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Building business value through sustainable modernization and resilience

Introduction

Sustainability has transformed from a compliance obligation into a strategic imperative.

More than two-thirds of CEOs view sustainability as a leading business growth opportunity. They recognize the potential to build business value — creating new revenue streams, cutting costs and attracting investment.

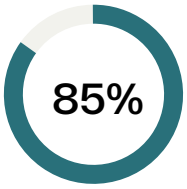
But seizing this opportunity depends on the digital systems now central to how enterprises not only achieve short-term environmental targets but deliver long-term value.

To meet the new sustainability imperative, organizations must integrate sustainability into technology, harness AI to accelerate transformation and build holistic resilience through emerging technologies, workforce readiness and organizational adaptability.

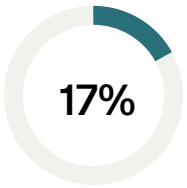
These actions turn sustainability into an enterprise-wide driver of measurable ROI — with potential to significantly reduce operational costs, unlock efficiency gains that directly improve bottom-line performance and position enterprises to outpace competitors while delivering quantifiable results.

Closing the strategic gap

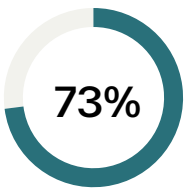
Organizations want to use technology to become more sustainable. But a significant gap between ambition and execution persists across global enterprises. Kyndryl's research reveals this disconnect:



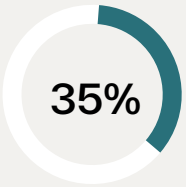
Organizations that say sustainability is a top strategic priority.



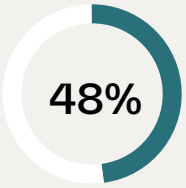
Organizations that have embedded sustainability as a core driver of innovation, cost savings, and long-term resilience.



Organizations that report strong alignment between technology and sustainability teams.



Organizations that centrally leverage AI to support sustainability and improve decision-making.



Organizations that cite the lack of ROI and difficulty measuring impact as the biggest barrier to sustainability initiatives.

Source: Kyndryl Global Sustainability Barometer 2025

The cost of inaction

Organizations maintaining the status quo face mounting pressures. Investors continue to explicitly consider sustainability factors in investment decisions. At the same time, energy demands are on the rise with future costs uncertain, compliance requirements are evolving in a fragmented global landscape, and climate-related disruptions are a growing concern. Physical climate risks alone could threaten up to 25% of businesses' gross profits by 2050, according to a World Economic Forum report, making sustainability financially essential.

Strategic integration: A full-stack sustainability approach

Integrating sustainability into the design and operation of technology can lay the foundation for long-term efficiency and growth.

A full-stack approach to sustainable modernization

From hardware to data, sustainability is an opportunity extending across the full technology stack.

A full-stack approach starts with building a sustainable infrastructure foundation. This includes considering the sizing and choice of hardware, updating inefficient equipment and implementing modernization strategies.

Actions like these can help deliver efficiency gains. And when businesses also focus on reducing electricity use in data centers through non-IT overhead like cooling and power distribution, they can substantially lower energy consumption and costs.

Sustainability also extends to cloud optimization and practices like FinOps that unite teams to maximize the value of technology investment. In undertaking cloud migration alone, organizations can significantly reduce greenhouse gas emissions and achieve substantial energy savings.

Then, by shifting focus up the stack — into architecture, applications and data management — organizations can continue to cut energy use and costs while boosting performance and IT stability. Data management is critical to this transformation. In hybrid IT environments that include a mix of cloud and on-premises platforms, enterprises generate and store massive amounts of data. And they increasingly rely on AI to transform this data into a strategic asset.

But unstructured, redundant and low-quality data leads to poor AI outputs — and increases data storage and processing that drains energy, slows businesses down and increases risks.

Overcoming hurdles

Enterprises must address additional challenges as they infuse sustainability into their technology environments.

