavy.AI is helping a major Southern California utility company leverage weather modeling data and AI to predict fire hazards, demonstrating how this technology can be used to enhance both safety and resource efficiency.

Hugging Face: From Chatbot App to AI Powerhouse

What started as a chatbot company with a playful emoji name has transformed into a $4.5 billion dollar success story.

In less than a decade, Hugging Face built an AI platform where developers share and collaborate on machine learning models, attracting both individual researchers and tech giants like Google and Salesforce.

Open-Source AI Innovation

Thomas Wolf, Co-Founder and Chief Science Officer of Hugging Face, brings a unique perspective to AI development that combines scientific rigor with real-world application. His background in quantum physics and patent law has shaped his distinctive approach to machine learning and open-source collaboration. In an exclusive interview, Wolf shared his insights and strategies below:

Community-Driven Innovation:

Hugging Face's mission for sustainable and accessible AI attracts a vibrant, engaged community with a common outlook. Wolf notes, "A lot of people in AI actually want to do good," and this shared purpose fuels their collaborative approach.

Environmental Leadership Through Transparency:

Beyond technological solutions, Wolf emphasizes the importance of open reporting. Hugging Face actively tracks and shares the energy consumption of their models. This sets the example of transparency.

Small Model Philosophy:

Hugging Face's "Small LMs" are browser-based models that deliver powerful AI with a reduced footprint; Wolf states they achieve 95% of typical performance using 70% less energy.

"You don't need a model that can solve complex mathematical problems like the Riemann Conjecture to just help you in your daily automated tasks," Wolf adds.

Future-Forward Projects

Quantum Chemistry:

Hugging Face is exploring AI applications in material discovery, potentially impacting battery technology and carbon capture solutions. "If we discover some specific material that makes batteries ten times more efficient... the impacts will be tremendous," Wolf shares.

Multilingual Innovation:

Partnering with institutions like ETH Swiss, Hugging Face is developing pretraining datasets to support lower-resource languages. This effort underscores their commitment to democratizing AI access.

Hugging Face's focus on efficient AI models, community collaboration, and transparency demonstrates a path toward a more sustainable and accessible AI ecosystem. For developers, their model hub gives offers clear documentation and specs - no mysteries, no jargon. Their platform is open to everyone, from tech giants to students.

And despite their huge success, Wolf says they are keeping the company name.

"It's a good reminder for us that, you know, whatever we do, we should not take ourselves too seriously as well." (🤗)

# AI Emerges as Critical Force in Climate Change Mitigation

The 2024 eMerge Americas conference in Miami Beach marked a decisive moment in climate technology awareness. With over 20,000 attendees from across the Americas and Europe, the event's showcased a Climate Tech track in their speaker lineup. It focused on how artificial intelligence is transforming environmental protection from aspiration to implementation.

Co-founder, President, and CEO, Melissa Medina leads eMerge Americas in its mission to drive technological innovation across the Americas since its inaugural conference in 2014. In an on-location interview, she shared her perspective: "We're seeing widespread AI integration among sustainability and climate tech companies, which is accelerating our ability to develop solutions to climate-related challenges."

Companies like Blink Charging, Quantum Computing and Clean Light Energy were spotlighted on ecotechinsights.com for their innovations in sustainable solutions in on-the-scene reports from the Miami event.

