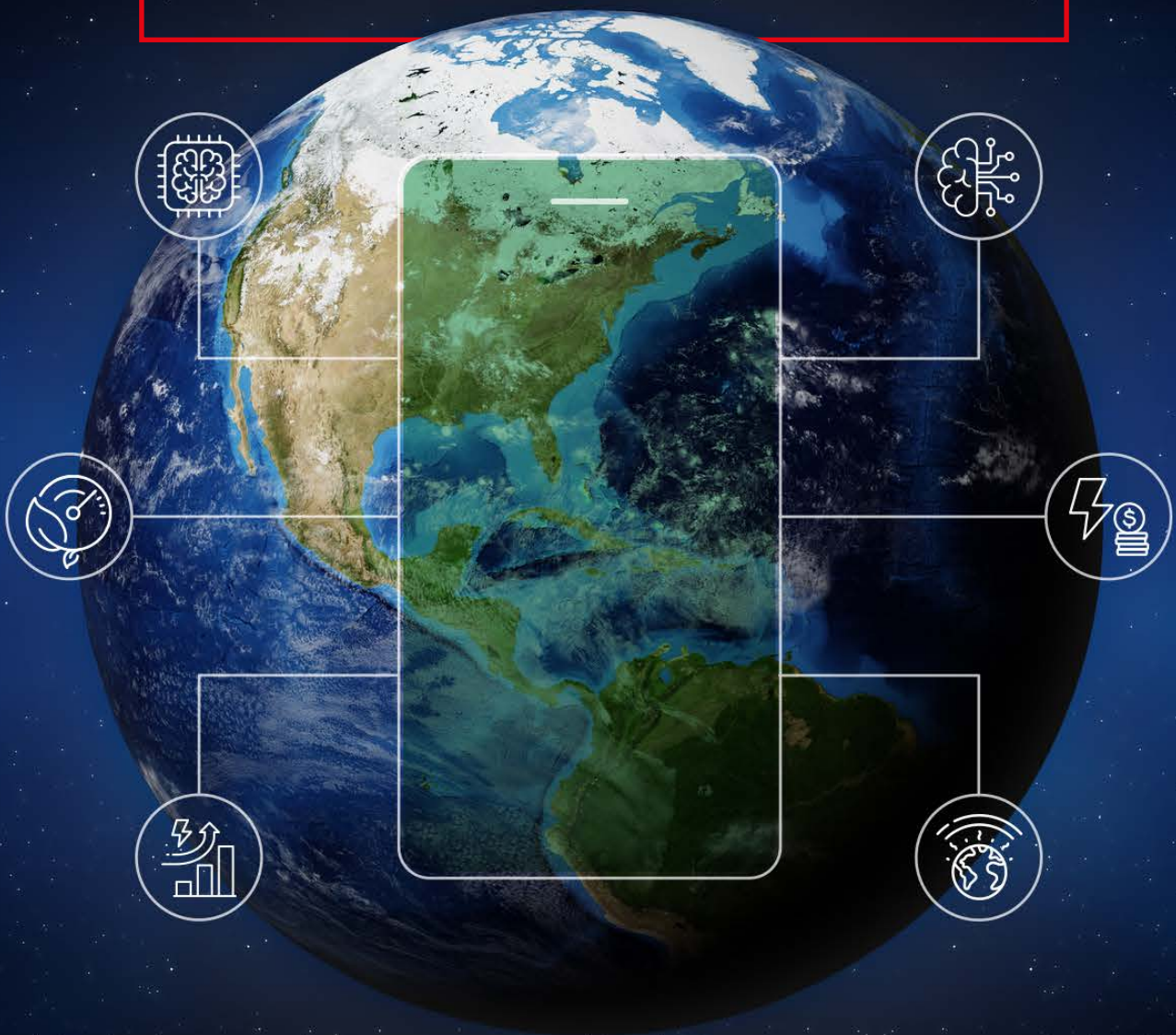


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Greener supply chains need smarter AI systems



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About this report

'Next-gen supply chains' is an Economist Impact report sponsored by GEP. It explores the evolving world of supply chains amid continued disruption from technology, notably AI, and climate change. The report is based on a survey conducted between January and March of 2025 of over 400 executives in the US and Europe who were familiar with their organisation's supply-chain strategy and operations.

Economist Impact is solely responsible for the views expressed in this report, and the content does not necessarily reflect the perspectives of the sponsor.

Economist Impact would like to extend its thanks to the following interviewees for their time and insights:

- **Abe Eshkenazi**, chief executive, Association for Supply Chain Management
- **Douglas Kent**, executive vice president, Association for Supply Chain Management
- **Jurriaan Lombaers**, former chief procurement officer, Air France KLM Group
- **Matteo Perondi**, chief procurement officer, Bulgari
- **Radharaman Jha**, vice president of supply chain, Flaconi

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- **John Ferguson**, project director
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Executive summary

1

Without reliable data, AI cannot deliver sustainability

Few firms can track the emissions buried in their supply chains or ensure that their suppliers are ethical. Just one in four firms uses AI to support sustainability and ESG efforts, despite the technology's relatively high level of effectiveness for these supply-chain functions. The main constraints for adopting AI for ESG are not financial: nearly half the firms we surveyed cite poor data as the biggest barrier to using the tech. Incomplete supplier disclosures and inconsistent methodologies make it hard to identify unethical practices or model emissions, especially Scope 3. As a result, firms struggle to translate AI-generated insights into action. Yet simpler AI can also help to digitalise supply chains, which would allow firms to unlock more advanced uses of the technology.

2

Ethical sourcing gets a boost from AI—but trust in the tech remains fragile

Around seven in ten firms using AI for ethical sourcing say it is effective in supporting that supply-chain function. But almost half of all executives are uneasy about the fairness of AI-made decisions. AI systems can surface hidden risks by analysing court records, sentiment data or satellite images. Some firms use this to trace forced labour deep in supply chains. Yet it is not always clear why an AI model flagged a supplier—or whether it should have. Algorithms trained on firm-specific data, such as procurement records, are likely to produce more reliable outputs as the data is grounded in historical context and business norms. But with trust still fragile, clearer governance principles are needed if AI tools are to improve due diligence in a meaningful way.

3

AI is already helping firms cut their emissions—but proving it remains difficult

About one in four firms reports using AI for carbon reduction, by applying it indirectly to tasks such as route optimisation, demand forecasting and emissions simulation across sourcing and logistics. In principle, this supports both climate goals and operational efficiency. Yet sustainability efforts must also be credible—and that is where AI faces some limits. Around two-thirds of firms say AI improves ESG transparency, but many still rely on generic emissions factors or inconsistent supplier disclosures. Some tools now estimate Scope 3 emissions from procurement data or validate claims using satellite imagery, but their impact is constrained by the lack of agreed standards.