Many still rely on legacy systems built without energy efficiency in mind. This older technology often consumes more power and requires more cooling. Years of patchwork fixes have also increased technical debt — redundant processes, bloated apps, inefficient code — that wastes money on upkeep, burns energy and drags down performance. And that leaves enterprises less stable and less sustainable.

Scaling AI adds to the challenge of managing energy consumption. More organizations are considering the environmental impact of their AI solutions, with 43% now saying they factor in AI's energy use and carbon footprint as they modernize. To align AI strategy with sustainability, it's essential to right-size implementation to maximize efficiency, increase renewable energy use and address data challenges that exacerbate AI inefficiency.

At a time when organizations face pressure to achieve the highest IT performance at the lowest cost, knowing what to prioritize can be difficult, particularly when most large organizations must retrofit updates. But many continue to pursue sustainability to achieve benefits like reduced operational costs and improved efficiency — both top drivers of sustainability efforts today, according to the 2025 Sustainability Barometer.

The business case for sustainable modernization is compelling: organizations that integrate sustainability into their technology strategy can reduce costs, extend the lifespan of equipment and mitigate risks — making sustainability a value accelerator.

Recommended actions

Build a strong foundation:

- → Boost hardware efficiency with devices that meet high energy efficiency standards.
- → Optimize cloud utilization with hyperscale cloud providers and cloud-native applications.
- → Align finance, technology and sustainability teams to enable data-driven decision-making.

Drive data and AI excellence:

- → Build efficiency into AI adoption with robust data and AI governance.
- → Right-size AI implementation and employ more efficient coding practices like refactoring to reduce processing.
- → Use carbon-aware scheduling to align AI workloads with renewable energy availability.

Optimize applications and processes:

- → Rationalize applications to eliminate duplication that drains energy.
- → Adopt modern microservices or serverless architectures that scale on demand.
- → Implement renewable energy strategies that go beyond power purchase agreements and support the build out of new renewable energy supply.

Cloud-powered sustainability

A leading insurance company in North America wanted to evaluate the emissions benefits of moving workloads to the cloud. Emissions from data center operations were estimated and compared to an estimation of emissions associated with cloud services. The results showed a significant reduction in energy consumption by 87% and a complete elimination of market-based greenhouse gas emissions. Moreover, 23 physical machines with 684 processing cores were reduced to 8 virtual machines with 288 processing cores.

AI-powered transformation: From reactive to proactive sustainability

AI can bridge the sustainability-technology divide, transforming reactive compliance efforts into proactive strategy.

The rise of AI

The benefits of AI-driven sustainability strategies are numerous. With strong data governance, organizations can use AI to reduce infrastructure operational costs, decrease total energy use, improve resource use efficiency and achieve higher ROI on sustainability investments. Case in point: recent research has found applying AI in the energy sector can result in 15% less energy waste and a 20% reduction in carbon emissions.

Yet many organizations are using AI for limited applications and missing out on emerging capabilities that enable proactive and predictive decision-making.

Nearly 69% of organizations track environmental metrics centrally, yet only 40% use this data to guide decisions and optimize performance, according to the 2025 Sustainability Barometer. And while organizations are moving from reactive to predictive analysis, just under half of organizations currently forecast resource use and emissions to anticipate future impacts.

Opportunities to use AI to enhance sustainability and resilience are abundant. Companies can wield AI-powered tools to analyze data to get ahead of disasters and protect critical infrastructure, supply chains and their workforce. They can also use AI to reduce waste in product or service design, or test how critical sites would fare in the case of a major storm or prolonged drought. Technologies like AI-enhanced digital twins, which provide a virtual representation of physical assets, can guide companies in designing more efficient products and developing real-world adaptation strategies.

Leaning into agentic

Agentic AI will magnify these opportunities — if it's architected with sustainability in mind.

Unlike traditional AI tools, agentic systems act and adapt to changing conditions. Sustainability agents, for example, could minimize carbon footprints by consolidating workloads onto energy-efficient servers. Or rapidly evaluate information from diverse sources to map an organization's sustainability footprint, assess compliance against evolving regulations and initiate corrective actions.