Climate Tech Hub

The city of Miami and it's local founders in climate tech solutions are broadening their reach and name recognition. As a rising hub for sustainability-focused innovation, Miami is attracting increased attention from investors, startups, and tech leaders who are committed to addressing climate challenges. Entrepreneurs across South Florida are leading breakthroughs in renewable energy, carbon capture, sustainable transportation, and environmental data solutions.
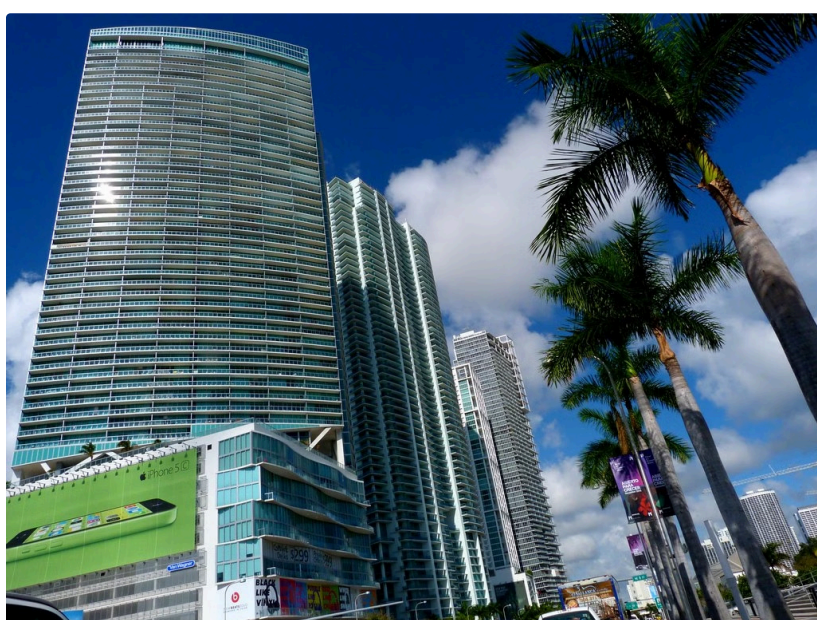
"Miami was designated a climate tech hub (in 2023) by the Economic Development Administration. Thirty-one tech hubs were designated around the country, and we are the only one named for climate. Miami has the opportunity, the need and the talent to bring home innovation in the climate tech space for the nation and for the world."

— Daniella Levine Cava, Mayor of Miami-Dade County

Other US climate tech hubs that received funding for innovation in recent years include Reno, NV for lithium battery production and recycling; an Ohio hub advancing sustainable materials research and development; Corvallis, OR for low-carbon construction; and centers in Montana and South Carolina dedicated to smart sensor technology for precision agriculture and grid resilience with clean energy storage.

Wildfire Detection and Prevention

Frequently fueled by hot temperatures, strong winds, and prolonged droughts, wildfires unleash massive carbon emissions, choke the air with thick smoke, and decimate entire ecosystems. These infernos create a relentless feedback loop that only deepens the climate crisis.

Climate change has dramatically increased U.S. wildfire activity, with burned forest areas rising 1,000% over four decades. Fire frequency has doubled on both coasts and quadrupled in the Great Plains in just 33 years.

San Francisco-based Chooch.AI, an innovative wildfire detection platform, uses advanced computer vision and generative AI to reduce false fire alerts from thousands to single digits. Their technology enables near instant detection, potentially saving billions in potential fire damage.

CEO and Co-founder Emrah Gultekin shares how their solutions are implemented in action: "Chooch's generative AI tool gives firefighters in California's Kern County a dashboard on their smartphones and PCs, populated in real-time with alerts, so they can detect wildfires fast."

The significance extends beyond technology - as Gultekin notes, "We were able to do that and scale it as well. And the ultimate goal here is obviously saving lives, saving property, making communities safer for ourselves, our children, our friends, and communities at large."

Advanced Analytics to Monitor Infrastructure Threats

While Chooch.AI uses visual recognition to reduce false fire alerts, another startup, Palo-Alto, California-based Buzz Solutions focuses on preventing wildfires by identifying faults in power line infrastructure. Through analyzing millions of drone and helicopter images, Buzz's AI platform reduces inspection analysis time from eight months to just days. This result can lower costs by 50%, and speeds up repairs to address fire hazards in the power grid.

CEO Kaitlyn Albertoli describes how her company solves an important problem: "Utilities need more data on their networks and assets to ensure resiliency and reduce the risk of infrastructure failure that can lead to wildfires and other environmental risks."

Improving Emergency Response Time

Boston-headquartered RedSOS, an AI-driven emergency response platform, demonstrates similar advances but in a different area of emergency management - rapid response capabilities.

Co-Inventor Dr. Shub Basu explain how his app works: "RedSOS reduces emergency response times significantly by providing real-time location updates directly to first responders. AI and GPS integration ensure that the closest emergency unit is alerted to a person's exact location, drastically cutting down response times."

Key Insights

1 **The GPU Advantage**

Vultr's GPU infrastructure 1 signals a strategic shift toward specialized hardware to address AI's energy demands, prioritizing power density over legacy CPU architectures for scalable efficiency.

2 **Efficient Model Selection**

Choosing task-specific AI model architectures, rather than defaulting to larger, more general-purpose models, directly contributes to minimizing the energy footprint of AI deployments.

3 **Transparency Drives Accountability**

Openly reporting energy consumption data, as advocated by Hugging Face, is becoming a crucial element in driving accountability and enabling informed decisions in the AI sector.

4 **Data Center Location Matters**

The geographic location of data centers, and their reliance on renewable energy sources as seen in Platform.sh's strategy, is a notable factor in the overall sustainability of AI operations.