4

Regulation—not rhetoric—drives AI adoption in sustainability

AI performs better in sustainability where regulation is strongest. In our survey, European firms report higher effectiveness in emissions tracking and ethical sourcing than their American peers. The EU's new directives have forced companies to invest in traceability, improve ESG data quality and explore AI as a compliance tool. In this context, effectiveness means not just anomaly detection, but readiness for scrutiny. By contrast, in less regulated markets, firms are slower to act. The disparity suggests that left to their own devices, few firms will adopt AI for sustainability on a meaningful scale.

5

AI's own carbon footprint cannot be ignored

Almost half of executives worry about the environmental impact of AI itself. Training large models and running them at scale consumes vast amounts of energy. Responsibility varies: firms operating bespoke systems in energy-hungry data centres have more to answer for than smaller companies using off-the-shelf tools. Yet few include AI emissions in their ESG metrics. That may soon change. As reporting expectations tighten, digital infrastructure will come under scrutiny. The challenge is to decarbonise AI itself—without making it inaccessible to the firms that need it most.

In 2013, European food inspectors discovered horse meat in frozen beef products sold across the continent.¹ The scandal, which forced tens of thousands of tonnes of mislabelled meat off the shelves, revealed a deeper problem: the firms involved had little idea where their ingredients came from. Almost a decade later, in 2022, a European fashion brand came under scrutiny for the sourcing of cotton used in its garments.² Concerns were raised about the traceability of the material. When questioned by a British parliamentary committee, company executives acknowledged that they could not verify the cotton's origin due to fibre blending and limited visibility across their supply chain.³

Such cases are not uncommon. Many firms tout sustainability targets and ethical sourcing codes yet struggle to see beyond their immediate suppliers. Ethical failures such as forced labour or illegal deforestation are often buried deep in sprawling, opaque supply networks. Scope 3 emissions—those in a firm's supply chain but outside its direct control—account for most of a company's carbon footprint, but few can measure them with any precision. Jurriaan Lombaers, former chief procurement officer at Air France-KLM, notes that “having visibility into tier one is doable; beyond that, across thousands of suppliers, it is a challenge.” His experience with

KLM, which managed more than twelve thousand direct suppliers, shows how maddeningly hard transparency can be.

Against this backdrop, generative artificial intelligence (AI) is emerging as a tool with real potential. The technology can scan satellite images for signs of forest loss, trawl procurement data for anomalies or flag labour abuses hidden in court filings and local news. It promises speed, scale and a new kind of insight—one that audits and that self-reporting cannot deliver.

While AI adoption remains uneven, early applications are showing promise. One in four firms we surveyed already uses AI to support sustainability tracking. These tools are helping firms detect risks, improve reporting and plan lower-emissions operations. Yet challenges remain. Many firms still struggle with poor data quality, inconsistent supplier disclosures and translating forecasts into action. As Abe Eshkenazi, chief executive of the Association for Supply Chain Management puts it, “I don't know that we have 100% visibility within the supply chain right now. But the good news is that [AI] has enabled us to better understand who and what is in our supply chains. The bad news is that we now know who and what is in our supply chains. With enhanced supply chain visibility, we're finding that we're not as sustainable as we claim to be—specifically on Scope 3.”

This briefing paper explores how firms are deploying AI to improve supply-chain transparency and sustainability. It examines where the technology delivers, where it disappoints, and what stands in the way. It looks at the role of regulation, the quality of emissions data and the tension between efficiency and accountability. And it asks whether AI is helping companies become more responsible—or merely appear so.



“Having visibility into tier one is doable; beyond that, across thousands of suppliers, it is a challenge.”

Jurriaan Lombaers, former chief procurement officer at Air France-KLM

¹ <https://www.bbc.co.uk/news/world-21412590>

² <https://www.bbc.co.uk/news/business-57691415#:~:text=H%26M%3A%20Fashion%20giant%20sees%20China%20sales%20slump%20after%20Xinjiang%20boycott,-Published&text=Swedish%20fashion%20giant%20H%26M%20saw,Muslims%20in%20China's%20Xinjiang%20province.>

³ <https://committees.parliament.uk/work/593/forced-labour-in-uk-value-chains/>

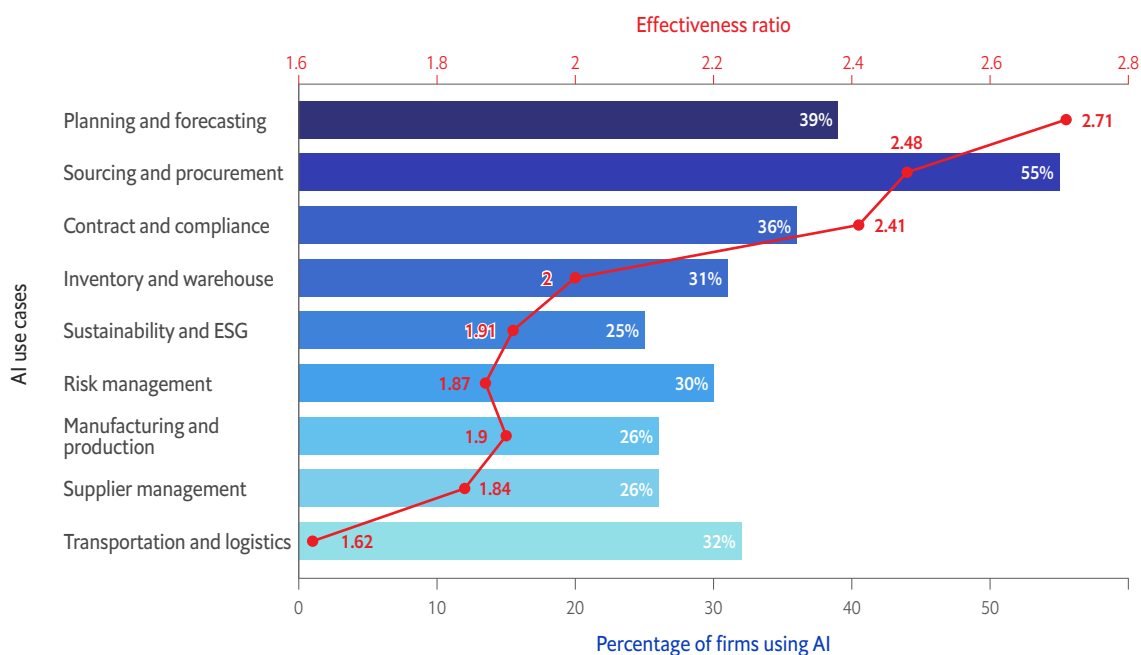
AI adoption for sustainability: promise meets patchy progress

Ask a procurement or supply-chain professional and, amid rising costs and geopolitical headaches, one likely source of optimism they will cite is the growing use of generative AI. In fact, an Economist Impact survey of 5,000 global executives finds that four in ten consider tools that improve efficiency and visibility in supply chains the greatest source of optimism

in 2025.⁴ And firms have been quick to adopt generative AI for planning, sourcing and contract management (see briefing paper one). But uptake for sustainability remains comparatively low. Just one in four firms uses AI to track emissions, ensure ethical sourcing or support ESG goals—making it the least common current use case across the supply chain (see chart 1).

