



ERM
SUSTAINABILITY
INSTITUTE

2025 ANNUAL TRENDS REPORT

The Path Forward for Sustainable Business

January 2025



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Executive Summary

Twenty-twenty-five promises to be a challenging year. Although many companies and investors still firmly believe sustainability is a key commercial driver, they face an increasingly complex environment, from trade disputes that may transform supply chains to policy uncertainties that increase unpredictability. Despite challenges, we believe most companies and investors will stay the course on sustainability in the year ahead.

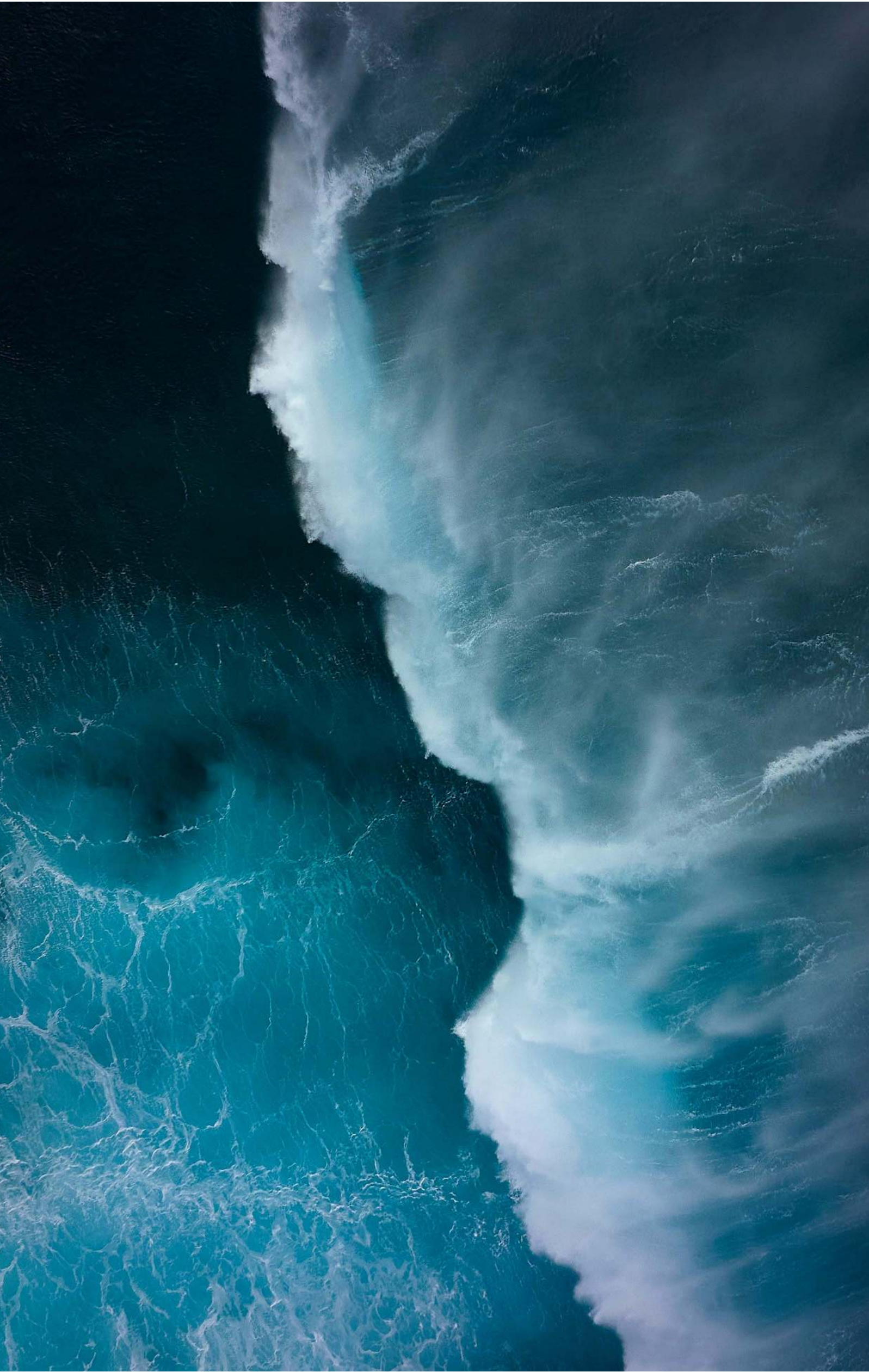
Geopolitical disruptions, a volatile policy environment, increasing climate change impacts, and trade disputes are some of the key challenges that global companies will navigate in the year ahead. Businesses will also grapple with needing to adjust to rapidly changing compliance and disclosure expectations.

President Donald Trump’s second term is likely to reshape many environmental regulations, and companies will follow closely the evolving developments in Europe, as the European Union comes under increasing pressure to lift the regulatory burden on companies to increase competitiveness.

Despite a complex operating environment, companies will continue investing in the energy transition and sustainability, from decarbonization of supply chains and sustainable product development to community engagement, because they know it builds resilience.

After years of setting goals, running projects, and preparing disclosures, many companies now see sustainability as an integral part of doing business.

Companies are also ready to embed sustainability deeper into operations. The rapid emergence of AI will help here, as companies turn to the technology to supercharge their sustainability initiatives.





As part of this new phase, companies have started to assess sustainability risks, dependencies, and opportunities in a more structured way through transition planning, particularly for climate, nature, and human rights. This helps them prioritize actions with the highest potential to create value and minimize risks. Companies understand that they are pursuing these actions because it makes business sense, not just sustainability sense.

Companies will think carefully about how to effectively communicate, but for many, their sustainability work will continue at a steady pace. The 2025 Annual Trends Report covers key accelerators and corporate responses across ten trends. Based on extensive research and interviews with subject matter experts, we point out and interconnect the critical developments for each trend and recommend high-level actions for companies to consider in response.

TREND 1

Responding to climate change:
Working to stay on track for 1.5°C



Emissions records continue to be set, bringing new urgency for action as countries revise their climate pledges in preparation for COP30. Still, surging renewable energy investment and corporate climate transition planning are poised to accelerate decarbonization.

Key accelerators

- Emission records put global warming on a 3.1°C trajectory
- However, renewable energy investments are surging
- COP29 clinched deal on transition finance
- Still, many country climate pledges fall short of net zero
- Carbon markets have work to do

The corporate response

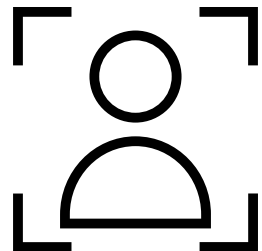
- Companies embrace climate transition plans to implement decarbonization
- Avoided emissions are entering the corporate GHG accounting lexicon
- Surging power demand takes aim at climate targets

Action recommendations

- Use double materiality and scenario analysis to map high-risk and high-opportunity energy transition areas.
- Develop and embed a forward-looking and financially quantified transition plan to allocate capital for decarbonization.
- Explore including avoided emissions in your organization’s carbon accounting.
- Double down on energy efficiency innovations to offset the rising power demands of emerging technologies.

TREND 2

Valuing human capital:
Diversity initiatives in the spotlight



In 2025, human capital management will remain influential at companies, many of whom will tie executive compensation to human capital metrics. However, public mentions may decrease.

Key accelerators

- Diversity initiatives continue to face headwinds, particularly in the U.S.
- After steady gains, women workplace advancement is slowing
- Employee loneliness and motivation issues cause concern
- Companies that manage human capital issues well are likely to see benefits
- Organized labor continues to make its presence felt globally

The corporate response

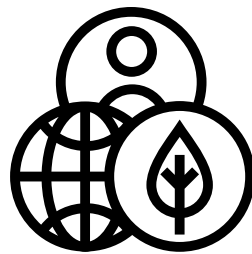
- Companies increasingly tie compensation to human capital metrics
- As societal polarization reaches the work floor, companies change workplace approaches

Action recommendations

- Link executive compensation to human capital metrics connected to broader business objectives.
- Maintain a culture of open dialogue by providing training and emphasizing norms for respectful discussions.

TREND 3

Integrating ESG:
Sustainability progress continues



Despite an ESG backlash in parts of the world, companies and investors will continue to pursue sustainability action in 2025. Increasingly inquisitive consumers and regulators will make false green claims a business risk.

Key accelerators

- ESG backlash in the U.S. continues
- ESG evolves in Europe and Asia as economic landscape shifts
- Global greenwashing enforcement accelerates
- Consumers want sustainable products but are sometimes skeptical of green claims

The corporate response

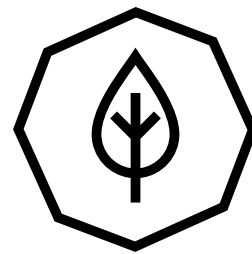
- Companies continue to speak less explicitly on ESG
- Companies review targets and focus on operationalizing sustainability
- Successful mergers and acquisitions increasingly depend on ESG performance

Action recommendations

- Focus on accuracy when assessing and disclosing sustainability impacts.
- Ensure sustainability technology investments align with standards and applicable regulations.
- Leverage sustainability data systems to identify cost-effective clean technology investments.

TREND 4

Safeguarding natural systems:
Action begins to multiply



Corporate efforts on nature, biodiversity, and preventing deforestation are beginning to multiply. As regulatory pressure rises and natural disasters highlight corporate dependency on nature, even more companies are likely to act.

Key accelerators

- Global deforestation continues, while wildlife populations struggle
- Emerging nature-related policies and regulations face uncertainty
- Progress made on Indigenous rights at COP16 even as conservation funding deal slows momentum
- Nature-related disclosure and action requirements for corporates are growing

The corporate response

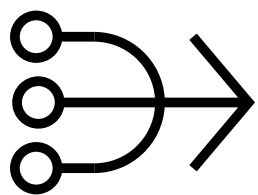
- Companies expand nature-related disclosures, but concrete actions must improve
- Corporate no-deforestation policies and efforts have room to expand
- Community engagement increasingly embedded in corporate nature strategies

Action recommendations

- Use the Task Force on Nature-related Financial Disclosures (TNFD) as a guide to report on biodiversity, water, and forest-related performance.
- Enhance transparency on exposure to deforestation-related risks and be more proactive in combating these risks.
- Establish relationships with Indigenous Peoples and local communities through formally recognized and legally binding arrangements.

TREND 5

Streamlining sustainability disclosure:
Standards continue to expand and converge



The global march towards mandatory sustainability disclosures continues. Twenty-twenty-five will see further convergence in standards underpinning disclosure regulations and a stronger focus on sectors and topics.

Key accelerators

- Mandatory sustainability disclosure requirements advance worldwide
- Convergence of frameworks simplifies corporate disclosure
- Disclosure requirements are increasingly sector- and topic-specific
- Regulations drive the need for more and higher-quality data

The corporate response

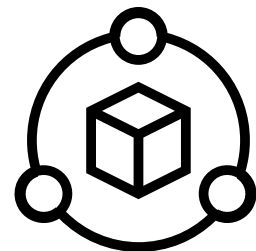
- Companies increasingly invest in software to enhance data quality and collection
- Companies respond to investors seeking sustainability disclosures
- Despite progress, companies need to be better prepared for sustainability audits

Action recommendations

- Transition sustainability data management from manual tools to dedicated ESG data platforms.
- Expand the quality and quantity of assured sustainability data and benchmark sustainability disclosures against industry leaders.
- Engage stakeholders to understand and ensure alignment with their sustainability disclosure priorities.

TREND 6

Building sustainable and resilient supply chains:
Dual pressures reshuffling supply chains



Growing trade tensions and increased regulatory focus on Scope 3 emissions will see companies reshuffle their supply chains to regions with low geopolitical risk and robust low-carbon and sustainability credentials. Companies will increasingly join forces to do so.

Key accelerators

- Countries prepare for the likelihood of protracted trade disputes
- Increasing tensions trigger a reshuffle of global supply chains
- Countries look to secure access to critical minerals
- Expanded carbon pricing accelerates supply chain decarbonization
- Regulation, extreme weather, and labor disputes impact supply chains

The corporate response

- Companies adapt supply chains as trade tensions rise
- Companies increasingly join forces to decarbonize supply chains
- Digital product passports help companies boost supply chain transparency

Action recommendations

- Track trade developments that could materially affect your organization and consider when risks warrant consideration of shifting to new geographies.
- Enhance efforts to disclose and reduce Scope 3 emissions by working with suppliers and joining forces with peers.
- Pilot digital product passports (DPPs) in line with emerging regulations.

TREND 7

Enabling sustainable production and consumption:
Consumers drive action



In 2025, consumers, investors, and regulators are likely to pressure companies to lower their plastic and chemical pollution. Companies will step up sustainable product and process innovation and waste reduction initiatives. Sustainability-conscious consumers will continue to favor sustainable products.

Key accelerators

- Governments aim to curb plastic waste through local mandates and taxation
- Consumer appetite for sustainable products continues amid inflationary concerns
- Waste keeps growing while recycling rates remain low

The corporate response

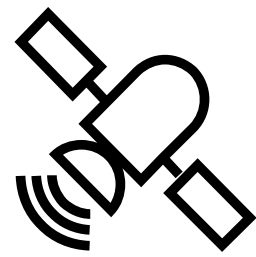
- Industrial firms increase green production
- Corporate action to reduce, reuse, and recycle material is still evolving
- Sustainable packaging innovations flourish despite companies changing goals

Action recommendations

- Dedicate time and resources to accelerate the adoption of low-carbon technologies in your production processes.
- Strengthen product sustainability and disclosures on operational environmental impact.
- Consider sharing your organization’s innovative product and process sustainability practices with other companies to facilitate faster uptake.

TREND 8

Applying technology to sustainability:
Exploring new frontiers



In 2025, companies will continue to explore how to leverage new technologies, such as artificial intelligence (AI), augmented reality (AR), virtual reality (VR), and digital twins, to boost sustainability performance.

Key accelerators

- AI’s energy appetite may be met by a mix of low- and high-carbon power sources
- AI’s ethical challenges trigger a range of governance proposals
- Improved artificial and virtual reality push operations into the digital realm

The corporate response

- Companies roll out AI applications and AI risk guidance
- AI continues to drive sustainability benefits
- AR and VR technologies improve worker training and customer interactions

Action recommendations

- Develop and implement a responsible AI strategy that helps ensure the ethical use of AI.
- Identify areas where AI can drive sustainability performance improvements and innovation, while weighing how to best manage its high energy demands.
- Assess the applicability of digital twins to improve sustainability performance.

TREND 9

Respecting fundamental rights:
Seizing the spotlight



Regulatory and legal efforts to protect fundamental rights and enforce ethical business conduct are likely to grow in 2025. Meanwhile, global clean energy shifts highlight human rights issues, further emphasizing the need for a just transition.

Key accelerators

- Fundamental rights regulation intensifies
- Fundamental rights disputes are increasingly settled in court
- Human rights issues are scrutinized as the energy transition gains steam

The corporate response

- Growing Indigenous equity initiatives give voice to communities
- Private sector record on human rights varies

Action recommendations

- Proactively engage Indigenous communities affected by your organization’s activities. Give them real influence and ensure benefit sharing.
- Conduct comprehensive human rights due diligence to identify potential energy transition-related risks.
- Establish human rights grievance mechanisms tailored to the circumstances of your operations and supply chains.
- Review potential human rights issues in your supply chains.

TREND 10

Navigating the evolving political landscape:
Improvisation skills required



Twenty-twenty-four was a politically unpredictable and action-packed year. In 2025, companies will closely follow political shifts on sustainability and trade policies, as regional outcomes become better understood.

Key accelerators

- The 2024 election wave is transforming the global sustainability landscape
- U.S. Administration likely to reshape environmental and sustainability policies
- Courts are increasingly shaping sustainability action
- A surge in global trade disputes interferes with business operations

The corporate response

- U.S. companies rethink their communications
- Political changes impacting decarbonization
- Companies increasingly try to shape government sustainability policies

Action recommendations

- Regularly assess the impacts of climate-related policy and regulatory changes on your company’s decarbonization efforts.
- Evaluate, invest, and participate in a broad range of climate action opportunities.
- Establish a responsible policy engagement strategy to positively shape future sustainability-related policy.

TREND 1

Responding to climate change

Key accelerators

Despite rising emissions threatening climate goals, there is hope that surging renewable energy investments will help put the world back on track. Amidst mixed country-level climate action, international negotiators at COP29 clinched a deal to triple climate finance to developing countries by 2035 and establish a global carbon market under UN auspices.

Emission records put global warming on a 3.1°C trajectory

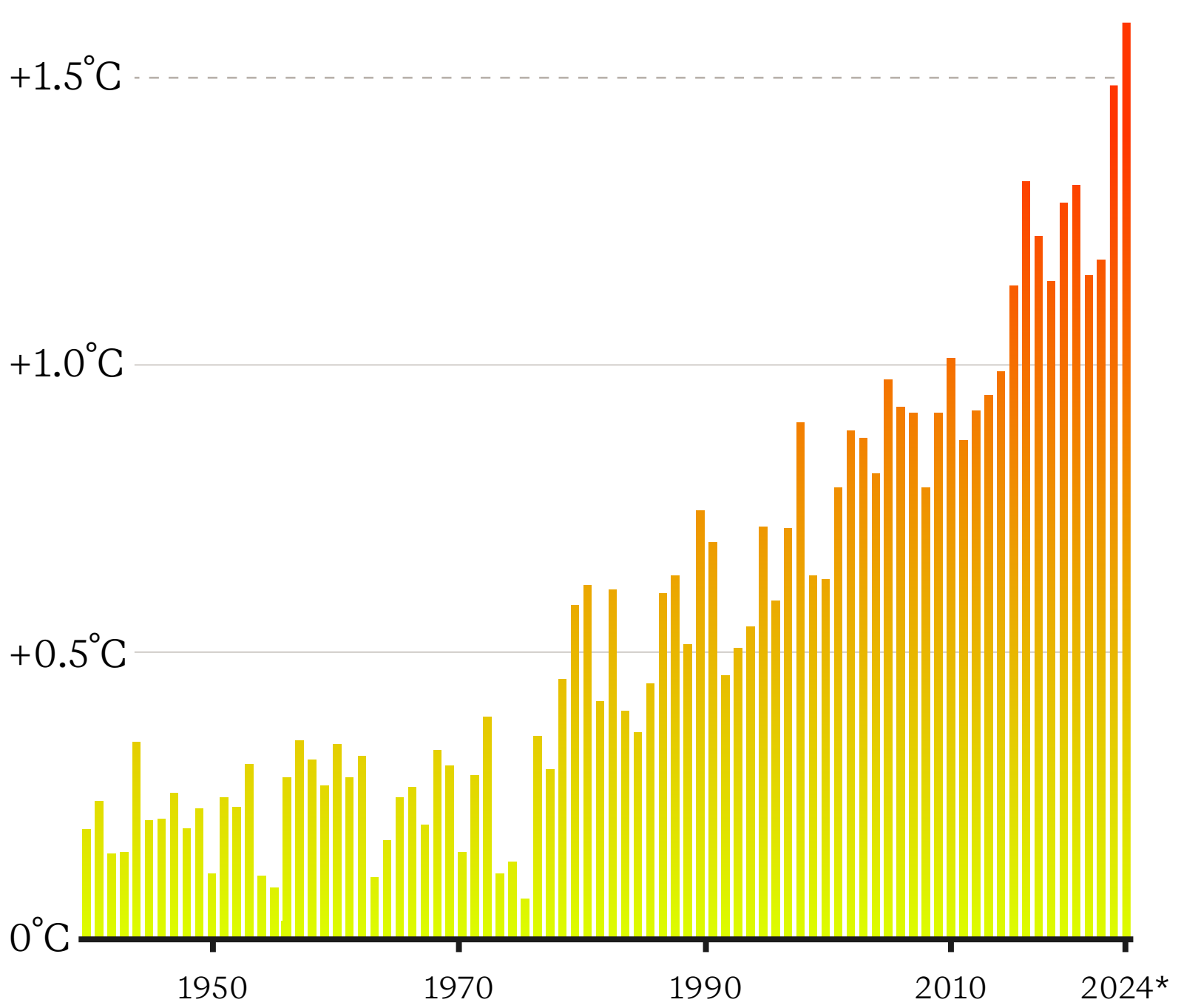
Greenhouse gas (GHG) emissions continue to rise globally. In October 2024, the World Metrological Organization announced that globally averaged surface concentration of CO₂, methane, and nitrous oxide rose to new records in 2023.¹ Meanwhile, the UN Environment Programme’s latest Emissions Gap Report, which found that while it is still possible to limit global warming to 1.5°C, countries’ current policies are projected to result in 3.1°C of warming.² The report also said that if the world is to preserve the 1.5°C goal, countries must cut GHG emissions by 42 percent and 57 percent from 2019 levels by 2030 and 2035, respectively.