5 **Wildfire Mitigation**

Companies like Buzz Solutions and Chooch.AI are using AI to transform wildfire and infrastructure threat detection and prevention. There technology potentially saves billions of dollars and demonstrates a strong business case for AI in environmental protection.

HP's Renew Solutions: Reimagining Technology's Lifecycle

When HP's Workforce Solutions president Dave Schull first approached Grant Hoffman about building a business aligned with HP's vision of becoming the most sustainable and just tech company, it marked the beginning of a bold experiment in circular economics at scale.

That initial conversation led to Hoffman becoming the Senior Vice President and General Manager of HP Renew Solutions, comprehensive initiative by HP focused on advancing sustainable IT practices through circular economy principles. The program centers on extending the lifecycle of hardware, reducing electronic waste, and promoting environmentally responsible technology use.
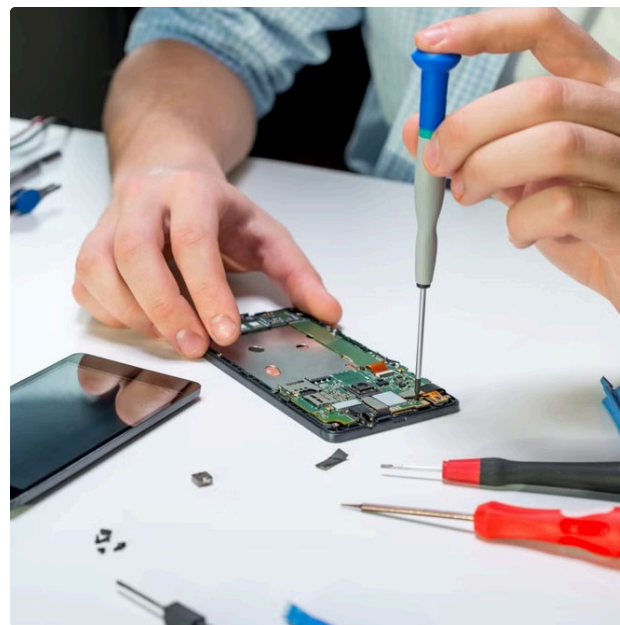
"Circularity means a lot of things to a lot of different people," Hoffman says.

Their approach encompasses three key areas:

Hardware Refurbishment

Extending the lifespan of devices through comprehensive repairs and upgrades.

Device Recovery Services

Reclaiming and repurposing unused or discarded technology.

Sustainable Practices

Embedding eco-friendly principles throughout their product lifecycle.

HP Renew Solutions operates globally, with careful attention to environmental impact. Equipment stays within regions to reduce transportation emissions, while refurbishment occurs at facilities already handling HP's manufacturing and warranty repairs.

> "Step one is finding these units in the marketplace—printers, PCs, and hybrid gear," Grant Hoffman says. "Then we move this gear to a qualified refurbishing partner."
>
> Quality control is paramount: "When they arrive at the factory, we conduct a very exhaustive performance and evaluation test. We check everything, from battery life to scratches on the screen and any cosmetic issues."

For corporate clients, HP streamlined equipment recovery: "If you're an HP customer and you have units you'd like to move along—maybe some sitting in your closet, or old devices—you can send us a list. We'll provide the value for those devices, and then you send them back, and we take care of them."

This initiative reflects HP's broader environmental commitment and their goal of achieving 75% circularity by 2030.