Chart 1: AI at work, but is it working?

Adoption and effectiveness of AI across tasks



Source: Economist Impact survey

⁴ <https://impact.economist.com/projects/trade-in-transition/free-trade-fraught-times/>

Yet there are encouraging signs. The AI effectiveness ratio—a measure of how often AI is rated as useful versus ineffective—places sustainability and ESG in the middle of surveyed functions (see chart 1). It outperforms areas such as risk management and supplier onboarding, though it still lags more mature uses like planning and procurement (see briefing paper one). With a ratio of 1.91, the signal is clear: nearly twice as many firms that use AI for sustainability and ESG believe it is effective, compared with those who are neutral or find the tech ineffective for sustainability-related purposes. Much of that enthusiasm, however, likely reflects AI's ability to manage scale trawling through declarations data far faster than humans. But 'effectiveness' in this context is relative. The technology may be better at detecting inconsistencies or surfacing anomalies but whether it yields deeper insights than traditional audits or spreadsheets is harder to prove.

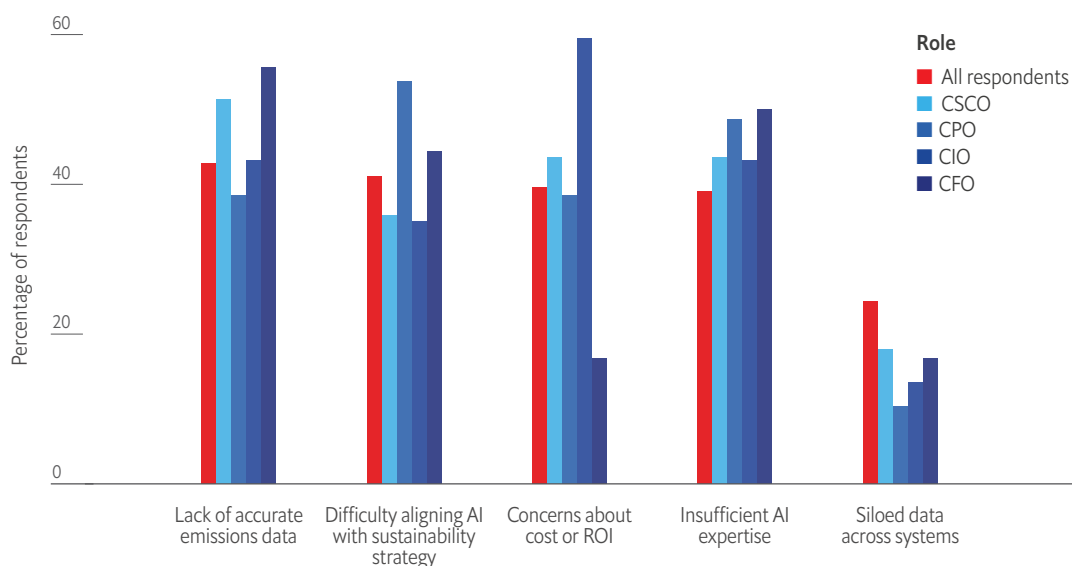
Yet, one might expect AI adoption for ESG-related purposes to be higher than a mere quarter of firms. The problem is not financial. Data from our survey suggests that when it comes to using AI to track and reduce supply-chain emissions, concern about return on investment is overtaken by more fundamental constraints: data and strategy.

Around half of chief procurement officers (CPOs), supply-chain managers and strategy leads cite poor or incomplete emissions data as their biggest obstacle to using AI for sustainability purposes (see chart 2). Among finance professionals the proportion is even higher: over half cite data gaps as the main problem, while few express concern about costs. Meanwhile, information and technology chiefs are more likely to point out that AI-generated forecasts cannot be translated into clear operational decisions. These divergences suggest AI fails not because it is too expensive, but because firms do not yet agree on what to do with the outputs. A supply-chain executive at a European apparel firm puts the dilemma into context: "we're at the start of something like the early internet era—a lot of opportunity for AI, but we have to find where the biggest value-add is."

We're at the start of something like the early internet era—a lot of opportunity for AI, but we have to find where the biggest value-add is."

Chart 2: Smarter systems, stubborn problems

Barriers to AI adoption for emissions tracking (respondents could select up to two options)



Source: Economist Impact survey

The starting point, adds the supply-chain executive, is that you can't run AI on supply chains that are "nowhere near fully digitalised." They point out that "you can always do the sexy AI stuff on top of the data you've got, but unless you've got a strong foundation, what's the point?" To improve this, the executive adds, his company is using simple AI tools to help generate digital data in the first place. Optical character recognition (OCR) and natural-language tools, for instance, are being deployed to digitise physical documents—such as transaction certificates and emissions declarations—and upload them onto industry-level platforms. Once this is the case, more advanced AI can be deployed and leveraged for increasingly meaningful insights.

The role of regulation

One feature firms that have made progress with AI for sustainability tend to share is regulatory pressure. Regional differences in AI

effectiveness reflect this. European firms find AI more effective than their American peers not because their algorithms are more advanced, but because regulation has forced them to pay more attention to ESG-related subjects and be stricter with their data (see chart 3). The EU's Corporate Sustainability Reporting Directive (CSRD) and its Carbon Border Adjustment Mechanism (CBAM), along with national supply-chain laws in countries like Germany, impose complex and demanding disclosure requirements. Compliance is not straightforward and political resistance lingers.⁵ Yet the prospect of mandatory scrutiny has already reshaped corporate behaviour. Many European firms have invested in structured ESG systems, cleaned up their data and built internal capabilities.^{6,7} That has laid the groundwork for more effective use of AI. It has also made firms more open to experimenting with AI as a compliance tool—whether to model emissions, flag supplier risks or reduce the burden of verification.