With emissions rising, climate change continues to accelerate

As emissions continue to rise, climate change is accelerating (see Figure 1). According to the European Union’s (EU) Copernicus Climate Change Service, 2024 was the warmest year ever and the first year where global temperatures breached 1.5°C over a calendar-year period.³ As a result, the world’s oceans, which absorb much of the Earth’s excessive heat, are warming at record levels. In each of the first six months of 2024, daily sea surface temperatures set record highs before falling below record levels in July.⁴ Such records will have real-world impact. The Planetary Health Check’s 2024 report found that climate change has already breached the boundary at which dangerous environmental changes will occur.⁵

From an economic perspective, the world may experience a global income reduction of 19 percent up to 2050 (equal to \$38 trillion in damages per year) because of climate change, according to the Potsdam Institute.⁶

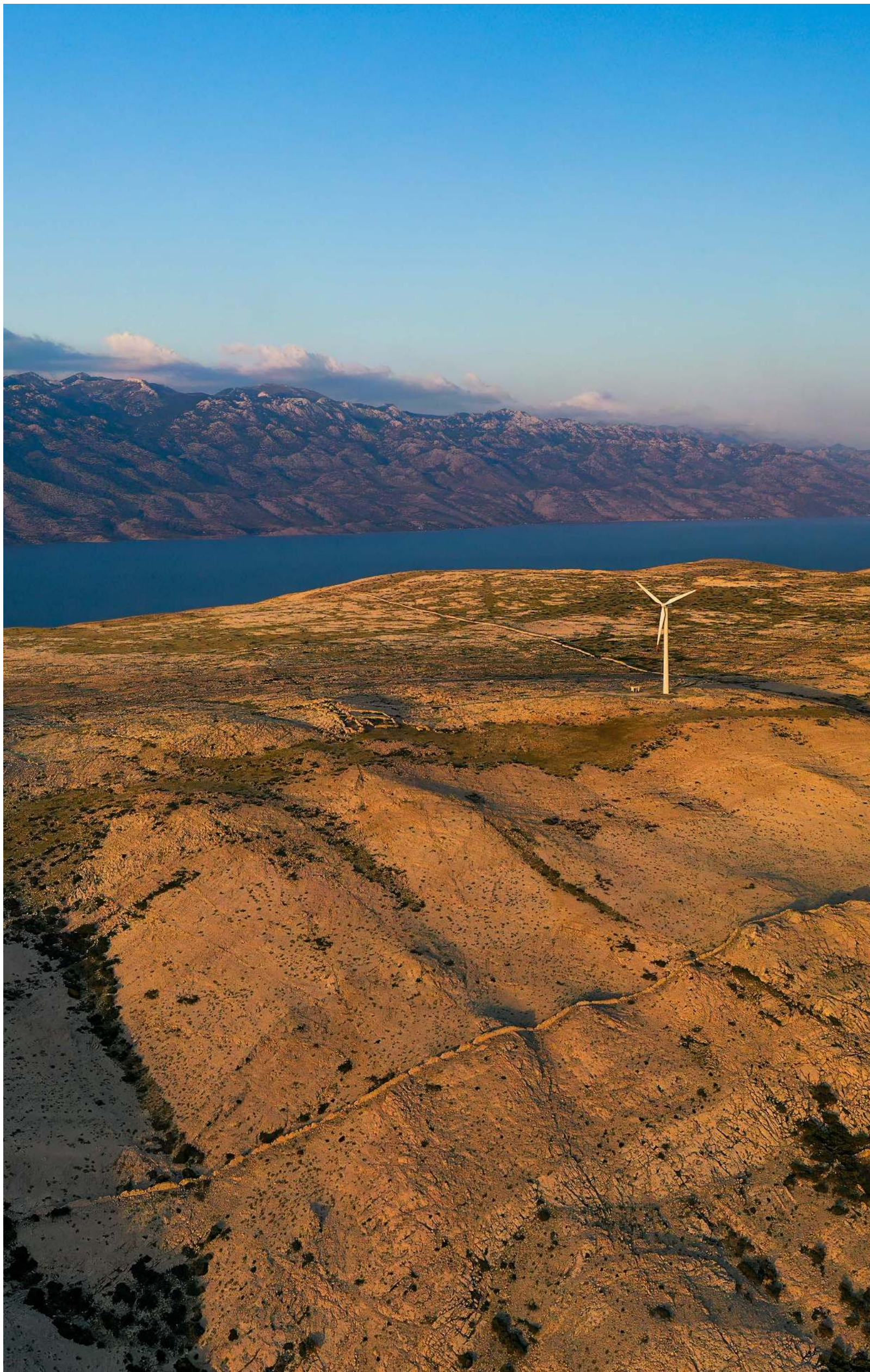
Figure 1: Annual global temperature anomalies relative to pre-industrial averages



*Provisional estimate for 2024 based on 10 months (January to October)

Annual global temperature anomalies between 1940 and 2024 compared to pre-industrial averages.

Source: [Copernicus Climate Change Service](#)



However, renewable energy investments are surging

Despite rising emissions, there are signs of strengthening climate action. In 2023, global renewable energy capacity additions grew by a record 50 percent year-on-year to more than 500 gigawatts (GW), according to the International Energy Agency.⁷ Capacity is projected to only continue to grow, with the International Energy Agency (IEA) forecasting that global capacity will be 2.7 times higher than 2022 levels in 2030, exceeding country pledges by close to 25 percent.⁸ Surging clean energy investments are making this growth possible. BloombergNEF found that energy transition investments grew 17 percent in 2023 to a staggering \$1.77 trillion.⁹ Future projections suggest such growth will continue, with the IEA estimating that total clean energy investment in 2024 will reach \$2 trillion, surpassing fossil fuel investment for the second year in a row.¹⁰

COP29 clinched deal on transition finance

Even before it started, COP29 was a subject of controversy. Given the UN climate conference was again held in a large oil and gas producing country, COP29's stature was diminished in global climate circles, with Climate Week NYC gaining in prominence and leading executives and organizations skipping Baku.^{11, 12} Disagreements led some to call for future COP reform like changing how COP host nations are selected.¹³

After two weeks, it seemed that the climate negotiations in Baku would end the same way as COP15 in Copenhagen, where negotiations collapsed.

However, at the final moment, parties agreed to triple climate finance to developing countries from \$100 billion to \$300 billion annually by 2035.¹⁴ The other notable achievement to come out of COP29 was the finalization of standards (Article 6.4 of the Paris Agreement) for a central carbon market under the UN. Now eyes turn to 2025's COP30 in Brazil where countries will submit updated nationally determined contributions (i.e., national emissions reduction targets) aligned with limiting global warming to 1.5°C in advance of the conference.

Still, many country climate pledges fall short of net zero

Outside the multilateral space, climate action progress at the country level was mixed. On one hand, Brazil set a more aggressive climate goal targeting emissions reductions of up to 67 percent by 2035, and the EU adopted regulations on fluorinated gases and ozone-depleting substances that are expected to reduce the bloc's emissions by 500 million metric tons of CO₂-equivalent by 2050.^{15, 16} On the other hand, some countries faced judicial decisions that found they were not doing enough to reduce emissions. These included the UK, where the High Court decided the previous Conservative government's plan to achieve net zero by 2050 did not provide sufficient explanation on risks associated with relying on future technology development, while the Constitutional Court in South Korea ruled that country's Carbon Neutral Act did not sufficiently protect citizen rights.^{17, 18}

Carbon markets have work to do

After facing significant controversy in recent years, the voluntary carbon market (VCM) contracted for the second year in a row in 2023, with transaction volume and value decreasing by 56 percent and 61 percent from 2022, respectively.¹⁹ The VCM stabilized but did not grow in 2024 with a market size of \$1.4 billion, the same as 2023.²⁰

This performance was attributed by some market participants to the increasing scrutiny facing the VCM such as a Science Based Targets initiative review of third-party studies that found that some types of carbon credits do not deliver “intended mitigation outcomes.”²¹ Various efforts were made to bolster VCM integrity. These include guidelines from the International Emissions Trading Association outlining how companies should use carbon credits to support Paris-aligned climate goals and the approval of the first Core Carbon Principles-labeled carbon credits by the Integrity Council for the Voluntary Carbon Market, which launched the principles to identify carbon credits that deliver verifiable climate impact.^{22, 23}



The corporate response

As companies gear up to meet decarbonization targets, climate transition plans and emissions accounting are poised to play key roles in corporate climate strategies. Simultaneously, growing power demand means companies must innovate.

Companies embrace climate transition plans to implement decarbonization targets

Of the world’s 2,000 largest publicly traded companies by revenue, 1,176 are known to have net zero goals. With ambitions defined, companies are now shifting to the actions needed to achieve them.²⁴ Many are turning to climate transition plans (CTP). CTPs outline a company’s decarbonization strategy, climate governance, and approach to climate policy advocacy.²⁵ They differ from climate-related disclosures in that they are forward-looking rather than backward-looking. They are also focused on financially quantifying climate-related risks and opportunities. A June 2024 study found that more than 25 percent of the companies disclosing information with CDP in 2023 published 1.5°C-aligned CTPs, a 44 percent increase over 2022.²⁶ A further 36 percent of companies disclosed that they intend to develop a CTP in two years.

Help is on the way for companies who have not developed CTPs yet. In June 2024, the International Sustainability Standards Board (ISSB) announced that it would work to streamline the numerous frameworks and standards for CTPs by integrating materials developed by the Transition Plan Taskforce into its Sustainability Knowledge Hub and develop supporting educational materials.²⁷ Others are preparing to grade CTPs. Early in 2024, Moody’s launched its Net Zero Assessment, which scores corporate decarbonization pathways and their associated governance mechanisms for investors.²⁸

Avoided emissions are entering the corporate GHG accounting lexicon

In the time since the GHG Protocol launched, companies have become intimately familiar with Scope 1, Scope 2, and Scope 3 GHG emissions accounting. While these scopes outline a company’s direct and indirect emissions, they do not capture the emissions a company avoids via more efficient processes, so-called avoided emissions. Recognizing this shortcoming, the World Resources Institute first highlighted the need to develop a standard accounting process for these emissions back in 2013.²⁹ Progress has been slow in the decade since, partially due to the complexity of calculating them, however, momentum is starting to build.

U.S. power company PG&E became one of the first companies to specifically reference avoided emissions when it announced goals “to enable customer emissions reductions” in its 2022 Climate Strategy Report.³⁰ It then outlined progress against these goals in its 2024 Corporate Sustainability Report.³¹ PG&E is not alone. In February 2024, French environmental management firm Veolia launched goals to avoid 18 million tons of CO₂ emissions by 2027.³² Others outside the U.S. and Europe are reporting on avoided emissions. Indian renewable energy firm ReNew Energy disclosed its FY2023-24 avoided emissions alongside Scope 1, Scope 2, and Scope 3 emissions in its Annual Integrated Report.³³ While momentum builds, there are some who see avoided emissions as an unnecessary distraction from Scope 3 emissions accounting that are difficult to accurately calculate without making broad assumptions.³⁴

Surging power demand takes aim at climate targets

Worldwide electricity demands are growing, often spurred on by emerging technologies like Artificial Intelligence (AI) and cryptocurrency mining as well as the increasing electrification of energy systems (e.g., for electric vehicle charging and building heating). According to the IEA, electricity demand from data centers, AI, and the cryptocurrency sector may double by 2026, while electricity as a share of final energy consumption grew to 20 percent in 2023 and will likely rise to close to 30 percent by 2030.³⁵

In the U.S. alone, utilities expect 128 GW in new energy demand by 2029 as data center loads grow.³⁶ Some utilities are extending the closure dates of fossil fuel plants in light of demand growth. Duke Energy announced in October 2024 that it would operate an Indiana coal plant until 2038, three years beyond its previous 2035 goal to close all coal facilities.³⁷

A delayed energy transition could put corporate decarbonization goals at risk. Microsoft’s 2024 Environmental Sustainability Report noted that its GHG emissions increased by 29.1 percent as a result of its investments in energy intensive AI and supporting data centers.³⁸ Microsoft is not sitting idly.

In September 2024, it established a supplier decarbonization team to help reduce the Scope 3 emissions generated by its AI and cloud computing activities.³⁹ With rising emissions, many tech companies are turning to nuclear power, spurring a renaissance in a technology that was falling out of favor.

Microsoft itself announced in September 2024 that it was working with Constellation Energy to reopen Three Mile Island to power its data centers.⁴⁰ At a smaller scale, Amazon and Google are investing in the development of small modular reactors with the hopes that they can provide ever more power for their data center activities.^{41, 42}



Action recommendations

Companies keen to respond to the climate change trends outlined above should consider the following actions:

- Evaluate which elements of your business are most at risk and most likely to benefit from the energy transition, using double materiality and scenario analysis to prioritize action.
- Develop a comprehensive, financially-quantified, and forward-looking climate transition plan that outlines your organization's decarbonization strategy, climate governance, and climate policy advocacy approach, and which accounts for the Just Transition-related impacts of your climate action.
- Embed your climate transition plan within your organization's financial planning process to ensure that it is accounted for within wider business strategy and informs the company's future capital and operational expenditures.
- Explore including avoided emissions in your organization's carbon accounting and disclosing the results. If pursuing avoided emissions accounting, establish a baseline from which to calculate avoided emissions from your products and services, gather the required data for these calculations, and seek external assurance for them where possible. Note that avoided emissions contribute to achieving emissions reduction targets.
- Pursue innovative strategies to reduce energy consumption and related emissions in the face of the rising power demands of emerging technologies, whether through energy efficiency measures or by opting for low-carbon energy sources like renewables and nuclear power.

“Over ten thousand companies have now set net zero goals. The next priority for these companies is figuring out how to deliver those goals in a way that delivers value. Climate transition plans are a critical part of that, and vital for communicating strategy to investors and meeting increasing regulatory requirements.”

Paul Simpson | OBE, Consulting Partner, ERM

“It is time for companies to start taking climate adaptation seriously and to figure out how they will operate in a warming world where climate norms are upended. These discussions are not happening at the scale needed, especially as global temperature rises are already eclipsing the 1.5°C goal of the Paris Agreement.”

Ricardo Zibas | Regional Head of Climate Change and Corporate Sustainability (LAC), ERM

TREND 2

Valuing human capital



Key accelerators

In the ever-shifting workplace, diversity initiatives face pushback that could stall progress at a time of slowing workplace advancement for women. Companies are also managing a growing employee loneliness and motivation crisis that is starting to affect productivity. Still, growing evidence that strong human capital management translates to strong corporate performance should give companies solace.

Diversity initiatives continue to face headwinds, particularly in the U.S.

A primarily U.S.-focused backlash to corporate diversity initiatives that began to grow in 2023 continued in 2024. Just a few years ago, companies made public pronouncements about diversity, committed to goals, and established policies. While not one single event accelerated the backlash, the diversity landscape is such that conservative activist Robby Starbuck has had success at pressuring companies to drop their diversity initiatives. Evidence of this began to appear in June 2024 when Tractor Supply announced it was eliminating its diversity roles and its current diversity goals, continuing through November 2024 when Walmart disallowed the use of terms like diversity and limited the ability of third parties to sell L.G.B.T.Q.-themed items that could be marketed to children.^{43, 44} Companies also faced judicial pressures. In December 2024, Nasdaq’s board diversity rule was invalidated by the Fifth U.S. Circuit Court of Appeals after the U.S. Securities and Exchange Commission went beyond its congressionally authorized power.⁴⁵ This ruling was preceded by a U.S. District Court ruling that Southwest Airlines must face a racial discrimination lawsuit over an old program to award free flights to Hispanic college students.⁴⁶ These developments all come at a time when Black worker advancement is stalling at public U.S. companies. Between 2021 and 2023, the share of Black workers at S&P 100 companies declined from 17 percent to 16.8 percent.⁴⁷

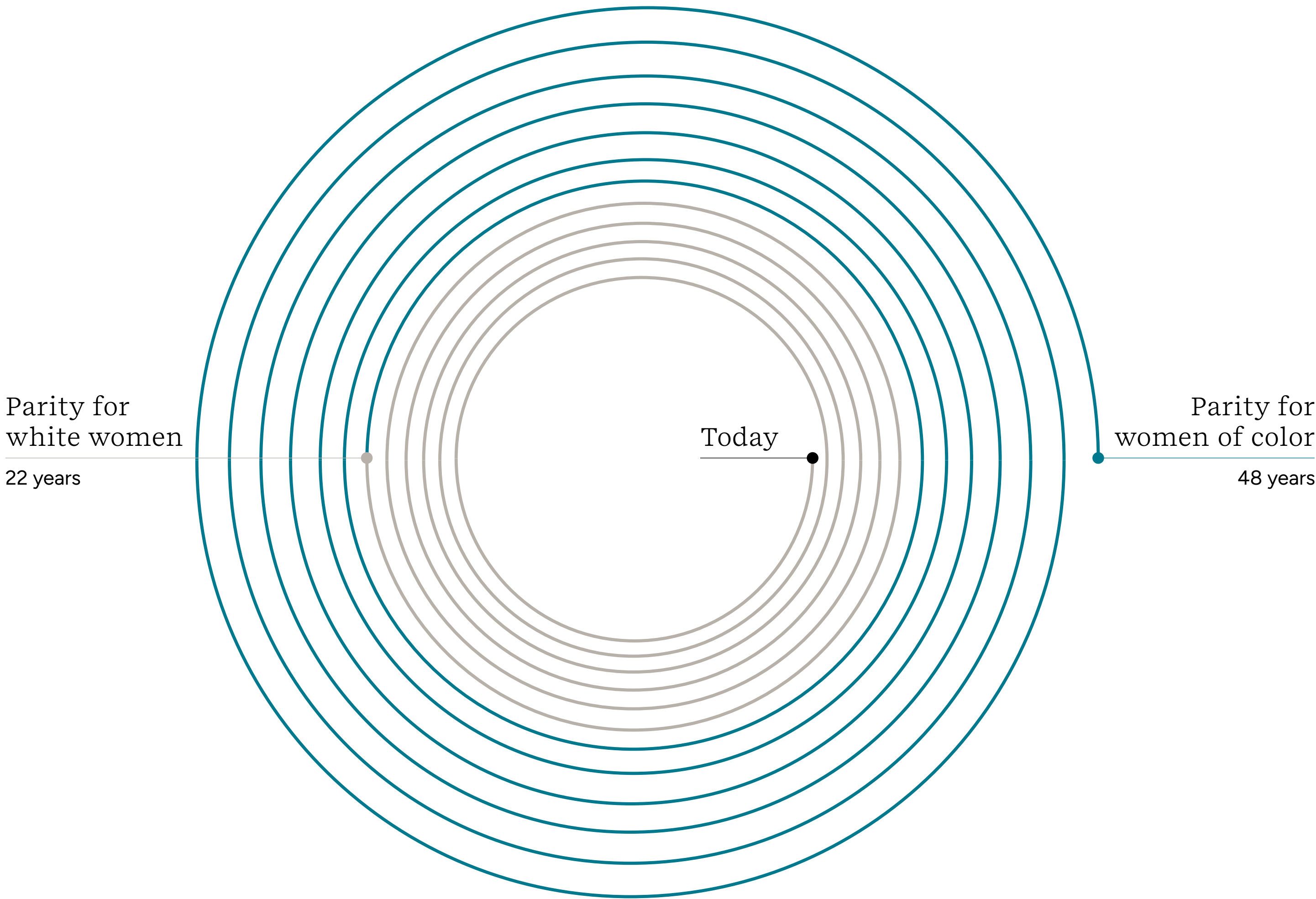


After steady gains, workplace advancement of women is slowing

Workforce gender diversity progress has also slowed after earlier gains. Over the past ten years, the share of women in managerial roles in the U.S. has barely risen, shifting from 37 percent in 2015 to 39 percent in 2024.⁴⁸ While there is more progress at higher levels such as for VP roles and the C-suite where the share of women rose from 27 percent to 34 percent and 17 percent to 29 percent, respectively, women are not close to parity with men. Globally, women labor force participation grew slowly, rising from 63.5 percent in 2023 to 65.7 percent in 2024.⁴⁹ Just as in the U.S., women globally are struggling to make inroads at higher levels. Despite composing 50 percent of entry-level positions globally, women hold only 25 percent of leadership positions.