Today, just 9% of organizations have deployed agentic AI for sustainability, according to the 2025 Sustainability Barometer. But those who have are significantly more likely to report gains in innovation, efficiency and customer satisfaction.

As more companies explore agentic AI, new opportunities will emerge to solve traditional sustainability challenges and accelerate research and innovation. A study from the London School of Economics and Political Science found that AI advancements could help eliminate 3.2 to 5.4 billion tonnes of carbon-dioxide-equivalent annually by 2035 if applied in power, transport and other key sectors. On the upper end, this reduction would be equivalent to about 8% of current annual global carbon emissions.

Harnessing these advancements will also help organizations navigate AI's sustainability paradox: the technology is among the most energy-intensive in enterprise IT environments. While the energy required for a single AI query can vary dramatically, researchers expect overall energy demand to skyrocket with the proliferation of AI. One report from the Lawrence Berkeley National Laboratory, funded by the U.S. Department of Energy, estimates that U.S. data center energy consumption could more than double by 2028, driven largely by AI. By integrating sustainability with AI, organizations can navigate this paradox, and scale AI while moving closer to both net-zero and business goals.

Recommended actions

Make an immediate impact with AI:

- → Optimize resource allocation through predictive maintenance and AI-powered infrastructure management.
- → Dynamically distribute computing workloads with AI tools based on real-time energy costs, carbon intensity and operational efficiency.
- → Eliminate dark data that silently consumes storage resources and energy with AI-driven data management.

Apply AI for advanced applications:

- → Tap into predictive analytics to forecast energy demand and reduce downtime.
- → Leverage AI systems to minimize carbon footprints across multiple data centers.
- → Integrate AI-enhanced digital twins to design more efficient products, develop climate adaptation strategies and optimize resource allocation across complex global operations.

Seize the agentic AI opportunity:

- → Use agentic AI to support accurate and timely compliance reporting.
- → Optimize supply chains with AI agents that help close gaps in supplier compliance and increase sustainable sourcing.
- → Shift from static sustainability reporting to dynamic sustainability management with AI agents that continuously observe, interpret and improve environmental performance in real-time.

AI-powered insights to drive efficiency

Implementing AI-powered solutions can reduce energy consumption. A machine learning-driven cooling setpoint control was applied to demonstrate how a leading multinational corporation could reduce data center cooling by 25%. This resulted in estimated annual energy savings of 1.3 million kWh and an estimated annual emissions reduction of 138 mtCO2e.

Building holistic resilience: Uniting technology, people and purpose

As organizations adopt emerging technologies to advance sustainability, resilience is the baseline for innovation — and a requirement to withstand environmental, regulatory and market disruption.

Rethinking resilience

Modern resilience demands adaptive capacity within and beyond the enterprise.

Leaders must prepare to face disruption and build resilience by using technology to assess, predict and adapt to climate risks in real-time. Operational continuity now involves evaluating energy security for data centers, ensuring data availability during climate-related disruptions and mitigating supply chain vulnerabilities across interconnected networks, as well as safeguarding critical infrastructure from cyberattacks.

Resilience also hinges on people. According to the World Economic Forum, 63% of organizations cite the skills gap as their greatest barrier. Overcoming this challenge requires intentional change management and comprehensive reskilling initiatives. Organizations must invest in workforce development so teams can effectively use new technologies that help them interpret sustainability data, mitigate risks and build a stronger adaptive muscle.

But resilience isn't limited to the enterprise; it increasingly extends beyond an organization's own walls.

To strengthen long-term stability, organizations can bridge enterprise and community resilience through social impact initiatives that build trust and spread best practices. And greater collaboration between industry leaders, academic institutions and governments can launch the wide-scale societal efforts needed to boost digital resiliency. The EU's Cyber Skills Academy, for instance, exemplifies how governments can support skills enablement through more accessible training, centralized resources and strong partnerships.