⁵ <https://www.ft.com/content/92b56c0b-663e-4820-90b1-533f1f36f08>

⁶ https://assets.bbhub.io/promo/sites/16/Bloomberg-European-ESG-Data-Survey-2024_FINAL-2.28.pdf

⁷ https://www.db.com/news/detail/20241112-europe-s-resilient-appetite-for-esg-investing?language_id=1

“France is ahead in ESG tech because of strong policy. That regulatory pressure drives real innovation.”

Regulation has not only increased the demand for traceability, it has clarified what firms must do to speed up adoption, including exploring the technologies that make it possible. “It brings clarity to what you are doing because you know what you have to do—it’s enforced upon you”, comments Douglas Kent, executive vice president of the Association for Supply Chain Management. This aligns with the opinion of a supply-chain executive at a European apparel firm who confirms: “France is ahead in ESG tech because of strong policy. That regulatory pressure drives real innovation.”

Not everyone is convinced this shift is purely positive. Abe Eshkenazi, chief executive of the Association for Supply Chain Management, notes that unlike in the EU where “regulatory and policy pressure” drive AI adoption, the use of the technology in the US is “more market driven.” The risk, Mr Eshkenazi suggests, is that

sustainability efforts—AI-powered or not—become mere “checklist compliance” rather than a source of competitive advantage.

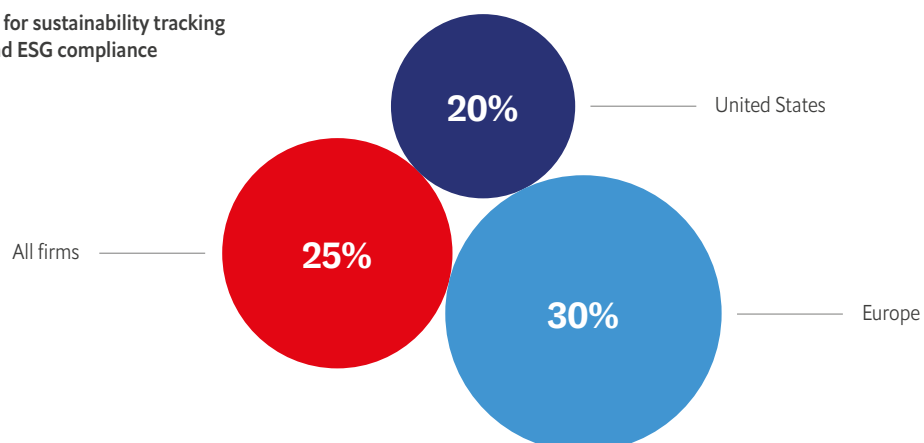
Yet the very existence of a checklist has, in many cases, proved better than nothing. For now, regulation is doing what markets alone have failed to: raising expectations, standardising action and compelling firms to build the systems that more advanced tools can exploit.

If regulation has spurred adoption, structure must follow—but without overwhelming the firms it seeks to guide. One supply-chain executive observes that “brands ask for different data from the same facility,” a demand that is unscalable without harmonised protocols. Their concern is widely shared: inconsistent reporting requests and patchy standards mean facilities must cater to bespoke requirements, rather than a shared framework. Regulation can help—by going beyond mandates and offering clearer rules on data quality, including definitions of acceptable estimation methods and thresholds for confidence in reported figures. Even so, some firms, especially smaller ones, will need help—not just with compliance, but with the digital basics needed to make AI work at all.

Chart 3: Regionalised use

Adoption of AI for sustainability and ESG compliance

AI for sustainability tracking and ESG compliance



Source: Economist Impact survey

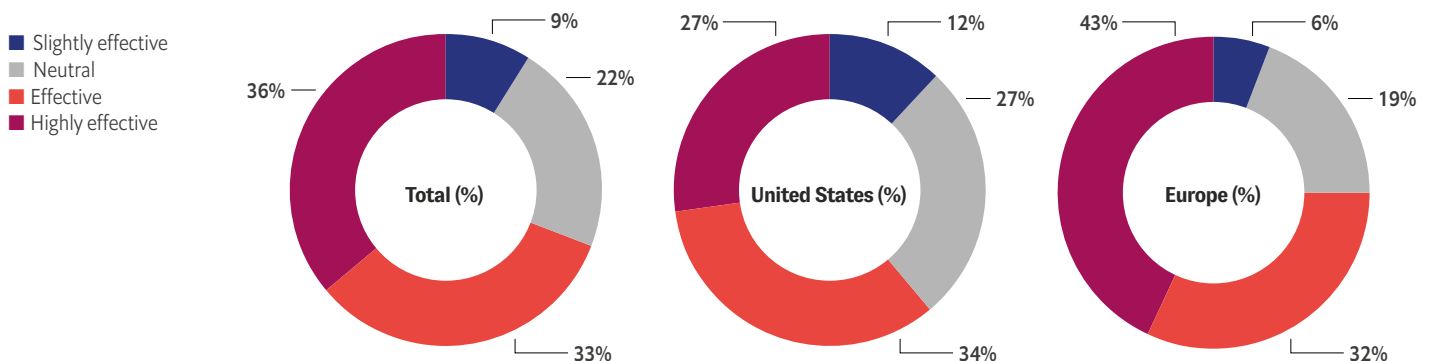
Responsible sourcing with AI

Few firms know what happens inside the factories, fields and workshops that feed their supply chains. Traditional in-person audits faced constraints and could rarely be deployed at the scale multinational supply chains require. Therefore, when Hope for Justice, an NGO, set out to trace forced labour for a multinational client, it decided to use artificial intelligence.⁸ Working with a compliance-analytics partner, it deployed an AI system that could sift through litigation records, recruitment data and even online worker sentiment. The tool flagged one supplier three levels deep in the chain, revealing it had links to exploitative labour practices. The AI did not replace investigators, but it helped them decide where to look.

Although the technology is still not widespread, the firms that have adopted AI for supplier due diligence report encouraging results. Seven in ten of the executives we surveyed say it has been effective in supporting ethical sourcing efforts (see chart 4). In theory, the process is straightforward: collect as much data as possible—from audit reports and certifications to public records and online content—and use algorithms to detect patterns, anomalies or gaps. In most cases, as one technology executive overseeing supply chains says, this means “identify outliers and inconsistencies in sourcing data” and checking whether suppliers have all needed certifications.