There are also signs that the gender pay gap may not close without structural changes. While the pay gap has closed significantly over the last four decades in North America and Europe, the narrowing of the last 20 years may be mostly attributed to the retirements of older worker cohorts, who had higher gaps, rather than targeted action by companies.⁵⁰ The story is much the same globally. In 2024 (as in 2023), women made 83 cents for every dollar earned by their male counterparts.⁵¹

Figure 2: Years for U.S. women to achieve senior leadership parity with men



The number of years it will take white women and women of color in the U.S. to achieve senior leadership parity with men.

Source: [Lean In](#)



Employee loneliness and motivation issues cause concern

Beyond workforce composition, well-being issues risk employee burnout globally. According to a 2024 Gallup study, 20 percent “of the world’s employees experience daily loneliness,” a figure that rises to 25 percent of fully remote workers.⁵² The same Gallup study also found that 23 percent of employees globally are engaged at work, matching 2022’s record high but still enough to cost the global economy \$8.9 trillion in lost productivity annually.

Other factors are negatively affecting employee well-being. These include constant virtual meetings, with Americans tripling the time they spend in them in recent years.⁵³ Workers in Singapore face similar challenges,

with 52 percent of hybrid or remote white-collar workers reporting that they spend more than six hours a week in virtual meetings.⁵⁴ Virtual meetings are prevalent even for those who work in the office; such workers spend 25 percent of their time in them.⁵⁵

Workers in Asia face a similar productivity dilemma, appearing busy rather than doing impactful work. According to a 2023 global survey, workers in India, Japan, and Singapore are spending more time on “performative work” like presenting achievements rather than making decisions compared to workers in any other country.⁵⁶ Another factor is an inability to disconnect from work. A 2024 study found that 42 percent of all UK workers including 66 percent of those making six figures or more worked while vacationing.⁵⁷

Companies that manage human capital issues well are likely to see benefits

Companies do not have to sit idly while employee well-being declines. There is increasing evidence that companies that manage human capital issues well will benefit. A 2024 University of Oxford study found that the top 100 companies in Indeed’s Work Wellbeing Score survey financially outperform companies in the S&P 500, Nasdaq Composite, and Russell 3000.⁵⁸ Also, in 2024, MSCI found that the cumulative returns of the companies with the highest social scores (which includes human capital management) on MSCI’s ESG Ratings outperformed their lowest-rated peers across Asia Pacific, Europe, and North America.⁵⁹ And companies have even more at stake than market performance. Another 2024 study found that employees who enjoy what they do are 49 percent less likely to consider joining another company than those

who are unhappy.⁶⁰ There are other, less immediately clear, benefits too. For instance, companies spending \$1 on childcare benefits can generate between \$0.90 and \$4.25 worth of increased productivity and reduced turnover, meaning such benefits pay for themselves.⁶¹

Organized labor continues to make its presence felt globally

After staging a resurgence in 2023, organized labor continued to shape global workplaces in 2024. Perhaps the most notable U.S. labor development of 2024 was the one-day dockworker strike along the U.S. East and Gulf Coasts.⁶² Although its actual impact was limited, it showcased the potential of future strikes to halt significant portions of global supply chains. Outside the U.S., a general strike in Guinea paralyzed businesses after a trade union leader was arrested over dubious claims of participating in an unauthorized protest.⁶³ In South Korea, an ongoing strike of junior doctors has triggered a crisis that is making it difficult for people to access medical services.⁶⁴ The strike, which was driven by a government plan to raise medical school enrollment by 2,000 annually beginning in 2025, shows no signs of resolution even as public patience runs thin.⁶⁵

The corporate response

Worldwide, organizations are incorporating human capital metrics into executive compensation plans and figuring out how best to manage societal polarization within their workplaces.

Companies increasingly tie compensation to human capital metrics

In what may sound contradictory at a time when many companies are ending diversity-linked executive compensation incentives, companies are increasingly linking human capital metrics to leader compensation.⁶⁶ In North America, 70 percent of S&P 500 companies and 75 percent of TSX 60 companies link executive compensation with human capital metrics. In Asia, 60 percent of companies across seven countries do the same.⁶⁷ Numbers are even higher in Europe, where 83 percent of companies across nine major indices tie human capital metrics to executive compensation plans. Another study of S&P 500 companies found year-over-year upticks in companies linking compensation to metrics for talent development, employee satisfaction, employee turnover, and company culture between FY21 and FY23.⁶⁸

This movement is driven by the growing evidence that sound human capital management translates to financial success, plus the belief among staff that greater responsibility for human capital leads to better outcomes. For example, a 2024 survey found that 88 percent of C-suite executives, 83 percent of managers, and 76 percent of workers favor having at least 25 percent of their compensation tied to human capital metrics.⁶⁹

As societal polarization reaches the work floor, companies change workplace approaches

In recent years, it has become common for many companies to speak out on social issues. While this is changing (see Navigating the evolving political landscape), organizations must still navigate tricky topics internally. As society becomes more polarized, it is increasingly difficult for companies to frame their response. Further, employees often express political views in the workplace. A February 2024 Gallup poll found that 45 percent of U.S. employees discussed politics with a coworker, while a July 2024 survey from Monster found that 67 percent of U.S. employees did so.^{70, 71} If companies do not successfully navigate these evolving dynamics, they risk creating tensions between employees with divergent viewpoints that could reduce productivity and lead to turnover among disaffected workers.

In this environment, companies are looking for ways to prevent internal schisms. A survey of Asian, North American, and European companies found that 97 percent restricted employee activism by, for example, controlling petitions and public comments in 2023, compared to just 46 percent in 2019.⁷² Instead of limiting difficult discussions, other companies are trying to spur them in the hopes that they will drive organizational resiliency. These include Gap Inc., General Mills, Siemens, and The Hartford, all of which have programs that encourage employees to discuss sensitive political issues in the hopes that they learn from one another and develop conversational skills that translate to their everyday jobs.^{73, 74, 75, 76}

Action recommendations

Companies keen to respond to the human capital trends outlined above should consider the following actions:

- Link executive compensation to human capital metrics such as employee engagement and retention rates that are connected to wider business objectives. When doing this, ensure that the metrics used are sufficient to motivate executive human capital action and are communicated to stakeholders throughout the organization to foster trust and accountability.
- Foster an inclusive workplace and maintain a culture of open dialogue by emphasizing norms for respectful employee discussions and by establishing and training employees on conversation guidelines for sensitive social topics. Rather than limiting discussion, encouragement under clear rules can facilitate mutual understanding and bolster organizational resilience.

“Effective human capital management requires more than metrics and dashboards to build a cohesive and high-performing workforce. Leaders must also gain deeper insights into the nuanced and often intangible social dynamics that data often misses – such as interpersonal trust, shared values, and cultural cohesion. As the risk from societal polarization grows, addressing these challenges is essential to sustain unity and cultivate organizational resilience.”

Zain Rizvi | Associate Partner, Change & Transformation, ERM

TREND 3

Integrating ESG



Key accelerators

Environmental, social, and governance (ESG) backlash continues to hinder corporate sustainability efforts in the U.S., while companies in Europe face uncertainties of their own. At the same time, global regulators are pursuing greenwashing with new laws and enforcement actions designed to improve transparency and accountability in corporate sustainability claims and address rising skepticism over these claims.

ESG backlash in the U.S. continues

The U.S. corporate world faces mounting scrutiny over ESG efforts. Notably, companies are urged to align their positions with the views of political activists, many of whom are increasingly well-resourced. For example, a conservative U.S. political activist with a \$1 billion trust announced plans in 2024 to support groups critical of “woke” companies and financial institutions.⁷⁷ Politicians are paying more attention to corporate actions too. In August 2024, a group of U.S. state treasurers asked the Business Roundtable to retract a 2019 statement highlighting the importance of considering all stakeholders, not just shareholders, for business success. Legal actions are on the rise as well.⁷⁸ In November 2024, 11 U.S. states sued the big three asset managers – BlackRock, Vanguard, and State Street – claiming they violated state antitrust laws by engaging in climate activism.⁷⁹ At the federal level, the Federal Reserve Board withdrew from the Network of Central Banks and Supervisors for Greening the Financial System (NGFS) in January 2025.⁸⁰ In its withdrawal announcement, the Federal Reserve Board cited the broadening scope of the NGFS, which aims to support the transition to a sustainable economy by mobilizing finance and enhancing the financial system’s capacity to manage climate–and environment–related risks, beyond its remit as the reason for the move.

Investors operating in the U.S. are also facing scrutiny from state legislatures and policymakers using state contracting or regulatory authority to influence how they consider ESG factors.⁸¹ However, this slowed in 2024. According to a study from November 2024, four anti-ESG

bills and two resolutions passed in 2024, compared to 23 and six, respectively, in 2023. The same study noted that concerns about costs have also weakened many enacted anti-ESG laws.⁸²

Since December 2024, the six largest U.S. banks (JPMorgan Chase, Citigroup, Bank of America, Morgan Stanley, Wells Fargo, and Goldman Sachs) have all quit the Net-Zero Banking Alliance, moves that were at least partially motivated by concerns over ESG backlash.⁸³ The Net-Zero Asset Managers initiative has also faced exoduses, with exits by BlackRock and Northern Trust Asset Management in January 2025 following a larger group of firms including State Street Global Advisors, Invesco, and Pacific Investment Management Company that left in 2024.⁸⁴

ESG evolves in Europe and Asia as economic landscape shifts

Europe and Asia have largely avoided the type of anti-ESG sentiments impacting investments.⁸⁵ For example, Morningstar reports that in Q3 of 2024 there was \$2.8 trillion invested in European funds classified as sustainable compared to only \$352 billion in the U.S.⁸⁶ Meanwhile, the sustainable bond market in East Asia grew by 29.3 percent in 2023, compared to the 21 percent global average.⁸⁷

In the European Union (EU), leaders have debated how to strike a balance between ESG and economic competitiveness. European Commission President Ursula von der Leyen has proposed introducing Omnibus legislation in 2025 to consolidate the Corporate Sustainability Reporting Directive (CSRD),

the EU Taxonomy Regulation, and Corporate Sustainability Due Diligence Directive (CSDDD) to eliminate redundancies while maintaining the content of the law.⁸⁸ The EU is expected to publish the Omnibus by February 26, 2025 in an effort to minimize regulatory barriers and member country pushback by shifting scope, timelines, and compliance requirements for the three sustainability rules under one regulation.⁸⁹

Global greenwashing enforcement accelerates

While political scrutiny has increased, regulators are taking on “greenwashing.” In February 2024, New York sued the Brazilian meat processing giant JBS for misleading the public about its environmental impact and ability to reach net zero emissions by 2040.⁹⁰ In September 2024, Australia fined Vanguard \$12.9 million for misleading claims about an ESG investment product.⁹¹ In March 2024, a South Korean NGO filed complaints against industrial giants SK Group and POSCO Group for allegedly double counting emissions reductions from renewable energy.⁹² In August 2024, South Africa’s advertising regulator ruled that TotalEnergies advertisements promoting its commitment to “sustainable development” were greenwashing.⁹³ Investors also see greenwashing as an increasing risk, with 85 percent calling it a growing problem in a 2024 survey of global investment decision-makers.⁹⁴

New greenwashing laws aim to improve the reliability of companies’ sustainability claims. A 2020 EU Commission report found that 53 percent of environmental claims on EU packaging were vague, misleading, or unfounded.⁹⁵ After publication, the EU set about developing a law to prevent misleading packaging claims.

This work culminated in March when the EU passed the ‘Empowering Consumers Directive’ (ECD), banning claims such as “biodegradable” and “climate neutral.”⁹⁶ The EU’s proposed ‘Green Claims Directive’ would complement the ECD by setting more specific standards to substantiate green and sustainability claims.⁹⁷ Additionally, Canada strengthened its consumer rules in June 2024 to require testing to verify claims about a product’s environmental or social benefits.⁹⁸ Regulators are also moving to prevent investment greenwashing, including guidance from an EU financial regulator on what funds can call themselves sustainable and a UK rule that combats greenwashing in finance by ensuring communications with clients is clear and factual.^{99, 100}

Consumers want sustainable products, but are sometimes skeptical of green claims

New laws to combat greenwashing aim to build consumer trust in sustainable claims at a time when many value green products but are sometimes skeptical of corporate sustainability efforts. A survey from October 2023 covering 17 international markets indicated that 33 percent of surveyed consumers do not trust sustainability logos.¹⁰¹ Another survey found that close to a third of consumers in 13 countries believed organizations were greenwashing their sustainability efforts, with that number rising to 52 percent in 2024.¹⁰² Skepticism varies by geography, with a 2024 survey finding that EU consumers are up to 25 percent more doubtful of a brand’s sustainability claims than non-EU consumers.¹⁰³

Despite skepticism, consumers consistently value green products. For example, a September 2024 survey showed that 70 percent of online shoppers in the Asia-

Pacific region consider sustainability a top priority.¹⁰⁴ Another 2024 survey of consumers in the U.S. and major economies in Asia and Europe found that about 60 percent are more concerned about climate change in 2024 than two years ago, and that 76 percent say living sustainably is important to them.¹⁰⁵ Investors face similar pressure to deliver sustainable solutions. A 2024 survey of nearly 5,000 retail investors revealed that 87 percent support investment firms encouraging companies to address climate change and advocating for government action.¹⁰⁶



The corporate response

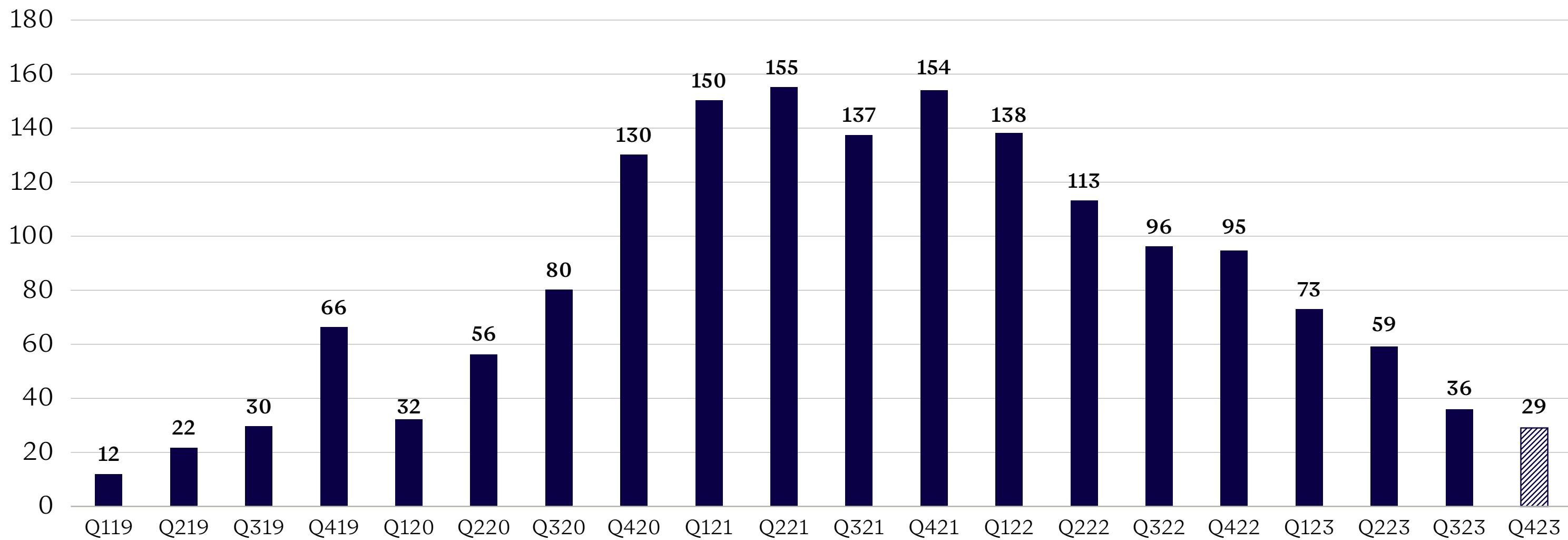
Amid growing scrutiny, some companies are pulling back on ESG. Despite such adjustments, sustainability remains a key driver of business performance, with many companies continuing to invest in sustainability technology and valuing ESG performance in mergers and acquisitions.

Companies will continue to speak less explicitly on ESG

Political pressure, stricter rules about sustainability claims, and skeptical consumers are pressuring companies to be more precise in their ESG communications. In response, many businesses are adjusting their messaging to clarify strategies and outline sustainability progress. A 2024 report found that incidents of misleading environmental claims decreased by 12 percent from 2023 to 2024, although the number of high-risk cases (defined by the consequences, extent

of the impact, and the intent behind the claim, such as accidental or not) increased by 30 percent.¹⁰⁷ However, this communication shift has also led to “greenhushing,” where companies intentionally share less about their sustainability efforts. Another 2024 report found that 58 percent of UK and U.S. companies were under-promoting and under-disclosing ESG progress.¹⁰⁸ Companies – particularly in the U.S. – are also talking about ESG less.¹⁰⁹ Data shows that fewer S&P 500 companies mentioned “ESG” on earnings calls in the fourth quarter of 2023 (see Figure 3) than any time since 2019.¹¹⁰

Figure 3: ESG mentions on earnings calls at S&P 500 companies reached a five-year low at the end of 2023



Number of S&P 500 Companies Citing “ESG” on Earnings Calls.

Source: [FactSet](#)

Greater scrutiny has pushed some companies to reframe their ESG strategies and targets, which often means tightening them. In April and December 2024, respectively, Unilever and Coca-Cola scaled back packaging goals and other ESG targets, while in March 2024, Shell dropped its 2035 carbon intensity goal and changed its 2030 target from a 20 percent reduction in carbon intensity to a 15-20 percent reduction.^{111, 112, 113} Perceptions vary about what such changes signify. Some have seen goal restatements as a sign that companies are putting short-term gains over long-term value, while others have noted that many leaders have not limited their sustainable aspirations and that their revised goals are still more ambitious than similar peer goals and represent a shift in focus to what really matters rather than doing everything at once.

Companies review targets and focus on operationalizing sustainability

Despite ups and downs, companies continue to value sustainability and the benefits it brings, whether it be growth opportunities, cost reductions, or better access to capital. A 2024 study from the European Central Bank found that the average interest rate for the top quarter of polluting companies was 0.14 percent greater than for those in the bottom quarter.¹¹⁴ They found an even larger gap in interest rates of 0.2 percent between companies with and without emissions reduction goals. Sustainability also helps drive profitability. A 2024 survey of 5,000 top executives across 22 industries and countries revealed that companies that embedded sustainability into their operations saw 16 percent higher revenue growth and were 52 percent more likely to exceed their peers’ profitability.¹¹⁵

Given sustainability’s importance to the bottom line, many companies have increased or plan to increase sustainability spending. A January 2024 survey of companies across 15 countries found that 52 percent planned to increase sustainability spending last year, up from 33 percent in 2023.¹¹⁶ Another 2024 survey of 200 U.S. executives showed that 83 percent planned to boost their sustainability budgets over the next two years.¹¹⁷ Lastly, in a September 2024 survey, 54 percent of CEOs indicated that sustainability is a higher priority now than a year ago, while only 23 percent said it is less important.¹¹⁸

Successful mergers and acquisitions increasingly depend on ESG performance

Another indication of companies’ growing appreciation of sustainability risks and opportunities is the increasing importance of ESG factors in mergers and acquisitions (M&A). A 2024 survey found that 72 percent of organizations chose not to go ahead with a purchase because of ESG issues, up from 49 percent in 2022. The survey also showed that dealmakers’ understanding of ESG is improving, with 57 percent saying they use clear metrics to measure it, compared to 39 percent in 2022.¹¹⁹ There are other indicators of ESG’s growing importance to M&A. A 2024 report noted that ESG-driven deals are likely to increasingly drive the M&A market, putting a premium on ESG data. The report also featured a quote from a senior U.S. executive who warned that buyers may cancel M&A deals if “critical ESG information is not provided or unavailable.”¹²⁰ Many companies are willing to pay more for a business with better ESG performance. Globally, 43 percent of dealmakers said they would pay

a 1-5 percent premium for companies with high ESG maturity, while 12 percent would pay an extra 6-10 percent, according to a 2024 survey. In the Americas, 19 percent of respondents said they would pay a 6-10 percent premium, the highest of any region.¹²¹



Action recommendations

Companies keen to respond to the ESG trends outlined above should consider the following actions:

- Game out the impact of taking a stance on ESG issues: Ask: If we commit to X and tell the world, what response do we imagine? How will we manage the consequences?
- Focus on accuracy. Conduct assessments (such as materiality and lifecycle) to better understand the impacts of products and sustainability issues on your business and then clearly communicate the results of these assessments with your stakeholders.
- When making investments in technology to collect, measure, and report on sustainability, prioritize systems that align with well-recognized standards and applicable regulations (such as CSRD and ISSB), which can be integrated with existing software systems, and that can be scaled across the organization or business expansions. Scalability and ease of use is critical when companies make acquisitions or expand.
- For clean technology investments, leverage data systems to identify investments that are cost-effective and improve the company’s sustainability performance. Methodologies and analytical tools such as scenario analyses and using marginal abatement curves can help identify the most impactful projects.