Breaking the Refresh Cycle
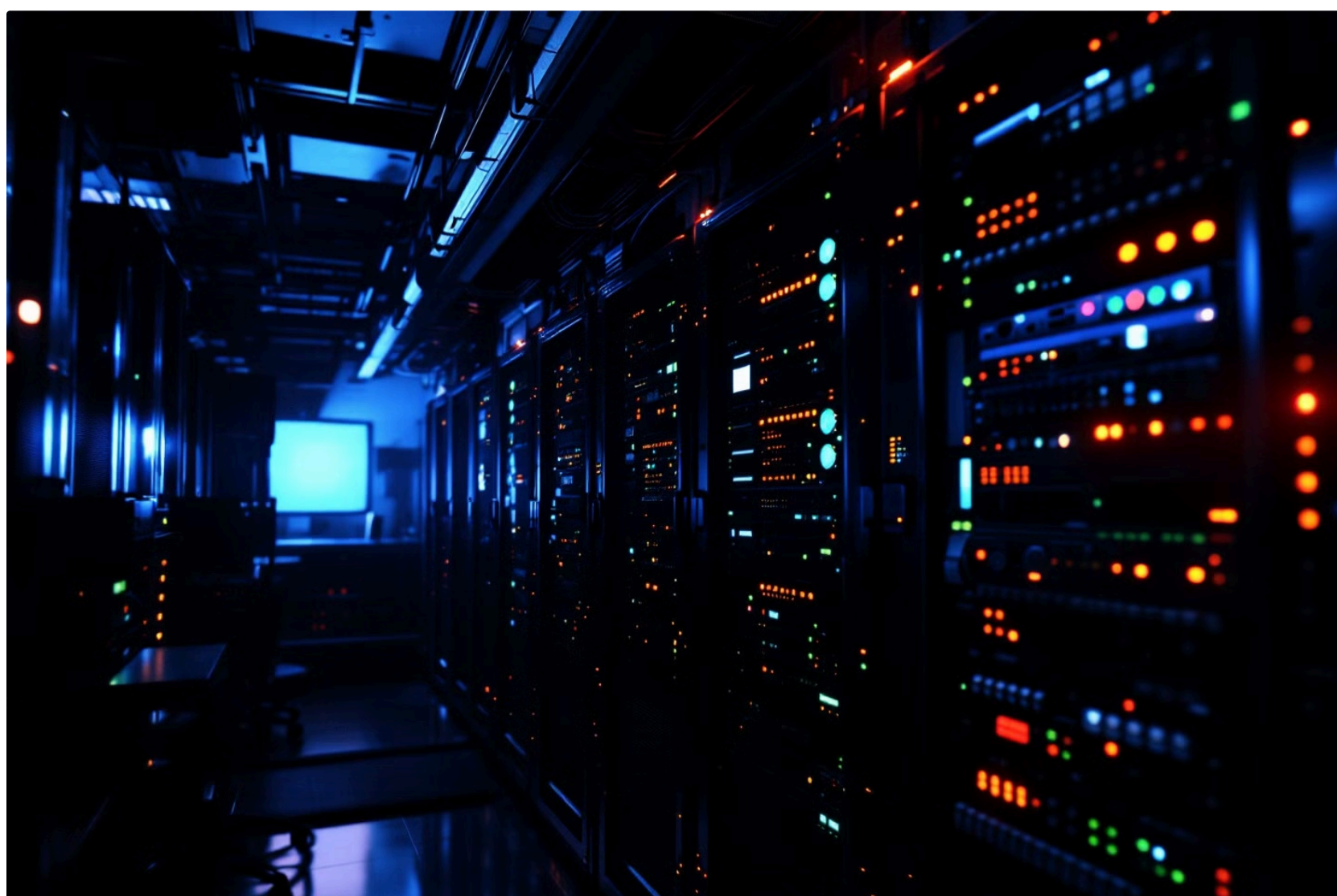
"Most IT infrastructure lasts about four to five years, after which it needs to be replaced, creating significant electronic waste," shares Prakash Darji, General Manager of the Digital Experience Business Unit at Pure Storage, a Mountain View, California-based data storage company.

Pure Storage's Evergreen architecture offers a solution to extend the lifespan of storage systems to minimize hardware waste.

California-based Workspot, a cloud desktop provider, highlights a parallel approach in cloud computing. Rather than refreshing physical PCs every few years, they propose customers leverage cloud infrastructure to minimize waste. This gives employees the option to use their own devices.

Closing the Loop: Technology's Circular Future

Brandon Smith's perspective on technology was forever changed during his time as a volunteer with Human-I-T, a nonprofit based in Long Beach, California, that refurbishes electronics to those in need. He remembers the moment years ago when he handed a young girl her very first computer.

> "I saw her life light up," recalls Smith, now Vice President of IT ESG at Human-I-T. "Whether it meant doing homework, connecting with friends, or watching cartoons—it didn't matter."

That single interaction underscored a profound truth: technology's real value lies in its ability to change lives.

From Corporate Asset to Community Resource

Smith, who serves dual roles as Vice President of IT ESG for Human-I-T and chapter lead for SustainableIT.org in Southern California, is focused on reimagining technology's end-of-life journey.

Photo Courtesy: Human-I-T

"We're essentially a global ITAD (IT Asset Disposition) provider," Smith explains, describing Human-I-T's mission:

> "Creating equitable access to opportunity by taking in unwanted obsolete hardware like desktops, laptops, tablets—you name it—wiping the data, refurbishing it, and then giving it a second life to help students, low income families, veterans, and nonprofits."