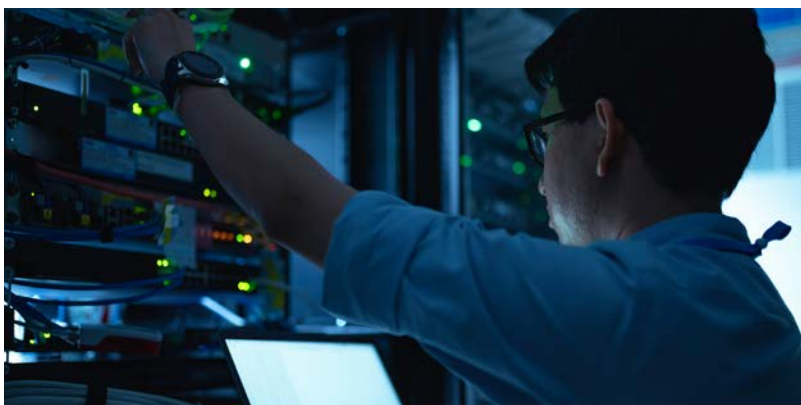
Chart 4: Algorithms and accountability

Effectiveness of AI for ensuring ethical sourcing



Source: Economist Impact survey

⁸ <https://www.supplychainbrain.com/articles/40024-watch-case-study-an-ngo-helps-multinationals-to-tackle-modern-day-slavery>



There are also much more advanced AI systems doing supplier due diligence. Unilever, for instance, uses an AI-enabled system that relies on satellite imagery, data from traffic patterns and radar-based forest alerts, to monitor sourcing of inputs, such as palm oil.^{9,10} The AI tracks potential deforestation risks across 24 million hectares and links them to more than 2,000 mills.¹¹ Unilever credits the initiative with helping it reach 97.5% deforestation-free sourcing across its chain. But such AI models depend on years of costly investment, deep partnerships and highly customised platforms—not something that most firms can easily replicate.

Indeed, for most firms, the reality of using AI for ethical sourcing is more constrained and still faces challenges. Many suppliers—particularly small ones—struggle to keep documentation up to date or fail to report data in usable formats. When this is the case, simpler (and

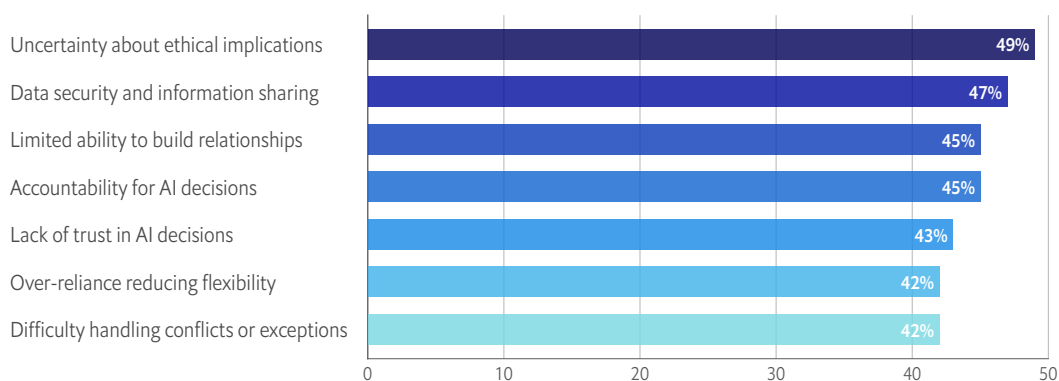
affordable) AI models, which can only process data that they are given, are not very effective. More advanced systems, which incorporate external data sources such as satellite imagery or enforcement records, such as those used by Unilever, may reveal additional signals.

AI use in ethical sourcing

Many firms will adopt AI for ethical sourcing based on the logic that any insights it brings will be better than none. But using AI in responsible sourcing is not without challenges. Nearly half of the firms we surveyed say they were concerned about the fairness and ethics of AI agents used by procurement or supply-chain partners (see chart 5). That is telling. AI tools are already influencing decisions about which suppliers are deemed trustworthy, which are escalated for review and, in some cases, which are excluded altogether. Because most of these AI systems operate using historic data, they risk hard coding past assessment inconsistencies or biases into current decisions. For example, a supplier flagged repeatedly in one jurisdiction may be prioritised for scrutiny—even if those flags were the result of inconsistent or overly stringent local enforcement of labour or environmental standards, rather than

Chart 5: Intelligent, but not infallible

What firms worry about when deploying or relying on AI systems (respondents could select all that apply)



Source: Economist Impact survey

⁹ <https://www.unilever.com/news/news-search/2022/how-were-using-tech-for-more-transparent-traceable-supply-chains/>

¹⁰ <https://www.unilever.com/sustainability/nature/deforestation-free-supply-chain/>

¹¹ <https://www.unilever.com/sustainability/nature/deforestation-free-supply-chain/>

genuine supplier misconduct. To mitigate this, some firms are adopting AI tools grounded in procurement-specific data and designed to reflect industry standards and regulatory expectations. These systems aim to produce more reliable and auditable outputs than generic models by drawing on historical sourcing data and organisational context.¹² One executive overseeing traceability at a global apparel brand puts it simply: without good data, “AI can misclassify or miss things—garbage in, garbage out still applies.” Algorithms trained on flawed inputs may end up amplifying the very inequalities that ESG policies are meant to correct. Improving the transparency of such systems, so that the logic behind decisions can be understood and interrogated, is key to mitigating this risk. Companies should seek models with explainability built in, enabling them to identify and correct faulty assumptions before they shape outcomes.

A similar number of executives worry about the opacity of AI systems (see chart 5). The more complex the model, the harder it becomes to explain why a supplier was flagged—or whether it should have been. Few firms have mechanisms in place to audit AI-generated supplier scores, or to give vendors an avenue to challenge how they are classified. As a result, even where the output is useful, the

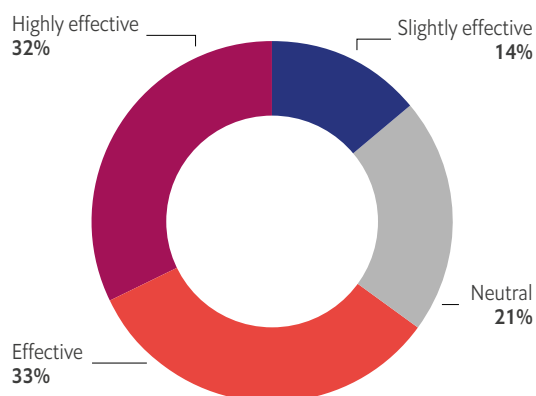
process behind it remains murky. That lack of transparency limits accountability and could undermine trust in AI-powered systems that deal with ethical questions.