“Companies must create conditions for ESG accountability inside their organizations if they want to achieve their goals and derive value from them. Doing so will require translating accountability from the corporate level to the operational level to ensure execution occurs and progress is made.”

Mathias Lelievre | Regional CEO (EMEA), ERM

TREND 4

Safeguarding natural systems

Key accelerators

Global deforestation and biodiversity loss are accelerating and exceeding sustainable targets, while wildlife populations continue to decline. Despite efforts like the European Union’s (EU) deforestation regulation and the progress made at COP16 to address the nature crisis, regulatory pushback, funding gaps, and the mounting impacts of climate change are hindering progress.

Global deforestation continues, while wildlife populations struggle

Nature and biodiversity loss continues to accelerate globally. In 2023, 6.37 million hectares of forest were lost around the world, blowing past the 4.4-million-hectare limit needed to eliminate deforestation by 2030 and the equivalent of releasing 3.8 billion metric tons of carbon dioxide into the atmosphere.¹²² The Amazon is experiencing unprecedented forest destruction and biodiversity loss. A surge in forest fires in the basin, combined with drought and intense heat, reached a record level in July 2024, threatening to push the rainforest ecosystem to the point of collapse, which could come as soon as 2050 if disturbances continue to compound.^{123, 124}

The world’s biodiversity is also not faring well. One notable 2024 study found that between 1970 and 2020, the average size of monitored wildlife populations declined by 73 percent, with freshwater population declines (85 percent) most pronounced.¹²⁵

Emerging nature-related policies and regulations face uncertainty

In response to fast-moving changes, countries are turning their attention to policies and regulations to stem declines, with the EU the most prominent. As nature-related policies and regulations gain traction globally, they have been met with both support and opposition. Proponents argue the measures are essential to halting and reversing nature and biodiversity losses, combating climate change, and ensuring economic development, while critics argue that the measures may impose

economic burdens, restrict land use, and lead to conflicts with local industries.

For instance, the EU’s Nature Restoration Law and European Union Regulation on Deforestation-free Products (EUDR) have been praised for their ambitious goals but also criticized for their potential business impacts.^{126, 127} The EUDR, which prohibits the sale of goods within the EU that are produced using commodities from deforested land across seven sectors, including cocoa, palm oil, rubber, and wood, has faced criticism from government officials and business groups around the world.¹²⁸ They argue that the EUDR’s compliance timeline is too short and will require significant resources to prove that each step of a company’s supply chain is free of ingredients linked to deforestation. This pushback led the EU to delay the law until the end of 2025 to give companies and governments more time to prepare.¹²⁹

Progress at COP16, but setbacks slow momentum

At the 16th UN Biodiversity Conference (COP16) in Cali, Columbia, delegates expressed cautious optimism as they celebrated key achievements such as the creation of a permanent space and work program for Indigenous Peoples and local communities under Article 8(j) of the Convention on Biological Diversity and the establishment of the Cali Fund.¹³⁰ Companies that benefit from digital sequence information on genetic resources will contribute a percentage of their profits to the Cali Fund, which will support Indigenous Peoples and local communities in biodiversity-rich countries.

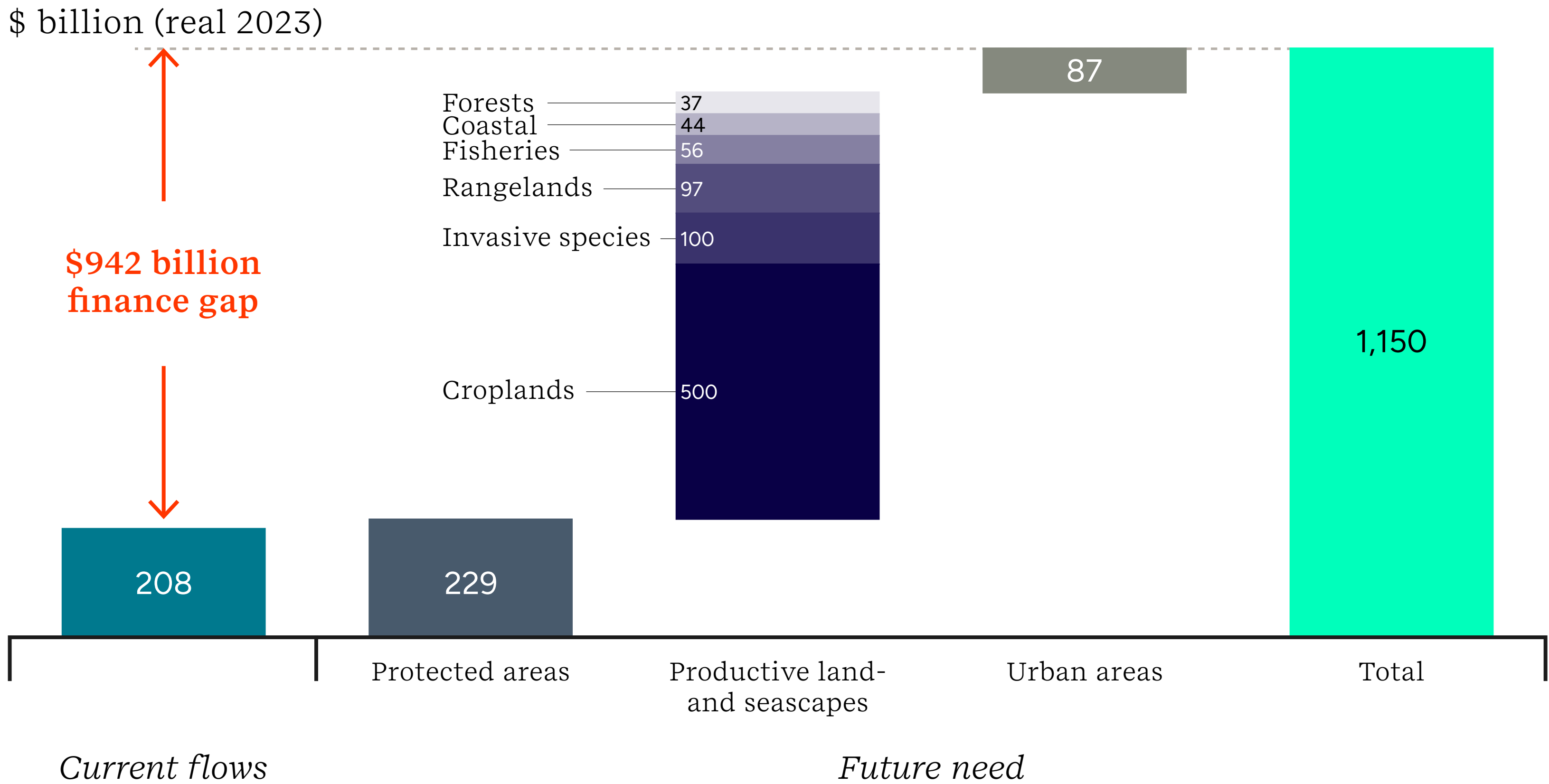
Delegates also acknowledged the significant challenges that await efforts to meet ambitious biodiversity targets. Prior to COP16, over 130 companies signed a statement urging governments to embrace more ambitious policies to halt and reverse nature loss by 2030.¹³¹ This company statement was partly driven by the \$942 billion gap between current biodiversity finance and future funding for preservation initiatives such as addressing habitat loss and species extinction (see figure 4).¹³² Despite urging, negotiations at COP16 ended with no consensus reached among parties to mobilize \$200 billion annually in conservation funding by 2030.¹³³

COP16 was not the only major nature-related event of 2024. The Global Nature Positive Summit 2024 in Sydney brought together over 1,000 global leaders to discuss nature positive action.¹³⁴ Summit outcomes included the launch of Australia’s “Nature Positive Matters,” establishing a network of leaders from the private sector who will work with the Australian government on a program of work that strengthens nature-related action including reporting and investment as well as embedding nature into decision making.¹³⁵

Nature-related disclosure and action demands come into focus for corporates

Nature-related disclosure continued to be front in center in 2024. In July, the Global Reporting Initiative (GRI) and the Taskforce on Nature-related Financial Disclosures (TNFD) announced a joint interoperability mapping resource for nature-related disclosure.¹³⁶ Companies can use the resource to simultaneously report on nature-related risks and impacts under the Global Reporting Initiative and TNFD and avoid double reporting.

Figure 4: Current annual biodiversity finance flows vs biodiversity conservation funding needs by 2030



Over \$1.15 trillion per year is needed by 2030 to restore and maintain biodiversity, with a current finance gap of \$942 billion.

Source: Biodiversity Finance Factbook



The European Financial Reporting Advisory Group (EFRAG) and TNFD also published a joint mapping resource, providing companies with standardized guidance on identifying, measuring, and reporting their impact on biodiversity and their reliance on nature.¹³⁷ Furthermore, the TNFD launched its first set of Additional Sector Guidance for eight economic sectors, along with guidance for financial institutions.¹³⁸ Both guidelines are designed to help businesses and financial institutions identify and manage nature-related risks.

Alongside disclosure, nature transition plans are also gaining momentum. For companies to meet their nature-related targets, they will need to make substantial changes to their business practices and develop extensive long-term management plans. That is where nature transition plans come in. These strategies provide a coherent structure for organizations to adjust their business models and value chains and manage nature-related dependencies, impacts, risks, and opportunities. To support companies and financial institutions in developing and disclosing a transition plan, the TNFD published a November 2024 discussion paper that outlines draft guidance for how companies should pursue transition planning and disclose a transition report.¹³⁹

The corporate response

Corporations are beginning to meet the call for greater transparency by increasing nature-related disclosures. Still, many have not implemented substantial strategies to protect and restore nature, with limited numbers taking concrete steps to actualize these strategies.

Companies expand nature-related disclosures, but concrete action must improve

As pressure from governments and stakeholders grows, companies are expanding their nature-related disclosures. In the year after the Global Biodiversity Framework (GBF) was adopted in December 2022, companies disclosing biodiversity information to CDP grew by 43 percent, while those disclosing water and forest information grew by 23 percent and 10 percent, respectively.¹⁴⁰ Companies are also including nature-related disclosures in their sustainability reports. A 2024 World Business Council for Sustainable Development study found that of 181 multinationals, the percentage referencing the TNFD in their public reports more than doubled, rising from 22 percent in 2023 to 52 percent in 2024.¹⁴¹

Despite an upward disclosure trend, corporate action has room to grow. At COP16, Nature Action 100, a global investor-led initiative to address nature and biodiversity loss, announced the results of its first benchmark assessment of corporate nature progress.¹⁴² Of the 100 companies assessed, most are still in the early stages of addressing their nature-related impacts and dependencies. While most companies (68 percent) disclose ambition statements to protect nature, fewer (1 percent) have taken concrete steps to support those ambitions, such as conducting a double materiality assessment. Corporate action is also lacking when it comes to recognizing and protecting the rights of Indigenous Peoples and local communities who play crucial roles in biodiversity conservation, restoration, and stewardship. Less than one-third of companies assessed met at least one of the five benchmark metrics for respecting and upholding the rights of these groups.

Corporate no-deforestation policies and efforts have room to expand

The EUDR is driving significant corporate action to address deforestation, yet it faced criticism for perceived shortcomings and implementation challenges and was ultimately postponed by a year. Although the law was postponed, the urgency behind it remains, as many companies still need comprehensive policies to address deforestation. A Ceres benchmark of the deforestation policies of 53 global companies with exposure to deforestation-linked commodities found that while most had a no-deforestation policy, only 18 had a company-wide, no-deforestation policy that covers all the commodities subject to the EUDR.¹⁴³

Many financial institutions also can improve. A February 2024 report revealed that of the global financial institutions with the highest portfolio exposure to deforestation, the majority (55 percent) do not have a deforestation policy. Because of this, investors are now pressuring financial institutions to enhance transparency and accountability regarding their deforestation exposures and intensifying calls for regulatory intervention.¹⁴⁴

Even with room to improve, companies are increasingly implementing deforestation strategies. For instance, JDE Peet’s committed to a deforestation-free supply chain for coffee, tea, and other commodities by 2025.¹⁴⁵ General Mills committed to no deforestation across its palm, cocoa, and fiber packaging supply chains by 2025 and released responsible sourcing principles for these same commodities.¹⁴⁶

Community engagement increasingly embedded in corporate nature strategies

Protecting natural systems will require more than regulations and policy changes; it also demands active and meaningful engagement with Indigenous Peoples (IPs), local communities (LCs), and other stakeholders. Corporate engagement with these groups is typically not well defined in standard business procedures, nature-related or otherwise. Recognizing the situation, the TNFD released guidance in September 2024 for effective company and financial institution engagement with IPs, LCs, and other affected stakeholders to help assess, manage, and disclose nature-related impacts, risks, and opportunities.¹⁴⁷

Some companies are already ahead of the curve regarding IPs and LCs engagement. For example, TC Energy created a Reconciliation Action Plan which focuses on fostering meaningful, long-term relationships with Indigenous groups.¹⁴⁸ Their approach includes cultural awareness training for employees and initiatives that offer educational opportunities, employment, and business partnerships for Indigenous communities. Similarly, Longreach Maris, an asset management firm, launched an initiative under its Innovative Reconciliation Action Plan to support Indigenous fishers in Australia.¹⁴⁹ The program provides access to wild-caught fishing rights and quotas for species like mud crab and abalone, supporting economic independence and sustainability for First Nations communities while respecting cultural practices and traditional knowledge in the fishing industry.¹⁵⁰



Action recommendations

Companies keen to respond to the nature and biodiversity trends outlined above should consider the following actions:

- Disclose biodiversity, water, and forest information in your organization’s public reports, using the Task force on Nature-related Financial Disclosures (TNFD) as a guide.
- Enhance transparency on your organization’s exposure to deforestation-related risks and be more proactive in combatting these risks. This could include regular reporting, adopting stringent deforestation screening practices, and supporting and partnering with businesses that prioritize practices that limit deforestation.
- Establish strong relationships with Indigenous Peoples and local communities through formally recognized and legally binding arrangements. These agreements should honor traditional knowledge, ensure the equitable sharing of conservation benefits, and commit to respecting and upholding the rights of these groups who play critical roles in biodiversity conservation

“Companies are increasingly realizing that they need to engage affected stakeholders to better understand their nature-related impacts and dependencies, discover opportunities, and mitigate risks - particularly within the value chains of certain commodities. Engaging stakeholders beyond traditional parties like customers and regulators requires - as a starting point - commodity-aligned affected stakeholder mapping. Ultimately, this will strengthen corporate alignment with TNFD’s LEAP recommendations, help companies assess and manage risk, and build trust with local communities.”

Erika Washburn | Principal Technical Consultant, ERM

“Once companies have completed the first steps in determining their nature-related impacts and dependencies in the disclosure context, their attention will likely turn to target setting and mitigation plans. Companies should aim to interpret nature-related risk and opportunity in the broader operational context of their business to ensure that goals and targets result in meaningful progress without introducing additional business risk.”

Carly Sibilia | Principal Technical Consultant, ERM

TREND 5

Streamlining sustainability disclosure

Key accelerators

Global momentum for mandatory sustainability reporting surged in 2024, with International Sustainability Standards Board (ISSB) adoption spreading widely and sector-specific regulations emerging in key industries. Enhanced collaboration among disclosure standard setters to simplify reporting requirements is further reinforcing momentum, while the development of digital taxonomies underscores the need for companies to collect, measure, and report on high-quality data.

Mandatory sustainability disclosure requirements advance worldwide

Twenty-twenty-four strengthened the foundation for mandatory sustainability disclosure to become a worldwide reality. The European Union (EU)’s Corporate Sustainability Reporting Directive (CSRD), California’s climate disclosure rules (which have been delayed by a year), and similar regulations have received much attention.¹⁵¹ However, growth in mandatory reporting requirements extends far beyond North America and Europe. The ISSB published two standards in 2023 that are now used by many countries globally: S1 (general sustainability-related disclosure) and S2 (climate-specific disclosure). About 57 percent of global GDP is now covered by countries working to adopt the standards.¹⁵² Nigeria became the first African country to adopt the ISSB standards in March 2024.¹⁵³ The same month, Japan released an ISSB-aligned disclosure standard.¹⁵⁴ After China’s major stock exchanges published their own sustainability requirements in February without mentioning ISSB, the country’s Ministry of Finance released a draft, voluntary framework aligned with ISSB in May that aims to underpin a mandatory disclosure framework by 2030.^{155, 156}

In the U.S., the Securities and Exchange Commission climate-related disclosure rule will almost certainly be shelved under the new U.S. administration.¹⁵⁷ Further change may emanate from the EU, where countries including France and Germany have expressed reservations about the CSRD’s scope amid fears that it could stifle economic growth. These reservations have driven the development of the EU Omnibus to streamline EU sustainability regulations (see Integrating ESG).

Many reporting regulations take a climate-first approach. For example, the South Korean Financial Services Commission announced in April 2024 that it would introduce mandatory climate-related disclosure, while non-climate related disclosures will be voluntary.¹⁵⁸ Similarly, India’s central bank will require lenders to disclose climate-related financial risks by April 2025.¹⁵⁹

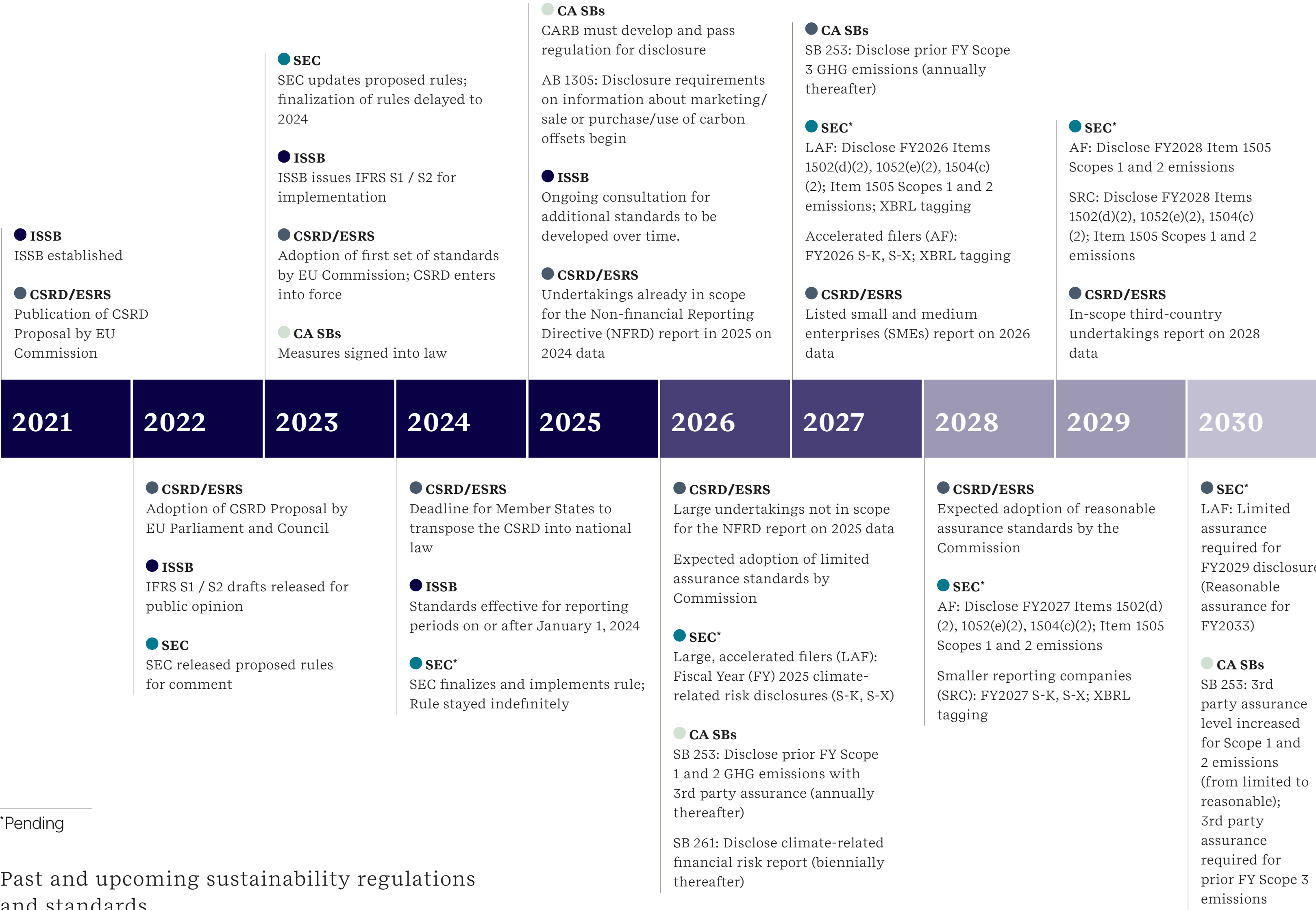
Convergence of frameworks simplifies corporate disclosure

To make reporting easier for companies, standard setters and regulators worked to simplify reporting in 2024. For example, the International Financial Reporting Standards (IFRS), which oversees ISSB, and the Global Reporting Initiative (GRI) have been working together to identify disclosures relevant to both standards.¹⁶⁰ CDP has also helped companies meet sustainability disclosure obligations by aligning CDP’s reporting tools with the IFRS and GRI as well as with the Task Force on Nature-Related Financial Disclosures (TNFD) and the European Sustainability Reporting Standards (ESRS) under CSRD.¹⁶¹ Mapping between CDP’s questionnaire and the ESRS E1 climate standard is also expected in early 2025.¹⁶² Lastly, in September 2024, the IFRS published guidance to help companies voluntarily apply the ISSB standards, while GRI launched a service in July 2024 to help companies report under CSRD.^{163, 164}

Disclosure requirements are increasingly sector and topic-specific

In 2024, regulators published various guidelines to address sustainability reporting gaps in important sectors and topic areas. Although the EU postponed sector-specific CSRD standards to June 2026, other countries

Figure 5: Timeline of key sustainability regulations and standards in the coming years



*Pending

Past and upcoming sustainability regulations and standards.