The metrics tell a story of transformation at scale. Brandon Smith shares how the magnitude of their effort adds up: "Human-I-T is redirecting over 16 million pounds of e-waste away from shredders, landfills, and developing countries, and giving that equipment a second life to those in need."

Workforce Development: The Human Element

Unlocking human potential represents the most promising frontier in climate technology. But cultivating and harnessing talent, particularly from underrepresented demographics, remains a challenge. For example, industry experts highlight the urgent need to increase the number of women in this sector.

Melissa Stires, Head of Global Growth at London-based Mia AI, a leading AI education platform focused on personalized skills, development and career transitions, offers a compelling observation. Stires points out that, "women are still only 26% of those in technical roles in AI, yet they represent 58% of those whose jobs will be displaced by automation." This data highlights a pressing need for reskilling initiatives targeted at women.

Photo Courtesy: MIA AI

Mia AI's ambitious mission to "train one million women in AI skills by 2030" directly addresses these headwinds by empowering women with the tools needed to thrive in the future of work.

Helen Whiteley, Executive Director of Boston-based Women+ in Climate Tech, an organization that combines advocacy, mentorship programs, and professional development to advance inclusivity in the climate technology sector, also talks about the gender gap in tech.

She points to a visibility problem. "For women in early careers, it's very specifically growing a program targeting girls in high school because I believe you cannot be what you cannot see." Her organization works to raise awareness and implement greater access to opportunity. Whitely recognizes that early exposure shapes future career choices.

Expanding Professional Pathways

Attracting innovators demands new approaches to recruitment and talent development.

"Many people think you need to be a scientist or environmentalist to work in climate tech, but that's not true," explains Natalie Lavery, Marketing Lead at Boston-based Climate People.

The technology recruiting firm is dedicated to decarbonizing the economy by placing mission-driven talent into Climate Tech careers. Climate People focuses on software, data, product, and user experience recruitment across all sectors.

> "Climate tech is about reimagining how we do things across the entire global economy."
>
> — Natalie Lavery, Marketing Lead, Climate People

Key Insights:

1 ### Circular Business Strategy

HP's Renew Solutions program demonstrates how circularity can be integrated into core business operations, combining hardware refurbishment, device recovery, and sustainable practices while targeting 75% circularity by 2030.

2 ### Infrastructure Innovation

Companies are reimagining traditional IT refresh cycles through solutions like Pure Storage's Evergreen architecture and Workspot's cloud infrastructure. These initiatives challenge the usual 4-5 year replacement paradigm.

3 ### Technology Redistribution Impact

Human-I-T's success in diverting 16 million pounds of e-waste while providing refurbished technology to underserved communities proves the viability of combining environmental sustainability with social impact.

**4** ### Gender Gap in Tech Evolution

With women comprising only 26% of technical AI roles but 58% of jobs at risk from automation, organizations like Mia AI and Women+ in Climate Tech are working to address this disparity through targeted training and early career development.

5 ### Expanding Career Pathways

The climate tech sector is broadening beyond traditional environmental roles to encompass software, data, and user experience positions, creating new opportunities for diverse talent in the sustainability field.