But the challenge is not purely technical. Many procurement and compliance teams lack the training to interpret AI-generated insights or spot flaws in the data that feeds them. Some firms have launched ‘AI academies’ or reskilling programmes to fill the gap—but for most, such efforts remain the exception, not the rule (see more in Briefing Paper One).

AI for ESG reporting

These issues need to be considered also when it comes to ESG reporting. About two-thirds of firms using AI say it improves transparency (see chart 6). And for many, it does—AI can extract relevant clauses from contracts, compare supplier declarations across jurisdictions and, again, flag inconsistencies. For example, an AI system could spot mismatched governance claims from two factories within the same supply chain, prompting a targeted audit. Tools like this make ESG reporting more consistent and auditable.

Chart 6: A clear view, mostly
Effectiveness of AI in improving ESG transparency



Source: Economist Impact survey

About two-thirds of firms using AI say it improves transparency. And for many, it does—AI can extract relevant clauses from contracts, compare supplier declarations across jurisdictions and, again, flag inconsistencies.

¹² <https://www.sciencedirect.com/science/article/pii/S1478409224000025>

Reducing carbon footprints— and assessing and reporting the results

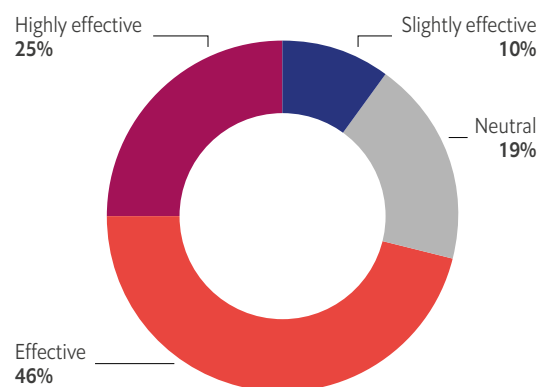
Amid tightening environmental regulations and net-zero pledges, companies are under pressure not just to cut emissions and be environmentally sustainable, but also to show their progress. As with other aspects of the firm's ESG efforts, AI is being brought in to help. The tools now available range from machine-learning models that optimise logistics and production, to satellite-enabled systems that track land use in real time. Since sustainability cuts across multiple parts of the supply chain—from transport and logistics to inventory and warehousing—managing these functions more efficiently can yield emissions gains as well as operational ones. But the aim is not only to reduce carbon footprints, it is also to improve the credibility of sustainability disclosures.

For some firms, AI is already doing both—helping cut emissions and ensuring those reductions can be validated—with a high degree of effectiveness (see chart 7). H&M, for example, uses AI for demand sensing, which enables better forecasting and resource allocation—limiting overproduction and emissions. In supply-chain planning, generative models are used to simulate emissions outcomes across different sourcing, routing and packaging scenarios. Yet implementation remains uneven. As one supply-chain executive at a global consumer-goods company notes, “green logistics experiments

show it's already a big step to even measure CO₂ emissions properly.” Without robust measurement, optimisation remains guesswork.

AI is also helping companies detect emissions-linked risks buried deep in the chain. Unilever, for instance, works with Google Earth Engine to analyse satellite imagery and trace land-use change, particularly in its palm oil supply. Others are seeking to go further by integrating AI across emissions sources. One executive at a multinational in the health and hygiene sector

Chart 7: From data to decarbonisation, gradually
How firms rate the use of AI to reduce carbon emissions



Source: Economist Impact survey

argues that “more integrated solutions, with AI linking real emissions to aggregate measures, would be a big step in the right direction.” Such models could help firms move beyond proxies and estimates, creating a clearer line between operational activity and disclosed impact.

Scope 3 emissions

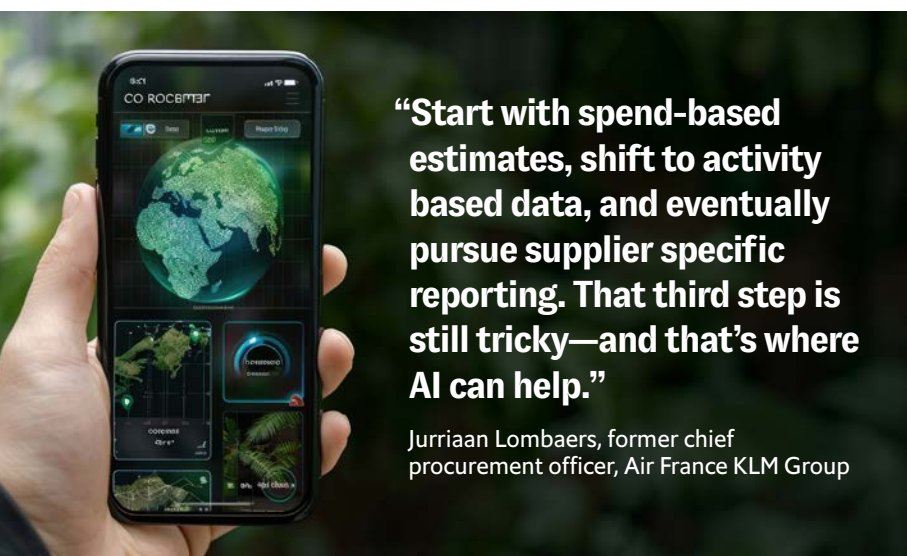
One particularly difficult area for obtaining quality data is Scope 3 emissions. These make up the majority of most firms’ carbon footprint, above 70% according to some estimations, but remain the hardest to quantify.¹³ Most companies still rely on generic emissions factors or inconsistent self-reporting. A few are experimenting with more dynamic approaches. Microsoft, for example, uses AI models to estimate Scope 3 emissions based on procurement spend and product-level benchmarks, adjusting the data as suppliers improve their disclosures.¹⁴ Meanwhile, Climate TRACE, a global initiative that combines satellite imagery and AI to estimate emissions from industrial sites and shipping, is increasingly being used as a validation tool.¹⁵ Yet such tools remain the exception.

“People are still scratching their heads when it comes to Scope 3,” says Jurriaan Lombaers, former chief procurement officer at Air France-KLM. He advocates a phased approach: start with spend-based estimates, shift to activity-based data, and eventually pursue supplier-specific reporting. “That third step is still tricky—and that’s where AI can help.”

But even when visibility improves, the results can be disquieting. “The bad news is that we now know what’s in our supply chains—and it turns out we’re not as sustainable as we claimed,” admits Mr Eshkenazi, chief executive of the Association for Supply Chain Management. He also notes the limitations of technology in the lower tiers of the chain. “We’re creating more risk by pushing digital solutions onto suppliers who simply don’t have the infrastructure or protocols to comply.” As a result, prime contractors can find themselves extending technical support—or even funding—just to help smaller partners meet new demands. Technology intended to improve supply-chain integrity can, in some cases, create fresh risks.