Source: [ERM](#)

continue to issue sector-specific guidance.¹⁶⁵ For example, Malaysia’s securities regulator published sustainability reporting guidance in 2024 for small and medium-sized businesses in five key sectors.¹⁶⁶ Efforts will continue in 2025 to develop new sector- and topic-specific standards. GRI, which published mining sector standards in February 2024, will publish financial services, textiles, and apparel sector sector disclosures in 2025.¹⁶⁷ Over the next two years, IFRS will also develop biodiversity/ ecosystems- and human capital-related standards and update the Sustainability Accounting Standards Board (SASB) standards.¹⁶⁸

Regulations drive need for more and higher-quality data

Regulatory requirements are driving demand for both more and more reliable data, putting pressure on companies to improve their reporting systems. IFRS introduced a taxonomy in April 2024 to digitally tag sustainability-related financial disclosures.¹⁶⁹ In August 2024, the European Financial Reporting Advisory Group released a digital taxonomy for CSRD, while the European Securities and Market Authority is translating the taxonomy into law.¹⁷⁰ Furthermore, GRI is developing a digital sustainability reporting taxonomy.¹⁷¹ Assurance standards are also emerging, further raising the need for high quality data. In November 2024, the International Auditing and Assurance Standards Board (IAASB) published a new standard for sustainability assurance.¹⁷² At the country level, the Australian Auditing and Assurance Board is developing assurance standards based on the IAASB guidelines for Australia’s mandatory climate reporting regulation.¹⁷³

The corporate response

Companies are working to improve sustainability data management. Many are investing in advanced technologies to improve reporting quality. Investors are also driving demand for better disclosures as well as watching how companies align with global sustainability goals and prepare for stricter audit requirements.

Companies increasingly invest in software to enhance data quality and collection

Companies are working to cope with growing sustainability disclosure data demands. Nearly half of companies still use spreadsheets to manage their environmental, social, and governance (ESG) data — potentially introducing risks of human error.¹⁷⁴

In a 2024 survey, 55 percent of companies that will report in line with CSRD say they expect to face data quality and consistency challenges. Data challenges extend beyond CSRD.¹⁷⁵ A February 2024 Salesforce survey of business professionals across a broad range of sectors and geographies found that only 27 percent reported having access to high-quality sustainability data.¹⁷⁶

To overcome data-related hurdles, companies are investing more in data systems and other technologies. In the same Salesforce survey, 65 percent of respondents said they plan to increase funding for sustainability data collection and management in the next two years. A November 2024 IBM survey of global business leaders revealed that 88 percent of companies are planning to invest more in sustainability information technology.¹⁷⁷

A range of technology providers have begun offering solutions to help companies meet sustainability reporting obligations. In August 2024, Microsoft launched a new ESG reporting product aimed at helping companies report on standards and regulations.¹⁷⁸ Similarly, IBM improved its ESG data platform by adding features such as ESRS-aligned questions that companies can respond to in order to help comply with CSRD reporting requirements.¹⁷⁹

Investors seek stronger, more comparable, sustainability disclosures

Better sustainability data and disclosures help shareholders make more informed decisions about their investments while ensuring they meet their own sustainability disclosure obligations. A 2024 Workiva survey found that 89 percent of investors believe that sustainability reporting will help them make more informed investment decisions.¹⁸⁰

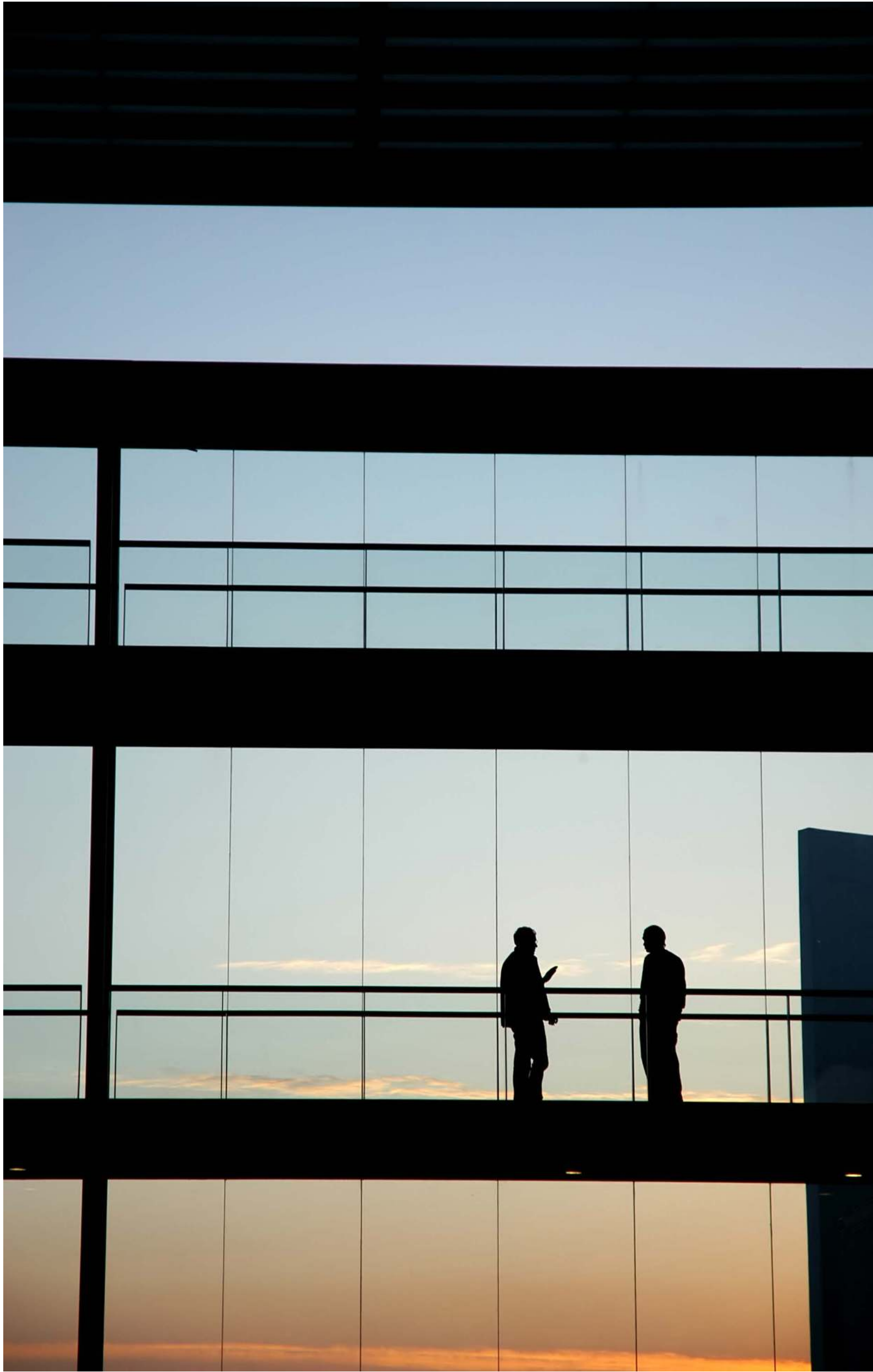
Accordingly, investors actively sought improved sustainability disclosures throughout 2024. For example, after Shell rolled back several of its climate targets, the asset manager of Norway’s \$1.7 trillion sovereign wealth fund asked the oil and gas major to clarify the alignment of its climate strategy with the Paris Agreement.^{181, 182} Furthermore, the head of global stewardship at BNP Paribas announced in June 2024 that the investor is considering voting against companies that do not conduct adequate double materiality assessments under the CSRD.¹⁸³ The New York City Comptroller reached agreements in 2024 with JPMorgan Chase, Citi, and Royal Bank of Canada to report on their financing ratio of low-carbon energy to fossil fuels and pressured Bank of America, Goldman Sachs, and Morgan Stanley to provide similar disclosures by filing shareholder resolutions at their annual general meetings.¹⁸⁴

Investors also helped improve disclosure guidance. In October 2024, The Impact Disclosure Taskforce, which includes some of the world’s largest investors, released disclosure guidance to help companies better report their contributions towards the UN Sustainable Development Goals (SDGs), with the aim to increase financing to firms with strong disclosures.¹⁸⁵ Additionally, investors have been asking governments to improve disclosure mandates. Before Climate Week NYC 2024, over 650 investors with more than \$33 trillion in assets under management (AUM) called on governments globally to mandate climate transition plans, among other policies, to mitigate climate change.¹⁸⁶ In October 2024, investors representing over \$3.5 trillion in AUM signed on to a letter from the Asia Investor Group on Climate Change calling on South Korea’s Financial Services Commission to adopt mandatory sustainability and climate disclosure by 2026.¹⁸⁷

Despite progress, companies need to be better prepared for rigorous sustainability audits

Many companies are not equipped to respond to the assurance requirements included in many sustainability disclosure regulations. Only 29 percent self-report they have the policies, skills, and systems in place to provide adequate sustainability assurance, according to a 2024 survey.¹⁸⁸ Despite this finding, it is still an improvement compared to 2023 when only 25 percent of companies said they were prepared. Some larger companies are making more progress on assurance. A 2024 survey of 181 multinationals found that most sustainability reports (85-95 percent) produced between 2021 and 2024 had some level of external assurance.¹⁸⁹

Overall, there has been only a modest move from limited assurance to more rigorous reasonable assurance, where the auditor affirms information is correct by conducting additional testing and verification. The 2024 multinationals survey also found that 16 percent of companies used combined limited and reasonable assurance in 2024, up from 12 percent in 2021. Companies are also expanding the amount of data they assure. A review of 250 sustainability reports from S&P 500 companies conducted in 2024 found that assured social data rose from 22 percent in 2023 to 32 percent in 2024.¹⁹⁰



Action recommendations

Companies keen to respond to the sustainability disclosure trends outlined above should consider the following actions:

- Transition your organization’s sustainability data management from manual tools like spreadsheets to dedicated ESG data platforms to enhance the accuracy and efficiency of your sustainability disclosure processes and ensure regulatory compliance.
- Increasingly expand the quality (moving from limited to reasonable) and the quantity of your organization’s assured sustainability data. Establish policies and procedures clearly stating how sustainability information is collected, measured, and utilized and the relevant responsibilities of team members. Companies should have documentation to certify processes and policies are followed and ensure their data systems align with their procedures, as this will make it easier to create a transparent audit trail that verifies the company’s progress.
- Benchmark your organization’s sustainability disclosures against industry leaders and implement best practices such as clearly laying out goals and aligning sustainability and financial reporting to improve disclosure quality and ensure these disclosures align with leading assurance standards.
- Actively engage with investors, regulators, and other stakeholders to understand their sustainability disclosure priorities and adapt your organization’s disclosures to ensure they align with these priorities.

“As soon as a company involves auditors in its sustainability disclosure process, it triggers a different level of interest from the financial side of the organization. Increasing interest helps put what is material for the business and for sustainability on the same axis, enabling more aligned decision making internally.”

Victoria Cross | Consulting Partner, ERM

“There is an ongoing shift in sustainability disclosure operating models. Disclosure activities used to be primarily driven by sustainability teams. Now, with regulations like the CSRD raising the bar on reliability and usefulness, companies are repurposing their financial reporting infrastructure for sustainability, expanding the resources and agency available for disclosure activities.”

Johann Weicht | Consulting Partner, ERM

TREND 6

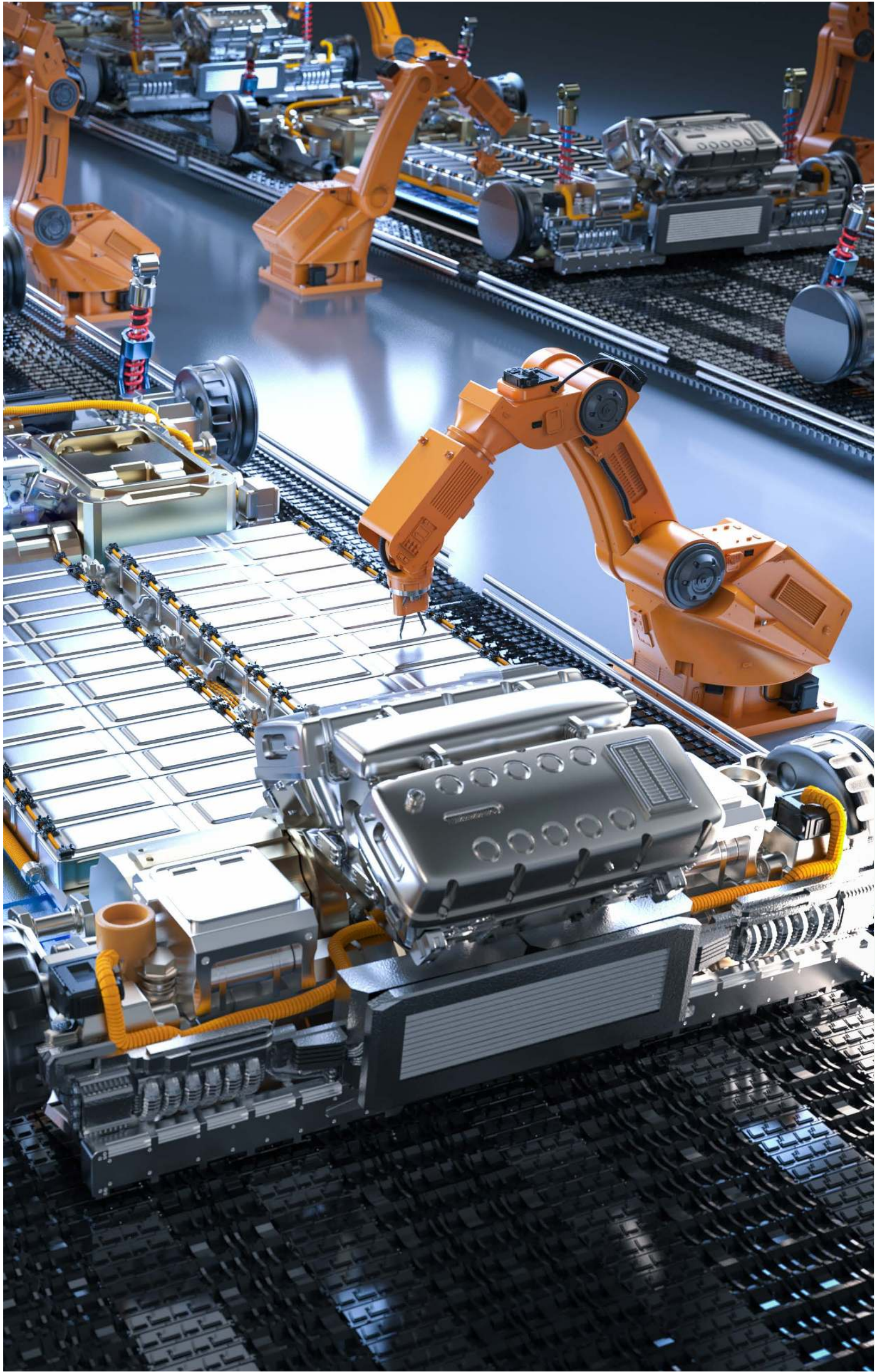
Building sustainable and resilient supply chains

Key accelerators

Global trade reached new heights in 2024, but rising trade tensions create uncertainty regarding the path forward. At the same time, critical mineral competition among countries is rising, and many countries are taking regulatory and other action designed to decarbonize supply chains In the background, extreme weather events and labor disputes continue to disrupt global supply chains.

Countries prepare for the likelihood of protracted trade disputes

Global trade is expected to reach a record high of \$33 trillion in 2024.¹⁹¹ However, tensions have shaken confidence in international trade. Former U.S. President Joe Biden continued to impose tariffs on China throughout 2024, including by enacting higher tariffs on Chinese solar inputs and electric vehicles in December.¹⁹² The Trump Administration is expected to ramp up tariffs as well, having promised to enact a 25 percent tariff on goods from Mexico and Canada and an additional 10 percent tariff on goods from China.¹⁹³ China is expected to respond by imposing tariffs or export restrictions of their own.¹⁹⁴ For example, in January 2025, China proposed banning the export of battery cathode and lithium processing technologies.¹⁹⁵ Other countries are also increasing trade barriers. For example, Indonesia announced tariffs of up to 200 percent on a wide range of Chinese goods in July 2024,¹⁹⁶ while India announced tariffs of 12-30 percent on some Vietnamese and Chinese steel products in September 2024.¹⁹⁷



Increasing tensions trigger a reshuffle of global supply chains

Trade tensions are reorienting global supply chains (see Figure 6). Many developed countries want to bring manufacturing closer to home to bolster economic opportunities and national security, creating opportunities for nearby emerging economies. Mexico, for instance, wants to be a major player in U.S. supply chains.¹⁹⁸ This is happening, with the U.S. buying more from Mexico than from China in 2023, the first time in twenty years.¹⁹⁹

Reshoring may be good for companies’ sustainability performance. New business relationships offer the chance for companies to reset. New suppliers may be based in countries with stronger human rights and environmental performance and be easier to monitor. Better sustainability performance could help companies meet supply chain due diligence expectations.

Along with reshoring and nearshoring, countries are looking for new supply partners. For example, Russia has responded to sanctions from the U.S., European Union (EU), and others over its invasion of Ukraine by shifting much of its trade with advanced economies to China and emerging economies.²⁰⁰

Trade between China and Latin America grew from \$18 billion in 2002 to \$450 billion in 2022.²⁰¹ To further accelerate this growth, in November 2024, Chinese President Xi Jinping opened a new \$1.3 billion deep-water port in Peru that China hopes will lead to further Latin American trade growth.²⁰²

Figure 6: International trade shifted in 2024 as trade tensions increased

Global interdependence trends are shaped by geopolitical and economic factors

Increasing trade dependence		Annual change	Decreasing trade dependence		Annual change
Dependent	Depending on		Dependent	Depending on	
Russian Federation	China	3.7%	Russian Federation	European Union	-5.1%
Brazil	China	2.1%	Australia	Japan	-2.4%
Russian Federation	India	1.8%	Philippines	China	-2.4%
Malaysia	United States	1.7%	Thailand	Japan	-1.3%
Viet Nam	United States	1.4%	Republic of Korea	China	-1.1%
Republic of Korea	United States	1.2%	Brazil	European Union	-0.6%
Japan	United States	1.0%	United Kingdom	China	-0.6%
United States	Mexico	0.4%	Viet Nam	China	-0.6%
European Union	United States	0.3%	China	European Union	-0.5%
United Kingdom	United States	0.2%	United States	China	-0.4%

Source: UNCTAD estimates based on national statistics.