Together, these actions enable organizations to manage fast-emerging threats — a critical priority when climate-related disasters have already caused more than $3.6 trillion in losses, and as climate-related risks are projected to accelerate. Investing in resilience also delivers measurable returns: a recent study found that every dollar invested in resilience can yield more than $10 in benefits over a decade.

Future regulatory readiness

With a holistic approach to resilience, organizations can thrive amid disruption, change and evolving societal expectations. This adaptability includes regulatory and compliance readiness — a top driver of sustainability efforts, according to the 2025 Sustainability Barometer.

Non-financial disclosures have required organizations to collect high-quality data to comply with a patchwork of reporting standards, frameworks and regulations. But global enterprises now face greater demands. They must collect and report data not only involving their business, but their full supply chains. And they must demonstrate their approach to cybersecurity, AI governance and social responsibility across multiple jurisdictions.

Despite regulatory rollbacks in some countries, many global companies will soon need to comply with the European Union's Corporate Sustainability Reporting Directive (CSRD). The directive is expected to cover thousands of organizations and mandates disclosing sustainability metrics across the value

chain, assessing sustainability-related risks and developing plans to increase resilience. Fulfilling reporting requirements will be a complex effort requiring advanced technological capabilities and close collaboration between teams tasked with managing risk and sustainability.

In the U.S., beginning in 2026, California will require companies doing business in the state to disclose climate risks and emissions. The law's requirements can help prepare businesses to comply with The International Sustainability Standards Board (ISSB) standards, mandated by various jurisdictions globally, and also align with many requirements of the CSRD, easing the compliance burden.

To confidently navigate this environment, organizations need global governance frameworks that provide consistent principles while accommodating local variations. They also need automated data capabilities to fully map their sustainability footprint. Integrating sustainability, technology and resilience can help them accomplish this, simplifying compliance obligations and building future readiness.

Recommended actions

Drive resilience with technology:

- → Harness AI-powered platforms for risk management and compliance across operational, environmental and security domains.
- → Apply AI to automatically adapt governance based on changing risk landscapes, regulatory requirements and operational conditions.
- → Customize resilience strategies with AI modeling.

Support far-reaching resilience:

- → Map climate risks and develop adaptation strategies with technology.
- → Identify new ways to strengthen community resilience through strategic investments and partnerships.
- → Create more resilient business environments for all stakeholders with social impact initiatives that strengthen communities, address local sustainability challenges and drive economic development.

Build a resilient talent ecosystem:

- → Invest in internal skills development and structured change management programs to support workforce transitions.
- → Collaborate with educational and government partners to increase digital resiliency through centralized training efforts that create sustainable talent pipelines and drive business results.
- → Prioritize reskilling initiatives that equip employees to manage new technologies, sustainability tools and evolving business processes.

Smarter sustainability reporting

A leading global marketing services company advanced its net zero ambitions by deploying a unified dashboard to measure, analyze and optimize energy usage and greenhouse gas emissions across its hybrid IT landscape. The platform empowered the company to identify underutilized servers for consolidation, replace inefficient hardware and implement carbon-aware workload management. Over a three-year period, projected opportunities included nearly $2 million in cost savings, over 800,000 KWh in energy savings, and a reduction of more than 23,000 KgCO2e in emissions — delivering a potential ROI of 250%.

Conclusion

Emerging risks and AI opportunities are transforming sustainability into a core driver of business.

Leaders face a clear choice: continue operating with fragmented approaches to sustainability, technology and resilience, or embrace integrated strategies that deliver measurable business value and set enterprises up for long-term success.

Organizations that act decisively will gain a competitive advantage and drive operational excellence through reduced costs, accelerated innovation and enhanced resilience. They will also define the future of sustainable and socially responsible business operations.

The same technology that could create global environmental challenges can also be the most powerful tool to avoid them. At this inflection point, organizations that prioritize transformation and consciously build sustainability and resilience into their foundation — supported by empowered, skilled teams — will be best positioned as tomorrow's market leaders, creating lasting value for all stakeholders.

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