The absence of clear standards compounds the problem. “Hundreds of companies are asking for a commonly adoptable way to do this,” says Douglas Kent of the Association for Supply Chain Management. “But there’s no magic bullet.” Without consistent methodologies, firms are left guessing—unsure whether AI-generated estimates will satisfy regulators or meet investor expectations.

What AI can offer, for now, is speed, scale and approximation. It can surface risks, simulate scenarios and fill in data gaps where inputs are incomplete. But until the broader ecosystem—of suppliers, standards and regulation—catches up, Scope 3 will remain AI’s most difficult frontier.



“Start with spend-based estimates, shift to activity based data, and eventually pursue supplier specific reporting. That third step is still tricky—and that’s where AI can help.”

Jurriaan Lombaers, former chief procurement officer, Air France KLM Group

¹³ <https://ghgprotocol.org/sites/default/files/Trends%20Show%20Companies%20Are%20Ready%20for%20Scope%203%20Reporting%20with%20U.S.%20Climate%20Disclosure%20Rule.pdf>

¹⁴ https://download.microsoft.com/download/7/2/8/72830831-5d64-4f5c-9f51-e6e38ab1dd55/Microsoft_Scope_3_Emissions.pdf

¹⁵ <https://climatetrace.org/>

AI Agents

“Talent is not keeping pace with technology.”

Abe Eshkenazi of the Association for Supply Chain Management

So far, most AI applications for carbon reduction have been analytical—modelling emissions and simulating outcomes. But a newer wave involves AI agents: autonomous systems that act on these insights without human prompting. They can shift orders to lower-carbon suppliers, reschedule deliveries or adjust warehouse operations to cut energy use. For firms already deploying AI in sustainability efforts, agents offer more than forecasts—they enable faster, decentralised decision-making and improve data-sharing across partners, both essential for traceability and emissions management (see Briefing Paper One).

Yet around half of executives express concern about the ethics of agent-led decisions by suppliers—particularly around fairness and bias in sustainability judgements. Others worry about

data security or the loss of personal supplier relationships. Matteo Perondi, chief procurement officer at Bulgari, offers a basic example: using agents to check supplier documents against ESG codes of conduct. The operational gains are clear, he says, but the added value depends on whether the agent can understand what truly matters. “Of course there’s a benefit—no one has to do it manually. But can the AI tell what’s actually important?”

Trust and talent remain the biggest barriers. “Talent is not keeping pace with technology,” warns Abe Eshkenazi of the Association for Supply Chain Management. Douglas Kent, also of ASCM, adds that while firms rush to invest in systems, they are underinvesting in the skills needed to use them effectively—a gap that could erode long-term returns (see Briefing Paper One). The technology’s promise lies in speed, consistency and scale—but only if paired with human oversight and incremental adoption.

The AI sustainability paradox

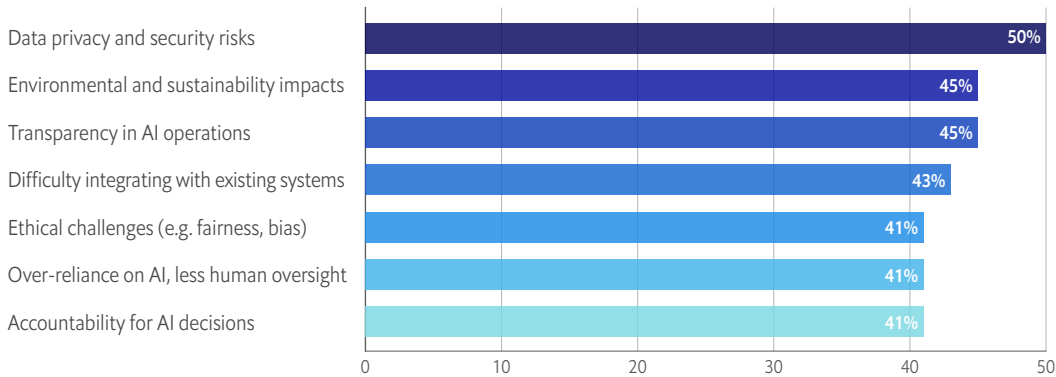
AI is becoming central to corporate sustainability strategies. Yet its own environmental costs remain under-examined. Nearly half of the executives we surveyed say they are concerned about the environmental impact of AI itself (see chart 8). That concern is warranted: training and running large models consumes significant electricity and water, particularly in data centres built to support AI workloads. Despite this, firms continue to deploy the technology to improve sustainability performance—optimising logistics,

reducing energy use and identifying emissions hotspots. The result is a growing paradox: AI may both reduce and contribute to emissions, depending on how it is used.

The energy demands are substantial. A typical AI-oriented data centre consumes as much electricity as 100,000 households. The largest facilities under construction today are projected to use up to 20 times more.¹⁶ In addition to training, running the model also draws heavily

Chart 8: Not-so-artificial concerns

Concerns cited by firms over AI adoption in procurement and supply-chain operations (respondents could select all that apply)