Note: The dependence of an economy on another is calculated as the ratio of their bilateral trade over the total trade of the dependent economy. Annual change is calculated as a four-quarter average of this ratio relative to the same period in the previous year. Data for Russian Federation includes estimates.

Shifts in trade dependencies between countries from Q3 of 2023 – Q3 of 2024

Source: [UN Trade & Development](#)

Countries look to secure access to critical minerals

As the energy transition accelerates, countries are looking to secure the critical minerals they need to decarbonize. The International Energy Agency predicts that under governments’ stated energy and climate policies, demand for critical minerals will double between 2023 and 2030.²⁰³ Chinese companies dominate the market for many critical minerals, making it hard for companies elsewhere to compete.²⁰⁴ In response, governments are expanding efforts to bolster their critical minerals capacities. The EU’s Critical Raw Materials Act – which entered into force in May 2024 – sets goals for extracting, processing, and recycling important raw materials, including critical minerals. Meanwhile, other governments have focused on providing funding to boost critical minerals projects.

The U.S. allocated \$412 million in loans and investments toward critical mineral mining and processing projects in emerging economies in 2024 and has committed to using the Defense Product Act to support Canadian critical mineral projects.²⁰⁵ In October 2024, the UK announced that critical mineral importers can now receive funding from the country’s export credit agency.

Governments are also collaborating to secure their supply chains.²⁰⁶ Fourteen countries and the EU formed the Minerals Security Partnership to promote responsible supply chains.²⁰⁷ Outside of securing supplies for domestic use, Gulf states are investing in critical minerals mining to take advantage of surging demand and to diversify their economies away from oil and gas.²⁰⁸

Expanded carbon pricing accelerates supply chain decarbonization

Supply chains are also being reshaped by government efforts to cut emissions. The EU has led by extending its cap-and-trade system in January 2024 to ships entering EU ports, mandating the use of sustainable aviation fuel (SAF) for a portion of airplane fuel starting in 2025, and adopting the Carbon Border Adjustment Mechanism (CBAM) for imports of various carbon-intensive products for 2026.²⁰⁹ In October 2024, the UK announced details of its own CBAM, and has adopted a mandate requiring SAF usage for some flights.^{210, 211} Outside Europe, India is rolling out nearly \$14 million in financing to retrofit ships to run on green hydrogen and provide green-hydrogen shipping fuel infrastructure at ports.²¹² South Africa passed its first climate law in July 2024, which will eventually set emissions caps on high-emitting sectors, including transportation.²¹³

Regulation, extreme weather, and labor disputes impact supply chains

Global supply chains continue to face disruptions. According to one September 2024 analysis, supply chain disruptions increased by 30 percent in the first half of 2024. The analysis found that new sustainability laws drove some of these disruptions, including the German Supply Chain Due Diligence Act, Canada’s Modern Slavery Act, the EU’s Corporate Sustainability Reporting Directive (CSRD) and Deforestation Regulation, and new PFAS regulations.²¹⁴ Extreme weather in 2024, such as heat waves in Africa and North America, forced manufacturers to shut down, while flooding in India and China inundated roads and muddled supply chains.²¹⁵

A continuing drought in Panama limited the size of ships that could use the Panama Canal. Labor strikes also negatively impacted supply chains.²¹⁶ A strike at Boeing impacted the aerospace supply chain by slowing production and creating financial strain on Boeing’s suppliers as the company cut costs.²¹⁷ Brief strikes related to freight in Canada and at U.S. ports highlighted how critical supply chain infrastructure can be threatened by labor disputes.^{218, 219} Furthermore, shipping firms increasingly avoided the Suez Canal due to conflicts in the Middle East.



The corporate response

Companies are adapting to shifting trade policies and supply chain challenges by shifting production locations. Meanwhile, there is growing emphasis on reducing Scope 3 emissions and adopting digital product passports to enhance transparency and promote circular economy practices.

Companies adapt supply chains as trade tensions rise

As threats of tariffs and protectionism rise, businesses are likely to face supply chain challenges. In a November 2024 financial filing, Stanley Black & Decker warned that tariffs could reduce their pre-tax income annually by \$200 million.²²⁰ Fearing financial risk, companies have lobbied to protect access to markets, with many reportedly asking the Trump administration to hold off on its plans to implement steep tariffs on U.S. imports.²²¹ Outside the U.S., German automakers called on the EU and China in October 2024 to avoid tariffs on Chinese electric vehicles.²²² When they cannot stop tariffs, companies are finding ways to avoid them. In August 2024, the shipping giant AP Møller-Maersk noted that retailers and manufacturers were placing orders earlier to avoid higher tariffs expected during the Trump administration.²²³

To reduce longer-term risk, companies are shifting supply chains. China’s share of U.S. imports peaked at 22 percent in 2018 before falling to 11.5 percent by June 2024. Expected tariffs under the Trump administration are accelerating this shift.²²⁴ In November 2024, U.S. shoemaker Steve Madden announced it would reduce goods made in China by 40 percent in the coming year.²²⁵ On the other hand, Chinese companies are now producing and shipping more goods through Mexico and Vietnam to circumvent tariffs and supply chain shifts.²²⁶ Companies outside the West and China are also adapting. For example, Brazil is selling more grain to Egypt to counteract grain shortages there created by the Russian invasion of Ukraine.²²⁷

Companies increasingly join forces to decarbonize supply chains

Companies are accelerating efforts to measure, reduce, and disclose Scope 3 emissions, which are on average 26 times greater than a corporation’s Scope 1 and 2 emissions.²²⁸ Corporate disclosure of upstream (such as the production and transportation of inputs for goods and services) Scope 3 emissions grew by eight percent and downstream (including transport, usage, and disposal of products) disclosure grew by six percent between August 2023 and August 2024. However, progress is uneven across countries. As of October 2024, 32 percent of listed companies in the U.S. disclosed at least some of their Scope 3 emissions, compared to 45 percent of companies listed outside the U.S.²²⁹

Companies are also joining forces to drive Scope 3 emission reductions. Members of the Zero Emissions Maritime Buyers Alliance, an alliance of approximately 40 companies that includes Amazon and Ikea, will invite shippers to bid on the first contract for ships using near-zero emissions fuels in early 2025.²³⁰ In the fashion sector, brands such as Bestseller, Gap Inc., H&M Group, and Mango launched the Future Supplier Initiative in June 2024 to offer financing and technical support to help suppliers reduce emissions.²³¹ Companies are also developing initiatives to drive emission reductions. The multinational logistics firm DP World announced a program in December 2024 for cargo importers to offset emissions by using lower-carbon fuels in its European shipping network.²³² Earlier in the year, the U.K. supermarket Asda launched a program with HSBC to offer preferential sustainability-related financing to 250 of the company’s suppliers that take steps to disclose and reduce emissions.²³³

Digital product passports help companies boost supply chain transparency

To improve supply chain transparency, there are growing efforts to create digital product passports (DPPs).²³⁴ These digital documents contain useful product details such as origin and manufacturer information on environmental performance. European companies are leading, partly due to new requirements like the EU’s Ecodesign for Sustainable Products Regulation and Batteries Regulation.^{235, 236} Both require DPPs for specific EU products beginning in 2027.²³⁷

Several companies are already experimenting. For example, in 2022, H&M Group added digital tags with information on the manufacturing, care requirements, and recycling instructions for its Men’s Essential Collection.²³⁸ Tesco is also piloting DPPs for its F&F fashion brands.²³⁹ Also in the fashion space, the Trace4Value project is developing a pilot for fashion brand DPPs, while the group Universo Mola and the company CAV+S launched the first DPP for textiles in Latin America in July 2024.^{240, 241} In automobile supply chains, Volvo issued the first digital battery passport for an electric vehicle in 2024 for its EX90 SUV in preparation for required reporting in 2027.²⁴² DPPs can also be an important tool to promote a circular economy. AMITA Corporation, Marubeni Corporation, the Japan Circular Economy Partnership (J-CEP), and Circularise announced the completion of a DPP pilot in January 2024 to track the characteristics of two types of plastic bottle caps so that the caps can be properly recycled.²⁴³



Action recommendations

Companies keen to respond to the supply chain trends outlined above should consider the following actions:

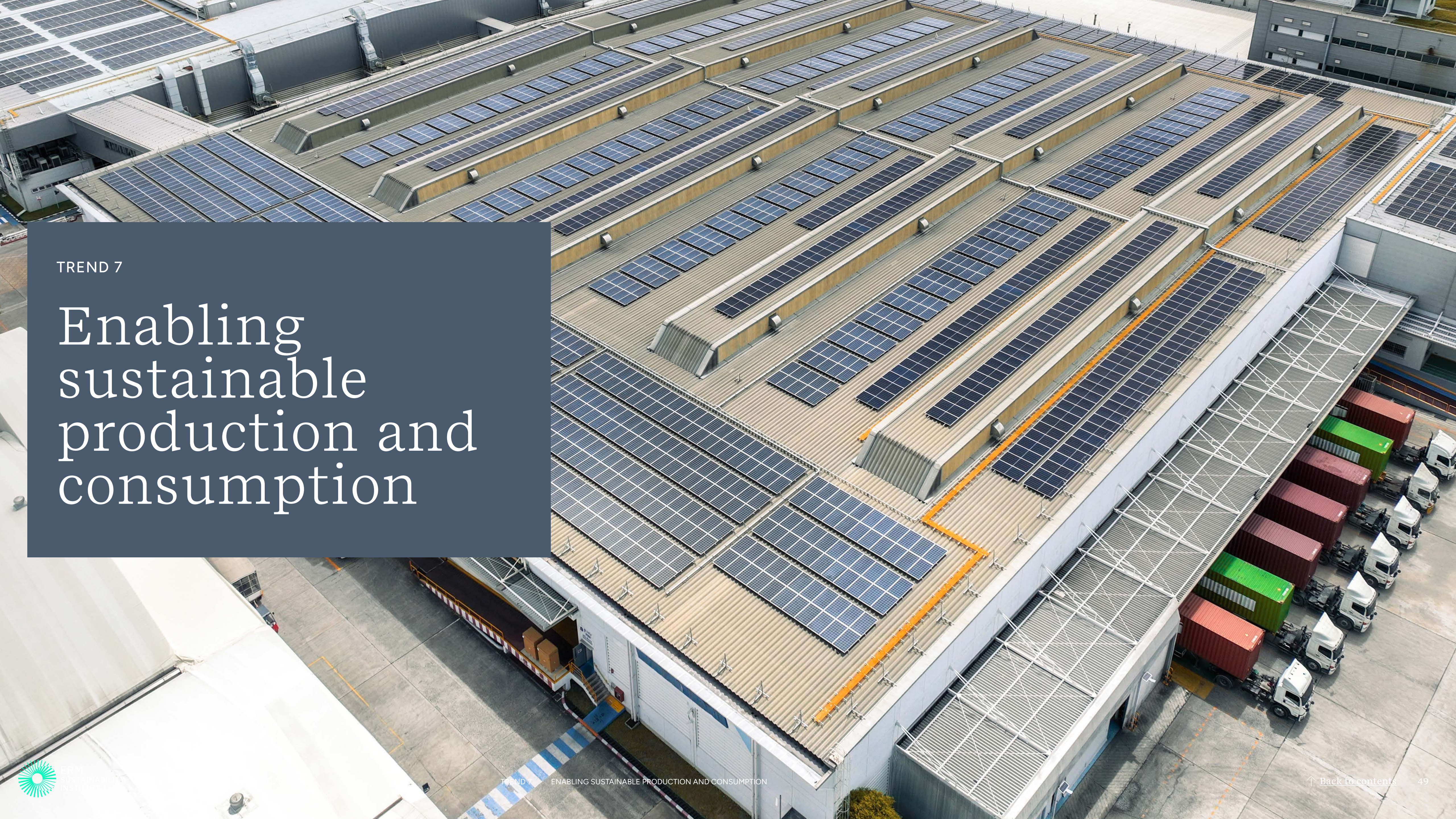
- Track trade developments that could materially affect your organization and consider when trade-related risks warrant consideration of shifting production to new geographies.
- Enhance efforts to disclose and address Scope 3 emissions by working with your suppliers to track upstream and downstream impacts and joining forces with peers to drive reductions across your supply chains.
- Pilot DPP initiatives in line with emerging regulations and collaborating with peers and industry bodies to scale impact, especially for high-priority products like batteries, textiles, and packaging.

“Digital product passports are poised to transform responsible sourcing by enabling regulators, the public, and other stakeholders to quickly assess a product’s sustainability credentials throughout its lifecycle.”

Alice Valvoda | Partner, ERM

“The nearshoring and/or offshoring of once distant supply chains to countries and regions with higher sustainability standards than those they left can be an opportunity for companies to enhance sustainability performance. Starting from a clean slate also gives companies more control over the suppliers they engage, enabling them to select high performers.”

Olaf Schatteman | Global Service Leader (Sustainable Products and Supply Chain), ERM



TREND 7

Enabling sustainable production and consumption



ERM
Sustainability
Network

TREND 7

ENABLING SUSTAINABLE PRODUCTION AND CONSUMPTION

[↑ Back to contents](#)

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Key accelerators

Progress stalled on a UN Plastics Treaty, leaving countries like Germany and India to advance their own plastic taxation and producer responsibility measures to curb waste. Meanwhile, global plastic waste generation continues to grow. E-waste is also increasing, fueled in part by the AI boom as well as the ongoing challenge presented by inadequate recycling systems for electronics.

Governments aim to curb plastic waste through mandates and taxation

Single-use plastic production continues to rise despite longstanding regulations and reduction pledges. In March 2022, UN Member States adopted a resolution to end plastic pollution and finalize a legally binding treaty by 2024 (the UN Plastics Treaty). However, recent talks in Busan, South Korea, failed to produce an agreement due to divisions between countries who want plastic production and consumption to continue at high levels and countries who are pushing for reductions.²⁴⁴ Treaty negotiations to address these conflicting priorities will continue in 2025.

Although the UN Plastics Treaty remains delayed, many countries and local governments are enacting their own measures to curb plastic waste. In 2025, Germany will join Portugal, the Netherlands, and the United Kingdom in imposing plastics taxation, aiming to reduce the improper disposal of single-use plastics.²⁴⁵ The tax requires manufacturers to contribute to a fund that offsets the costs of non-recycled plastic waste collection, cleaning, and disposal in public spaces.

Extended producer responsibility (EPR) is also gaining traction as part of a strategy to shift accountability for a product’s lifecycle, including its disposal, to manufacturers. India, one of the first countries to launch an EPR scheme in 2011, developed a new set of requirements that will go into effect in April 2025.²⁴⁶ Under the initiative, manufacturers must incorporate at least 30 percent recycled content into plastic products and ensure a designated percentage of the plastic is successfully recycled. The Malaysian government

similarly announced plans in September 2024 to make EPR mandatory for manufacturing firms over three to five years.²⁴⁷ Canada is also putting pressure on plastics producers with its new Federal Plastics Registry tool, requiring them to report on the quantity and types of plastic they put on the Canadian market each year and how the plastic moves through the economy.²⁴⁸

Consumer appetite for sustainable products continues amid inflationary concerns

Product sustainability practices are driven not only by regulations but also by growing pressure from investors and consumers. In a 2023 survey of more than 9,000 consumers across Europe, North America, and South America, 82 percent said they would be willing to pay more for sustainable packaging, and 71 percent said they have chosen a product based on its sustainability credentials.²⁴⁹ A 2024 survey of 20,000 consumers from across 31 countries and territories came to similar conclusions, with 80 percent answering they are willing to pay more for sustainably produced or sourced goods.²⁵⁰ Coming at a time when inflationary concerns remain high, both surveys could point to continued high demand for sustainable products. Further reinforcing this point, a group of more than 20,000 consumers are willing to pay an average 9.7 percent more for goods that meet specific environmental criteria, including locally sourced, made from recycled or eco-friendly materials, and more.

Shareholder activism continues to exert influence as a tool sometimes used to push companies to adopt product sustainability practices. For example, As You Sow, a nonprofit shareholder advocacy organization, worked with Hormel to secure commitments to reduce packaging



by 10 million pounds and invest in recycling initiatives.²⁵¹ Green Century Capital, an activist investment firm, also prompted Disney and Choice Hotels to set commitments to phase out single-use plastics and set targets for overall plastics reduction.²⁵² This success runs counter to the diminishing impact of environmental, social, and governance (ESG) shareholder resolutions as a whole.²⁵³

Waste keeps growing while recycling rates remain low

Despite ongoing efforts to reduce it, waste on a global scale continues to grow. Global plastic waste has increased from 206 million metric tons in 2021 to a projected 221 million metric tons in 2024.²⁵⁴ Along with the numerous negative externalities of waste, its management is not cheap. In 2020, the UN Environmental Programme estimated that global waste management cost \$252 billion.²⁵⁵ Without urgent action to reduce waste, this cost could potentially double to \$640.3 billion by 2050.

Electronic waste (e-waste) is also rising. The UN's fourth Global E-waste Monitor (GEM) found that the world produced a record 62 million metric tons of e-waste in 2022, up 82 percent from 2010.²⁵⁶ Of 2022's e-waste, less than 22.3 percent was properly collected and recycled, resulting in the loss of \$62 billion worth of recoverable resources. E-waste may grow. The Artificial Intelligence (AI) boom is expected to increase global e-waste by 3 to 12 percent by 2030.²⁵⁷ This growth will be driven by the building and upgrading of data centers for generative AI, which requires the disposal of older equipment and chips in favor of more powerful components.

The corporate response

Facing mounting pressures from investors and stakeholders, industrial firms are changing their production processes, with the cement and steel sectors at the forefront of this green transformation movement. Despite challenges, investment in sustainable production initiatives continue to grow, with firms ranging from startups to multinationals acting.