Conclusion
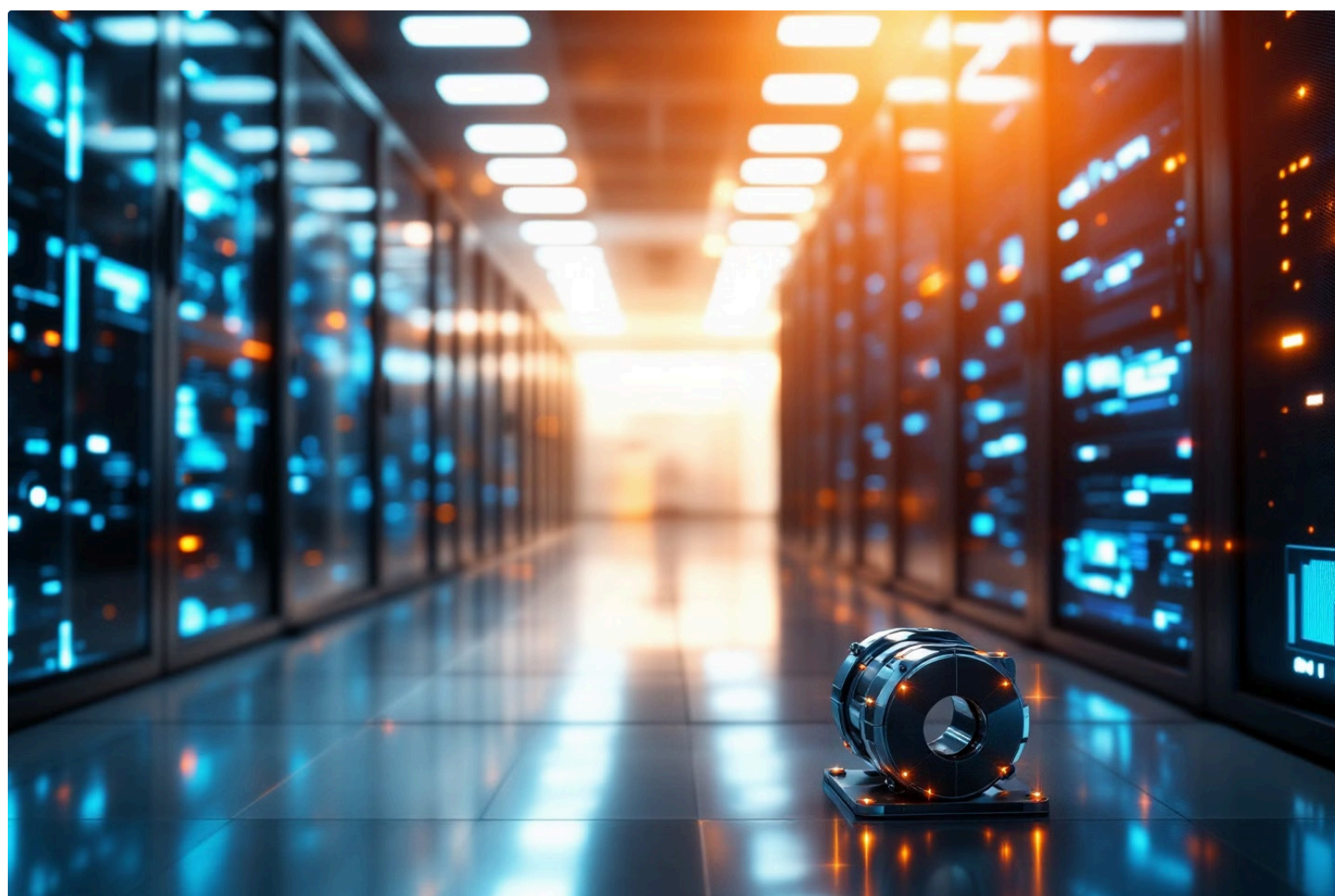
Tapping into the expertise of the leaders featured in this report reveals a clear conclusion: sustainability is a core business strategy, not an optional initiative. Insights from over 100 in-depth interviews with top executives emphasize the strategic value of embedding sustainability throughout operations.

Across industries, particularly in the tech sector, leaders are demonstrating that environmental responsibility and economic performance are not mutually exclusive but, in fact, deeply interconnected. Companies are finding creative ways to tackle sustainability challenges while boosting their bottom line.

How can businesses manage and mitigate their own carbon output? It's not an easy task.

Advanced carbon tracking tools are helping to measure, track and reduce emissions. Though, many organizations today are struggling to piece together insights from fragmented data systems scattered across their operations.

These complexities multiply exponentially as environmental regulations continue to evolve at different paces. Success requires not just technical sophistication, but also the organizational flexibility to evolve alongside new rules, notably the 2025 mandates of the EU's CRSD.

Duly noting its immense energy demands, advanced AI tools can also help optimize energy use and reduce risk from climate-induced extreme weather events. Circular economy practices are turning e-waste into community resources.

The Path Forward

This report underscores the value of leadership that prioritizes systemic integration of sustainability across operations, supply chains, and workforce development. Embracing this holistic approach will better position organizations in navigating the rapidly shifting landscape of environmental accountability.

Ultimately, the convergence of climate imperatives, technological innovation, and regulatory pressures is reshaping the business environment. Those who act decisively to embed sustainability into their organizational DNA will not only mitigate risks but also drive long-term growth and resilience. As this report illustrates, the future belongs to those who view sustainability not as a constraint but as a catalyst for innovation and enduring success.

For thought leaders at the intersection of technology and sustainability, I look forward to continuing the conversation!

—Bonnie Schneider, *Sustainability Analyst, Decisions That Define: Executive Strategies and Innovations Driving Corporate Sustainability, 2025,* ecotechreport.com