Source: Economist Impact survey

¹⁶ <https://www.iea.org/reports/energy-and-ai>

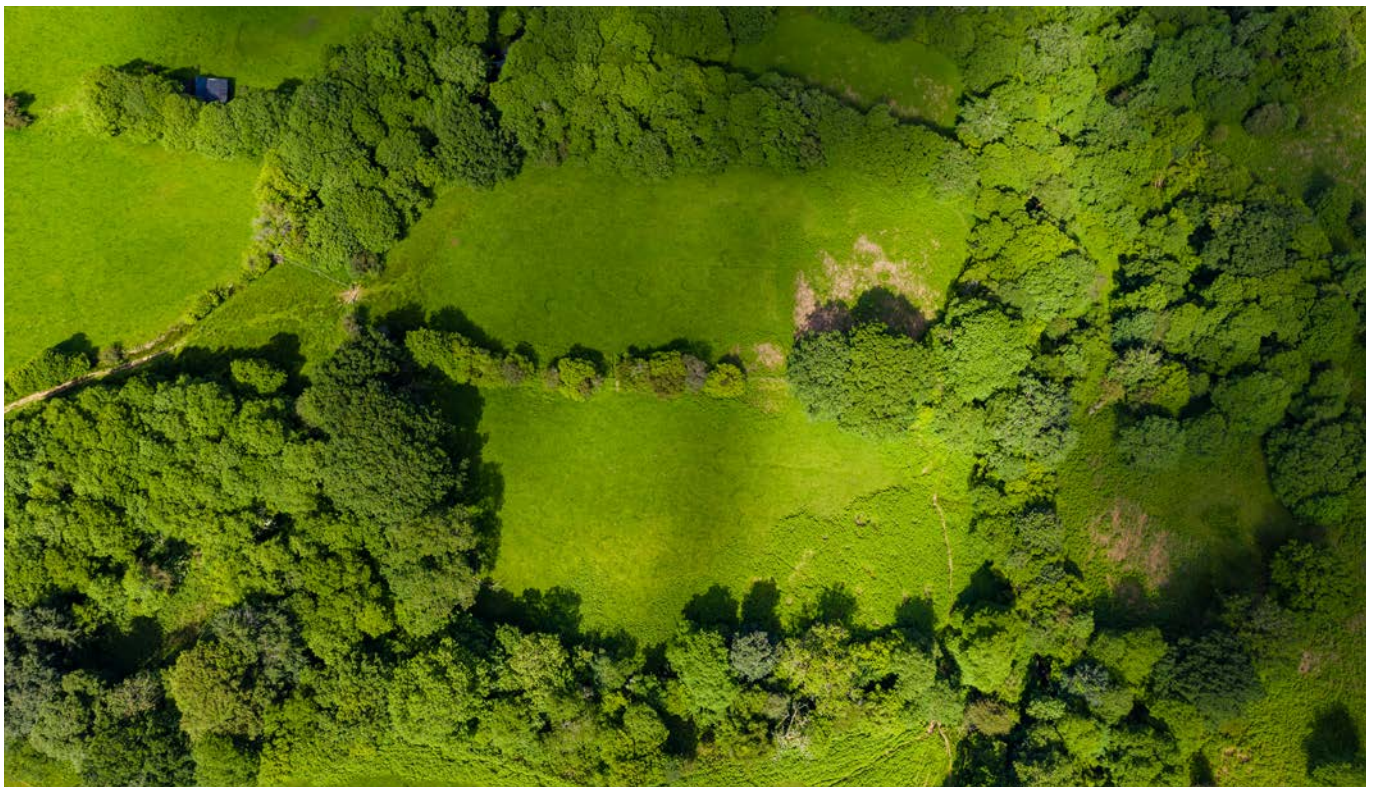
on power and cooling resources. Global electricity use by data centres could more than double by 2030—surpassing Japan’s current national electricity demand—with AI driving most of the increase.

Still, the technology is helping some firms achieve measurable gains. Steelmakers using AI to optimise inputs have cut emissions by 3.3% without new equipment.¹⁷ Mining companies are applying AI to shift energy-intensive tasks to times of high solar output, reducing capacity needs by 9%. Logistics firms are using predictive systems to shorten routes and lower fuel use. These applications show that when embedded effectively, AI can support climate targets.

As AI becomes more embedded in operations, firms will need a clearer understanding of

where energy is consumed—and where it is saved. That visibility can help both providers and users make better deployment choices and prioritise improvements in efficiency. Without it, there is a risk that the climate benefits of AI are overstated.

Responsibility varies by scale and use. A retailer relying on off-the-shelf AI to scan contracts will have a different impact—and obligation—from a firm running bespoke foundation models in energy-intensive cloud environments. In view of this, companies may need to treat AI’s emissions like any other digital infrastructure risk: small in isolation, but non-trivial in aggregate. Doing so will require more transparency from providers and greater scrutiny from buyers. Without both, the environmental impact of AI will remain unaccounted for.



¹⁷ <https://www.economist.com/science-and-technology/2025/04/10/ai-models-are-helping-dirty-industries-go-green>

What's needed

Progress will depend on standards. The EU is experimenting with digital product passports to trace environmental impacts across lifecycles. Initiatives such as Science Based Targets are reviewing how firms should report Scope 3.¹⁸ But until those efforts translate into widely accepted norms, most companies will remain stuck in a grey zone—where AI can offer insight, but not full accountability.

Even so, the technology is already proving its worth in targeted areas of supply-chain sustainability, emissions management and

regulatory compliance. These include due diligence in ethical sourcing, emissions optimisation, ESG reporting and automated compliance tasks. AI helps firms surface anomalies in supplier records, track deforestation risks through satellite imagery, and automate document checks. It can optimise sourcing routes, simulate emissions outcomes, and extract inconsistencies from ESG declarations. In regulated environments, it is supporting audit readiness and improving firms' ability to meet disclosure demands.

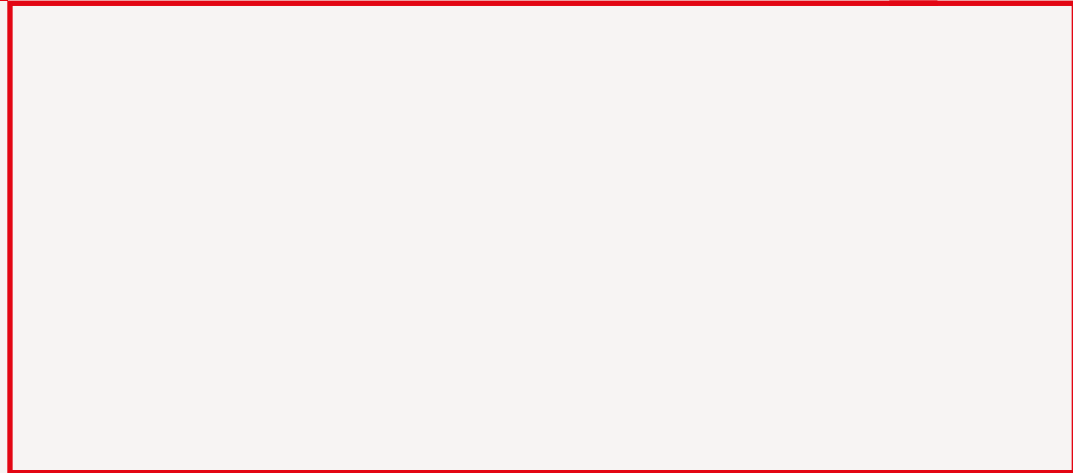
But businesses need to factor in the areas where human oversight remains essential. Tracking Scope 3 emissions is still hampered by inconsistent disclosures. Biases in historical records can skew supplier assessments. Smaller firms often lack the digital infrastructure to support AI tools, and some models still produce opaque outputs. As AI agents take on more autonomous roles, explainability and accountability become more urgent.

AI will play a growing role in supply-chain sustainability, but only if firms match technological ambition with operational discipline. That means not just piloting tools, but investing in the standards, data and oversight that make their outputs credible.



¹⁸ <https://www.wri.org/initiatives/science-based-targets>

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