Industrial firms increase green production

As sustainability demands grow, industrial firms are committing to green production. Some cement and steel companies are leading. The green cement industry, which uses processes like electrolysis to reduce greenhouse gas emissions, is expected to grow from \$30.15 billion in 2023 to \$47.32 billion by 2028.²⁵⁸ At the company level, Vattenfall and low carbon cement startup Cemvision agreed to develop green cement with a reduced carbon footprint of as much as 95 percent in June 2024.²⁵⁹ Vattenfall will produce the cement using raw materials recycled from industrial waste and utilize kilns powered by green electricity. Similarly, Heidelberg Materials’ launched its ecoZero cement in November 2023, which achieves a net zero footprint via carbon capture.²⁶⁰

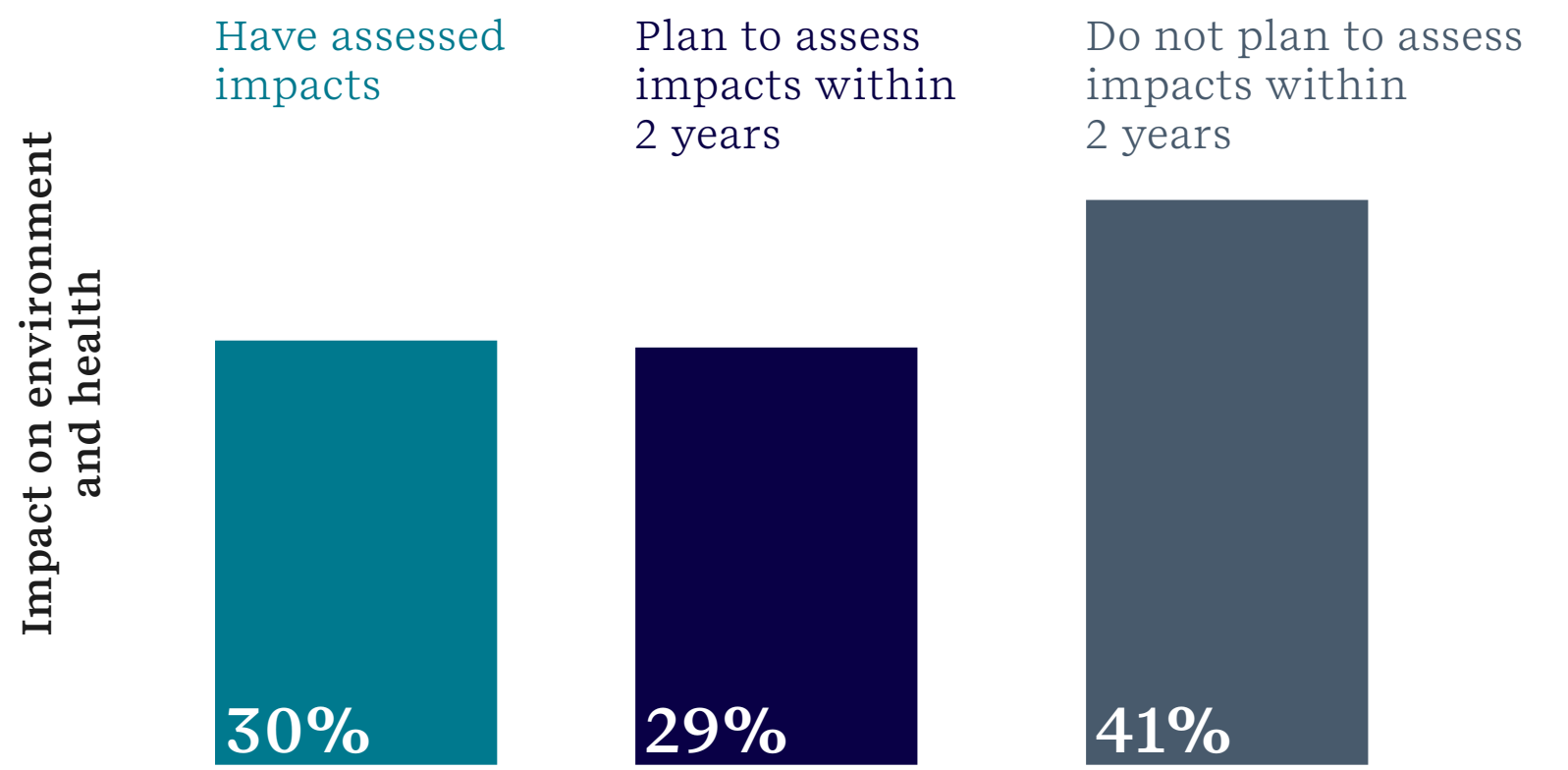
Green steel production is also growing. At NYC Climate Week 2024, members of the Sustainable Steel Buyers Platform asked steelmakers to deliver a total of 1 million metric tons per year of “near-zero emissions” steel to North America by 2028.²⁶¹ By grouping demand and offering a price premium, the alliance hopes to scale production. In Sweden, Stegra secured over \$4 billion in debt financing to construct the world’s first large-scale green steel plant.²⁶² Once operational, the plant is projected to produce 5 million tons of steel annually using green hydrogen and wind power. Companies in India, the world’s second largest steel producer, are also moving ahead. For example, Jindal Steel & Power will use carbon capture technology at its Angul plant to capture emissions from steel production through coal gasification, where carbon dioxide is fully reabsorbed.²⁶³

Meanwhile Tata Steel is planning a pilot project to produce steel using up to 75,000 tons of hydrogen annually.²⁶⁴

Corporate action to reduce, reuse, and recycle materials is still evolving

In 2023, CDP added corporate plastic disclosures for the first time. Of the almost 3,000 companies that provided information, only 21 percent reported plastic-related risks within their value chains, while a further 41 percent have not mapped the impact of their plastics use and production to the environment and human health (see figure 7).^{265, 266}

Figure 7: Company plans for mapping plastic-related impacts on the environment and human health



Percentage of companies that are already or planning to map plastic-related impacts on the environment and human health

Source: [Plastics Disclosure Data - CDP](#)

Other analyses also show room to grow. The 2024 Plastics Scorecard analyzed 225 companies across 15 industries with annual revenues of at least \$1 billion and found that while most have plastic recycling and reduction-related goals, many are not on track given their plastic use intensity continues to increase.²⁶⁷ Despite slow progress, companies are increasingly integrating sustainable product design principles into their operations. Humanscale, a manufacturer of ergonomic office solutions, launched its ‘Refreshed’ program, where corporate customers may return their pre-owned products to be restored and refreshed for purchase, so they do not end up in landfills.²⁶⁸ The company’s products are designed around four key pillars that contribute to circularity: longevity, serviceability, material health, and simplicity. Gualapack is also making progress in sustainable product design. The Italian manufacturer of spouted pouches launched a new pouch that is specifically designed for collection, sorting, and recycling within the polypropylene stream.²⁶⁹

Sustainable packaging innovations flourish despite companies changing goals

Sustainable packaging targets proliferated in recent years. However, many companies are now adapting these targets, saying they are no longer realistic due to challenges, such as economic pressures and a lack of waste management infrastructure.

Companies including Unilever, Coca-Cola, and PepsiCo have revised plastic packaging goals, with each postponing or dropping previously set targets to achieve 100 percent reusable, recyclable, or compostable plastic packaging by 2025.^{270, 271, 272}

Despite adjustments, companies are still pursuing sustainable packaging innovations. One innovation driver is the growing market for sustainable packaging, which was valued at \$30.53 billion in 2024 and is poised to reach \$41.27 billion by 2031.²⁷³ Amazon is one company at the forefront with its ‘Ships in Product Packaging’ program.²⁷⁴ Under the program, the company ships products in the original manufacturer’s packaging, with only a customer address label added, rather than using a separate box or sleeve. Amazon has also developed machines that create on-demand, recyclable, and made-to-fit packages, further reducing the volume of packaging needed to ship items. Colgate-Palmolive is another company pushing innovation forward.²⁷⁵ In 2019, it launched recyclable toothpaste tubes for its Tom’s of Maine brand. The company now plans to shift to this sustainable format for all toothpastes worldwide by the end of 2025.



Action recommendations

Companies keen to respond to the sustainable production and consumption trends outlined above should consider the following actions:

- Explore opportunities to accelerate the adoption of low-carbon technologies, including carbon capture, green hydrogen, and electrolysis, to transform your organization’s production processes and align with industry leaders.
- Strengthen your organization’s product sustainability and operational environmental impact disclosures to meet growing stakeholder transparency demands. This strengthening may involve measuring, documenting, and publicly reporting related risks and opportunities in a more transparent and comprehensive manner.
- Consider sharing your organization’s innovative product sustainability practices with other companies. By going beyond proprietary interests, companies can facilitate faster uptake of sustainable practices.

“Companies are increasingly assessing methods to eliminate single-use plastics from their products and packaging. Companies that can easily eliminate plastics are opting for alternative materials. For those for whom plastic is essential to products and packaging, attention is shifting to recycled plastic.”

Lee Read | Partner, ERM

“One company alone cannot drive product sustainability. Collaboration will be key to realizing the landscape-level shift needed to integrate sustainability across every part of a product’s value chain and achieving true transformation.”

Cristina Pellegrino | Global Industry Leader, Chemicals, ERM

TREND 8

Applying technology to sustainability

Key accelerators

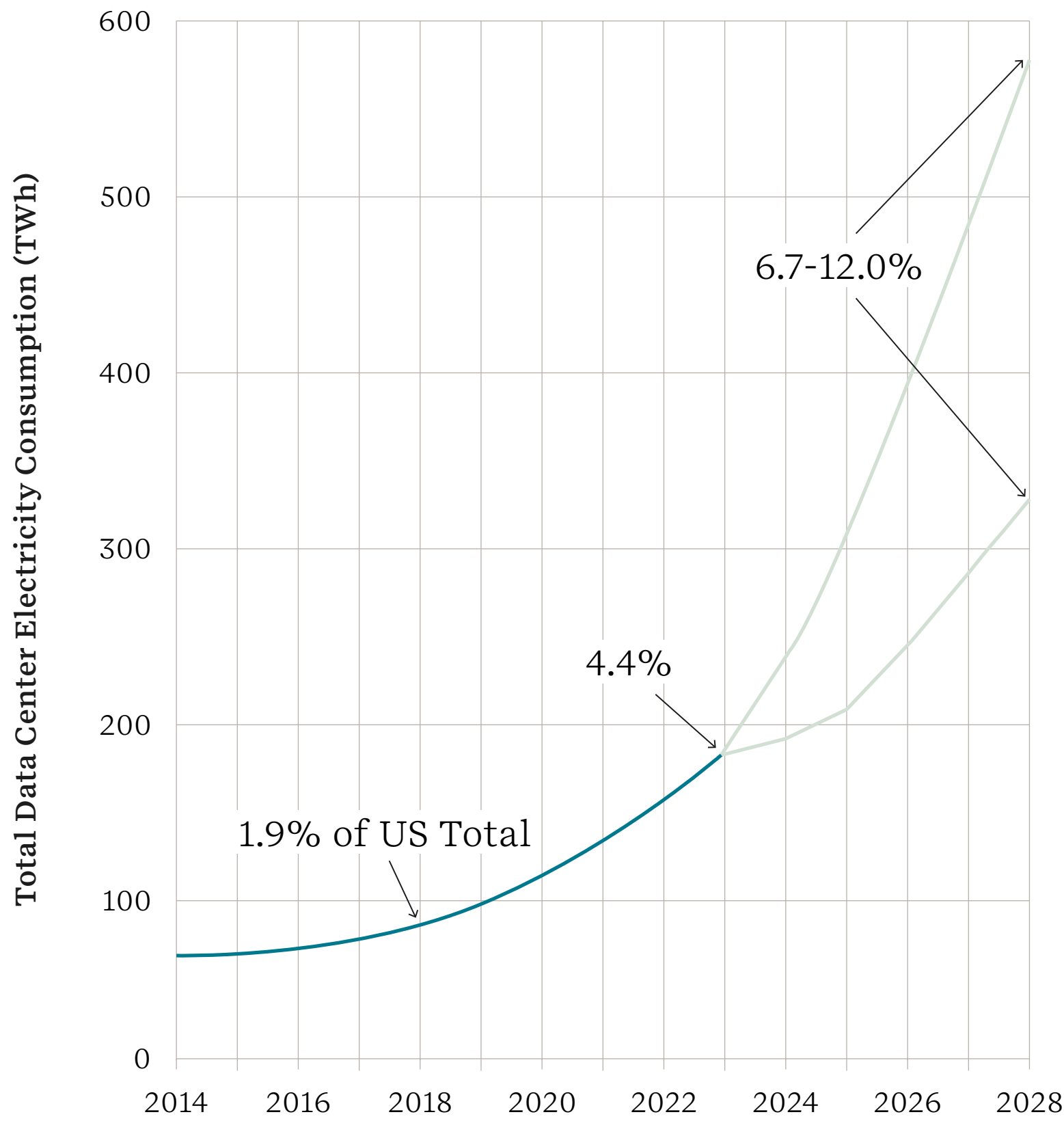
As Artificial Intelligence (AI)’s transformative potential demands all attention, its energy appetite poses challenges to global decarbonization efforts. Simultaneously, ethical concerns over AI are spurring government action to prevent social disruption, while advances in artificial and virtual reality technologies could reshape businesses.

AI’s energy appetite may be met by a mix of low- and high-carbon power sources

AI is projected to consume ever greater amounts of energy as it is integrated into everyday applications. This energy consumption could have implications for global decarbonization efforts depending on whether or not it is met by low- or high-carbon power sources. However, there are still unknowns when it comes to just how much demand AI will generate. A 2024 Electric Power Research Institute (EPRI) study found that early ChatGPT requests required 2.9 watt-hours of energy compared to 0.3 watt-hours for a traditional Google search.²⁷⁶ Despite ChatGPT potentially requiring almost ten times as much energy, new AI applications may require even more to create photos, music, and videos. A 2024 Lawrence Berkeley National Laboratory study found that beginning in 2017, U.S. data center energy usage began to grow rapidly as operators increasingly directed resources to AI applications. In 2018, U.S. data centres consumed 76 TWh of electricity (1.9 percent of total U.S. electricity consumption), up from approximately 60 Twh in 2016. By 2023, consumption surged to 176 TWh (4.4 percent of total U.S. electricity consumption). The study projects that consumption will likely only grow further, potentially reaching 580 TWh (12 percent of total U.S. electricity consumption) by 2028 (see Figure 8).²⁷⁷

Even with this wide disparity, it is apparent that AI will be a key driver of energy demand. This has led ARM’s CEO to call AI’s energy needs unsustainable.²⁷⁸ Others, including Ireland’s former Minister for the Environment, Climate and Communications, have called for the tech companies to “work within the climate limits” the world is committed to when further developing AI.²⁷⁹

Figure 8: Projected U.S data center electricity consumption



Historical and projected U.S. data center electricity consumption between 2014 and 2018.

Source: Lawrence Berkeley National Laboratory

Still, society must also account for AI’s potential energy saving applications that could help scale climate action. These applications could take the form of using AI to manage smart grids and help utilities more efficiently allocate electricity generation or to forecast renewable energy generation to better match supply with demand. AI can also help combat physical climate change risks. In August 2024, the United Nations launched the Global Initiative on Resilience to Natural Hazards through AI Solutions, which will create an AI readiness framework for evaluating and bolstering countries’ disaster management capacities, by, for example, integrating AI into disaster management tools.²⁸⁰

AI’s ethical challenges trigger a range of governance proposals

Ethical concerns about AI are also rising to the forefront of discussions on what responsible AI use looks like. As more and more tasks are delegated to AI, the technology’s potential ability to spread misinformation, discriminate in its outputs, compromise privacy, and remove humans from decision making is raising worries that it could cause social harms. Recognizing these risks, governments are stepping in to prevent escalation. In October 2024, the U.S. Department of Labor released its AI Principles for Developers and Employers, which includes best practices for developing AI to protect workers, ensuring AI use transparency, and establishing AI governance systems.²⁸¹ Earlier in the year, the European Union (EU)’s AI Act became law.²⁸² The first of its kind, the AI Act categorizes AI systems into three risk levels and imposes safe-use requirements for each, ranging from outright bans for those that pose unacceptable risks to transparency

obligations for those that pose limited risk. Stakeholders involved in AI lifecycles also have specific obligations under the act, with AI providers required to comply with AI safety and data governance standards.

Technological advances push operations into the digital realm

Other technological advances are poised to change the business landscape. Artificial reality (AR) and virtual reality (VR) have seen major improvements in recent years. For one, AI integration has made AR and VR constructs more realistic, opening them to more real-world applications.²⁸³ New wearable devices are another highlight, with more AR- and VR- capable glasses and headset options providing companies more opportunities to integrate AR and VR into their operations. Relatedly, the emergence of spatial computing promises more seamless interactions with the digital world. A combination of AR, VR, and mixed reality, companies can apply spatial computing to sustainability applications such as data center energy optimization and supply chain emissions mitigation. In this latter application, spatial computing can drive carbon-aware site selection by helping companies optimize transportation networks for emissions savings by relocating or adding new supply chain sites.²⁸⁴

Quantum computing is another emerging technology to watch. Using quantum physics, quantum computers can perform complex calculations that would take traditional supercomputers hundreds if not thousands of years in just a few minutes. This speed enables quantum computers to help provide once inaccessible sustainability insights like identifying more powerful

electric vehicle batteries by simulating chemistries or optimizing power grids as distributed energy resources integration adds complexity by introducing bidirectional power flows.



The corporate response

As companies scale AI efforts, many are increasingly considering how to responsibly and sustainably use the technology. Alongside AI, companies are applying AR and VR technologies to training and customer applications.

Companies roll out AI risk guidance

Companies are integrating AI into their operations as they look to increase efficiencies and unlock productivity gains. According to a 2024 U.S. survey, 88 percent are already using generative AI solutions like ChatGPT.²⁸⁵

As usage grows, companies are turning their attention to responsible AI use. In November 2024, IBM celebrated the five-year anniversary of its AI Ethics Board, which oversees AI governance and evaluates AI use cases where ethical issues could potentially arise.²⁸⁶ IBM also published its AI Risk Atlas in 2024 to outline key risks companies could face when working with AI.²⁸⁷ Salesforce has pursued similar steps. In 2023, it published five guidelines to responsibly develop AI that is accurate, safe, honest, human, and sustainable.²⁸⁸ China’s Alibaba Group has too. It published a white paper on generative AI governance and ethics in FY24 that analyses the biggest risks of large language models and provides governance strategies to best mitigate them.²⁸⁹ Tech companies are not the only organizations pursuing responsible AI. In 2024, pharmaceutical firm Novartis published its AI Risk and Compliance Management Framework, outlining its procedures for managing AI risks, which it classifies based on the same system the EU AI Act uses.²⁹⁰

AI continues to drive sustainability benefits

AI’s high energy consumption is not dissuading companies from continuing to use the technology to drive sustainability benefits. Amazon is using AI to combat the very issue of energy consumption. Its Amazon Web Services subsidiary partnered with Orbital Materials in December 2024 to use the firm’s AI model to test how

different advanced materials remove carbon from the atmosphere at its data center sites, with the aim to remove more carbon than is generated by its sites’ energy use.²⁹¹ Meta is also focused on reducing the emissions impacts of its data centers. It partnered with the University of Illinois at Urbana-Champaign to develop and train an AI model that predicts the strength and emissions footprint of the concrete mixtures it uses to build its data centers.²⁹² Using the model, Meta was able to reduce concrete-associated emissions by up to 70 percent without compromising on construction performance. Beyond environmental sustainability, firms are using AI to predict medical issues and develop new medicines. For example, Bayesian Health’s AI platform predicts pressure injury infections six days prior to development, while Johnson and Johnson applies AI to medical datasets to identify disease targets and determine and optimize molecules to combat the identified disease.^{293, 294}

AR and VR technologies improve worker training and customer interactions

Advances in AR and VR technologies promise to help companies. Many are already employing the tools to help transform worker training and customer interactions. For example, Georgia-Pacific uses VR to train employees on how to control hazardous energy situations by walking through steps to shutdown equipment, lock it, and confirm that it will not run again.²⁹⁵ The process has led to improved safety performance and allows employees to learn about something they could only previously do on the job. Delta Airlines is using VR to help train employees for a job that is only possible under certain conditions in the field, de-icing planes.²⁹⁶ Delta’s de-icing technicians must complete an annual training. Before VR, technicians had to travel to places with icy conditions, costing time and money. After employing VR for training technicians, Delta was able to train 150 technicians a day, up from 3 previously, saving money by reducing travel costs and de-icing fluid use. Toyota has opted for AR to improve customer experience and education. Its Applied Technology and Research Lab has created realistic replications of Toyota and Lexus products, allowing customers to experience vehicle exteriors and interiors, review features via interactive hotspots, and visualize what Toyota Approved accessories look like on physical products.²⁹⁷



Action recommendations

Companies keen to respond to the sustainability technology trends outlined above should consider the following actions:

- Develop and implement a responsible AI strategy that helps ensure the ethical use of AI within your organization. As part of this strategy, define a clear governance structure and AI use guidelines that account for the intricacies of your business and consider creating an AI ethics panel that can review AI use cases that may pose ethical concerns.
- Evaluate the areas of your organization where AI could help bolster sustainability action and seek out AI and VR applications that you can apply to these areas. These applications may or may not already be on the market. For the latter, your organization may need to partner with external developers to ensure your needs are met.
- Assess where within your organization digital twins can help improve sustainability performance. Potential application areas could include building energy consumption optimization, waste reduction opportunity identification, water conservation modelling, and sustainable product design. Before moving forward within digital twin initiatives, ensure your organization’s IT infrastructure has the capacity to support them.

“Despite the current urgency to source power by any means necessary, data center developers must carefully consider the impacts of deploying temporary power infrastructure. Companies should not neglect long-term sustainability planning during this booming period.”

Tiffany Cuni | Partner, ERM

“Although AI may appear to be a straightforward technological solution for certain sustainability use cases, companies must still consider capacity and policy factors. What is effective in one geography may not be applicable to those in their supply chain who have different resources and operate under different political systems. It is essential for companies to engage their supply chain and local governments when implementing AI initiatives.”

Rebecca Green | Technology Sector Lead (Asia), ERM

A close-up photograph of a person's face, showing their nose and mouth, and their hand holding a thick wooden staff. The person is wearing a blue and white striped garment. The background is blurred, showing other people in a crowd.

TREND 9

Respecting fundamental rights

Key accelerators

The global push among governments and regulators to protect fundamental rights and promote ethical business conduct intensified in 2024. Meanwhile, global clean energy shifts impact human rights, further emphasizing the need for a just transition.

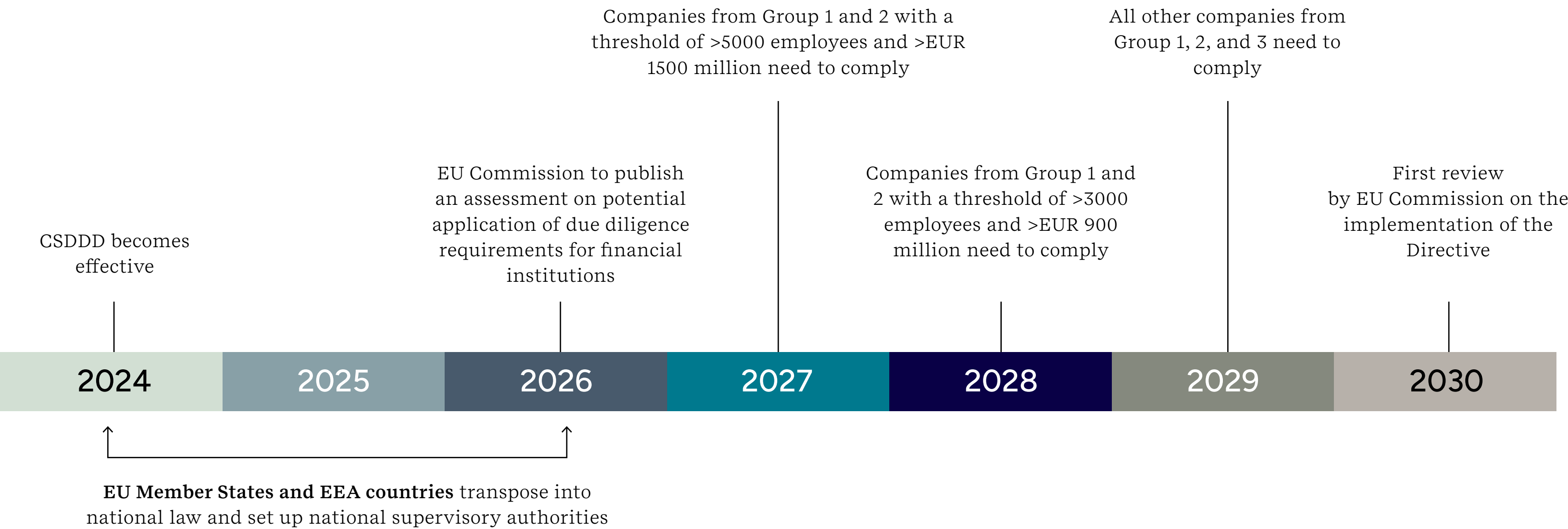
Fundamental rights regulation intensifies

Last year was marked by several milestones aimed at protecting fundamental rights. However, the initiatives also faced an environment that is more skeptical about human rights.

First, many fundamental rights advocates celebrated after the European Council and European Parliament reached a provisional agreement on the Corporate Sustainability Due Diligence Directive (CSDDD).²⁹⁸

The directive requires companies to conduct environmental and human rights due diligence within their operations and supply chains. However, the CSDDD’s final approval faced uncertainty after countries including Germany and Italy objected to the rule.²⁹⁹ The CSDDD entered into force in July 2024 but in a changed state after further debate led to compromises that included reducing the number of companies in scope by approximately two-thirds (see Figure 9).³⁰⁰

Figure 9: CSDDD implementation timeline



The different phases of CSDDD implementation between 2024 and 2030.

Source: [ERM](#)

The CSDDD faced criticism after finalization. In December 2024, the U.S. Chamber of Commerce sent a letter to the U.S. Congress to voice their issues with the law.³⁰¹ Qatar’s Energy Minister also critiqued the CSDDD in December 2024, warning that Qatar would cut liquified natural gas exports to the European Union (EU) if it is fined under the law.³⁰²

Beyond the CSDDD, the EU also enacted a new rule banning the sale of products made with forced labor in November 2024.³⁰³ Under the rule, member state authorities will have the power to investigate suspected violations and ban the product. Any bans will apply to all other member states.

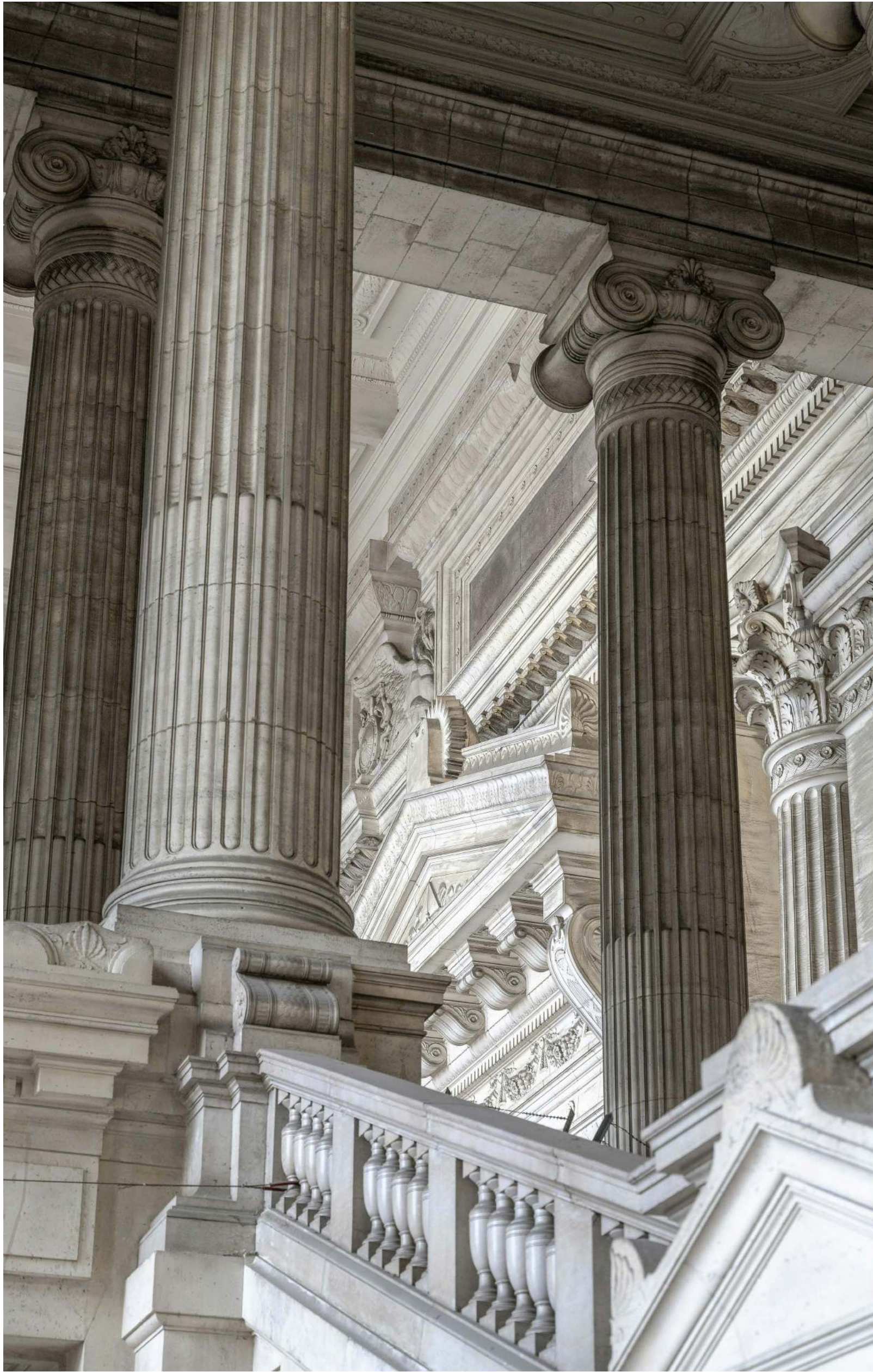
The EU was not the only government pursuing fundamental rights-related action. The U.S. released its updated National Action Plan (NAP) on Responsible Business Conduct in March 2024.³⁰⁴ First released in 2016, the non-compulsory NAP serves as a guide for U.S. businesses conducting human rights due diligence in their operations and supply chains.

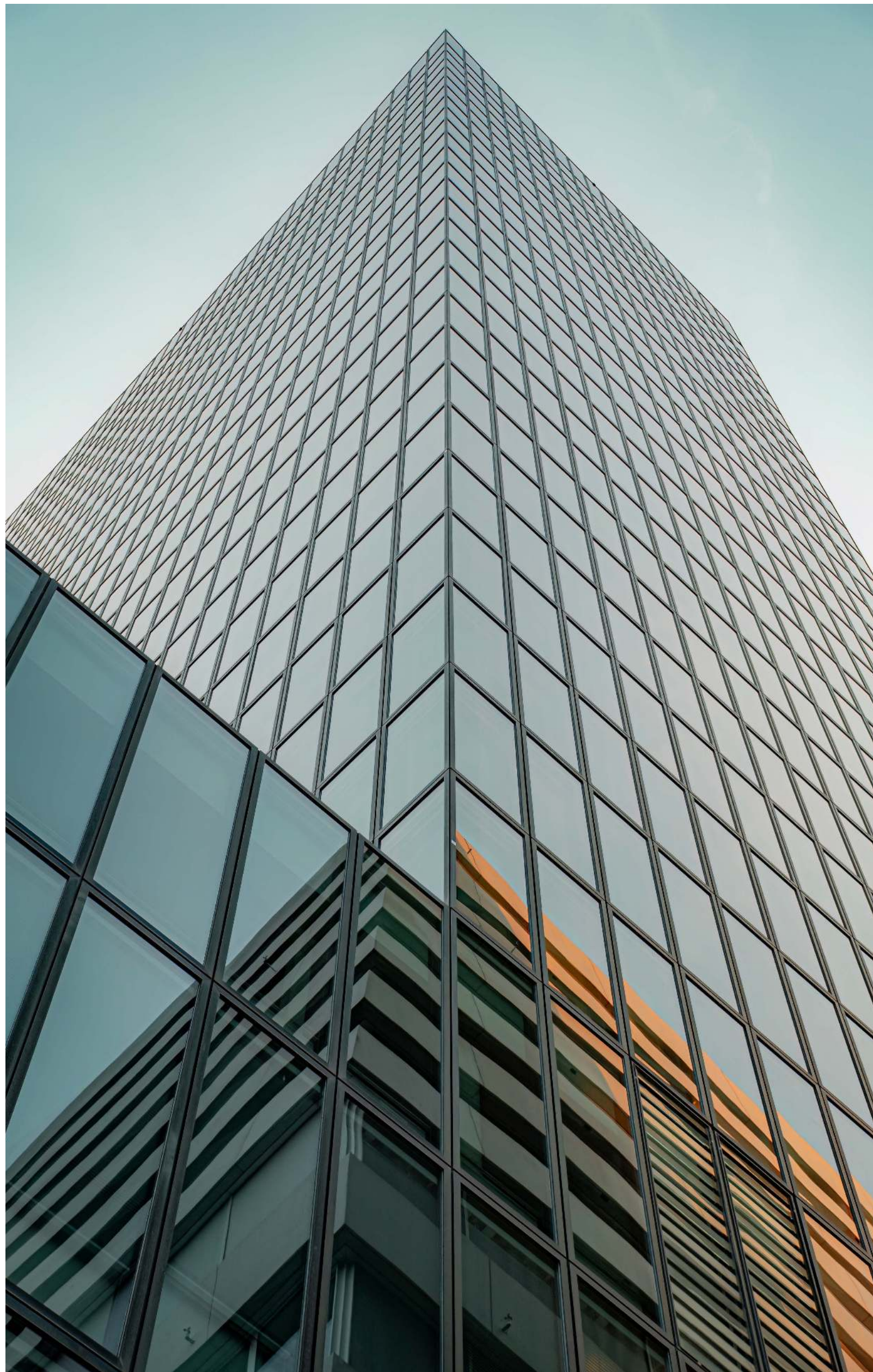
Outside government, the Taskforce on Inequality and Social-related Financial Disclosures (TISFD) launched in September 2024.³⁰⁵ Following the example of the Task Force on Climate-related Financial Disclosure (TCFD) and the Taskforce on Nature-related Financial Disclosures (TNFD), the TISFD will create a framework for companies and financial institutions to assess and disclose their inequality- and social-related impacts, dependencies, risks, and opportunities. Shortly after its launch, the TISFD signed a cooperation agreement with the European Financial Reporting Advisory Group (EFRAG) to help develop the TISFD and related disclosure initiatives.³⁰⁶

Fundamental rights disputes are increasingly settled in court

The judicial system shaped the fundamental rights space in 2024. In March, a Belgian farmer sued TotalEnergies for contributing to climate change, which has damaged his farm and led to crop failures.³⁰⁷ The suit was followed by an April European Court of Human Rights ruling that found that Switzerland had violated the human rights of more than 2,000 Swiss women for not adequately reducing emissions and fighting climate change.³⁰⁸ However, the future of the rule is uncertain after the lower house of Swiss parliament voted to reject the ruling in June, arguing that it already had a sufficient climate strategy in place.³⁰⁹

In the Americas’, a Native American nonprofit in September appealed to the U.S. Supreme Court to stop Rio Tinto and BHP from building what would be one the world’s largest copper mines in Arizona.³¹⁰ In the appeal, Apache Stronghold argued that the federal government would violate their freedom of religion rights by giving the companies land sacred to the Apache people. In Brazil, a judge ordered BHP and Vale to pay \$9.67 billion to victims of the 2015 Fundão dam collapse that killed 19 people.³¹¹ BHP also faces another lawsuit for the same collapse in London.³¹² The suit, which was brought by approximately 620,000 alleged victims in October, is the largest in British history.





Human rights issues are scrutinized as the energy transition gains steam

The energy transition is accelerating as countries and companies decarbonize and fight climate change. While this occurs, human rights are at play. The Business and Human Rights Resource Centre’s latest Transition Mineral Tracker, which tracks human rights abuses in the supply chains of minerals key to the energy transition (e.g., cobalt, copper, nickel, etc.), found 91 alleged abuses globally in 2023.³¹³ Of these, 61 impacted the rights of indigenous peoples, with the majority violations of their right to free, prior, and informed consent. A similar 2024 study of critical mineral supply chain abuses found that there were 334 violent incidents or protests between 2021 and 2023 associated with copper, cobalt, lithium, and nickel mines in the world’s ten largest producing countries.³¹⁴

Human rights issues are also occurring in downstream supply chains. A fire in a South Korean lithium battery factory killed 23 workers in June 2024.³¹⁵ The majority of workers who died were temporary migrant workers primarily from China who succumbed quickly to a fire made worse by safety issues that made the building vulnerable to fire.

Stakeholders are acting as human rights violations occur. At the 13th Conference of the parties for UNECE Convention on the Transboundary Effects of Industrial Accidents, countries agreed to improve energy transition-related industrial safety management and address emerging risks related to decarbonization.³¹⁶ Formed at COP27, the United Arab Emirates Just Transition Work Programme held its first dialogue in June 2024 where

170 party representatives discussed just transition pathways to achieve the Paris Agreement via nationally determined contributions (NDCs). Going forward, the Programme will work to include just transition elements in all NDCs.

The corporate response

Equity initiatives are growing among companies looking to empower communities. Human rights are also front and center in supply chains, as companies are increasingly embroiled in labor rights disputes.

Indigenous equity initiatives give voices to communities

Indigenous communities have sometimes been neglected in natural resource extraction and energy activities. However, with equity initiatives, this is starting to change. These initiatives, which provide Indigenous communities with stakes in projects, are gaining most ground in Canada, where the government is developing a National Benefits-Sharing Framework to ensure Indigenous people benefit from projects in or near their communities.³¹⁷ In July 2024, TC Energy announced the country’s largest Indigenous equity ownership agreement, which will give a 5.34 percent ownership stake in the company’s western Canada pipeline assets to an Indigenous-owned investment partnership representing communities across Alberta, British Columbia, and Saskatchewan.³¹⁸ Enbridge is making a similar move after submitting an application in August 2024 with the Canada Energy Regulator to sell a stake in its British Columbia pipeline system.³¹⁹

Pipeline projects are not the only focus. New Zealand’s state-owned utility Mercury entered into an agreement whereby the Tauhara Maori Land Trust owns 35 percent of the Tauhara North II geothermal project, which generates 35 megawatts (MW) of energy.³²⁰ As part of the agreement, the Trust receives an annual royalty of approximately \$402,000. A similar project was recently agreed to in Colombia where Greenwood Energy is developing a 160 MW solar farm on the land of the Arhuaco Indigenous group in exchange for providing the group a 49 percent stake in the project.³²¹

Private sector record on human rights varies

Companies perform unevenly when it comes to respecting human rights. A 2024 World Benchmarking Alliance review of 2,000 of the world’s most influential companies found that 90 percent do not meet fundamental expectations on human rights by, for example, paying a living wage or conducting human rights due diligence.³²²

The same is sometimes true for companies involved in the energy transition. Another 2024 study from the Business & Human Rights Resource Centre found that while renewable energy companies are not prepared to deliver a fast and fair transition, there are signs of progress.³²³ For example, 75 percent of wind and solar developers have implemented human rights policies aligned with the UN Guiding Principles on Human Rights and two-thirds have a grievance mechanism for external stakeholders. For individual companies, Vestas was the clear leader because of its commitment to remedy human rights issues when they arise and provide grievance mechanisms for workers and external stakeholders, among other measures. More regionally, a 2024 assessment of 12 renewable energy companies operating in Southeast Asia revealed that four disclosed commitments to respect human rights, while two had processes to identify and mitigate human rights risks.³²⁴

Action recommendations

Companies keen to respond to the fundamental rights trends outlined above should consider the following actions:

- Work with Indigenous communities that may be affected by your organization’s activities to develop an equity initiative that accounts for their needs and ensures that any benefits generated are equitably shared with them, whether through ownership stakes or revenue-sharing agreements. To guide this work, consider forming an Indigenous advisory council to provide counsel on Indigenous engagements and how best to share project benefits.
- Conduct comprehensive human rights due diligence to identify potential energy transition-related risks within your operations and supply chains such as land rights violations, environmental resource degradation, and dangerous working conditions.
- Establish human rights grievance mechanisms tailored to the circumstances of your operations and supply chains. The mechanisms should include clear remediation processes for identified human rights issues and be accessible to both internal and external stakeholders.
- Review potential human rights issues in your supply chains that may expose you to ongoing economic tensions. In circumstances where you identify potentially serious issues, reassess your supplier relationships and whether it is sensible to continue those that could negatively affect your organization’s reputation and performance.

“Climate transition plans should not be created in isolation. The decisions made within a plan will have clear impacts on people; be that company employees, workers within the value chain, or local communities. To ensure climate transition plans do not lead to unintended consequences that adversely impact people, it’ll be important to consider the Just Transition within them.”

Désirée Abrahams | Consulting Director: Human Rights, ERM

TREND 10

Navigating the evolving political landscape



Key accelerators

The 2024 election wave is reshaping global sustainability efforts, with changes likely to temper decarbonization ambitions, while leaders in other countries pursue mixed climate policies. Lastly, court decisions opened sustainability regulations to future challenges and overturned corporate decarbonization mandates.

The 2024 election wave is transforming the global sustainability landscape

2024 was deemed the year of elections, with over half of the world’s population heading to the polls.³²⁵ While it is too early to determine how exactly results will impact sustainability, a few clues are already emerging. Inroads made by conservative parties may force the European Parliament to scale back decarbonization ambitions, particularly regarding heating and transportation.

Other elections are poised to be equally important to climate action. The actions of Indonesia’s new President Prabowo Subianto may be mixed. On one hand, President Subianto will look to accelerate the country’s growing role in electric vehicle supply chains. On the other, he may continue to expand coal exports and power production to meet growing energy demands, partially driven by the mining and refining the nickel electric vehicle (EV) supply chains so desperately need.³²⁶ Across the Indian Ocean, many hope that the first coalition government in post-Apartheid South Africa will accelerate climate action. In July, the country passed the Climate Change Act, which will require the government to set national emissions reduction goal-aligned greenhouse gas (GHG) budgets for different economic sectors. Companies in these sectors will then be required to develop mitigation plans to remain within this budget.³²⁷

U.S. administration likely to reshape environmental and sustainability policies

The re-election of U.S. President Donald Trump is widely expected by experts to have significant impact on environmental and sustainability policies. In the

immediate aftermath of the election, clean energy stocks fell over concerns that the President would reduce government support and impose tariffs that could negatively affect the industry.³²⁸

Despite early indicators, there is still much uncertainty about the changes to be implemented during President Trump’s second term. Ali Zaidi, former President Biden’s National Climate Advisor, believes that Republicans will struggle to roll back clean energy provisions in the Inflation Reduction Act, particularly because much of its funds are benefiting Republican-leaning states.³²⁹ This view is supported by a letter by 18 House Republicans calling on Speaker Mike Johnson not to repeal the Inflation Reduction Act’s clean energy tax credits because of the benefits they bring their jurisdictions.³³⁰

One anticipated change involves further postponement or repeal of the U.S. Securities and Exchange Commission’s climate rule. First proposed in 2023, the SEC paused the rule in April 2024 as it underwent legal challenges.³³¹ The new administration is unlikely to implement this rule. It may choose to repeal it or simply not defend it in court.³³²

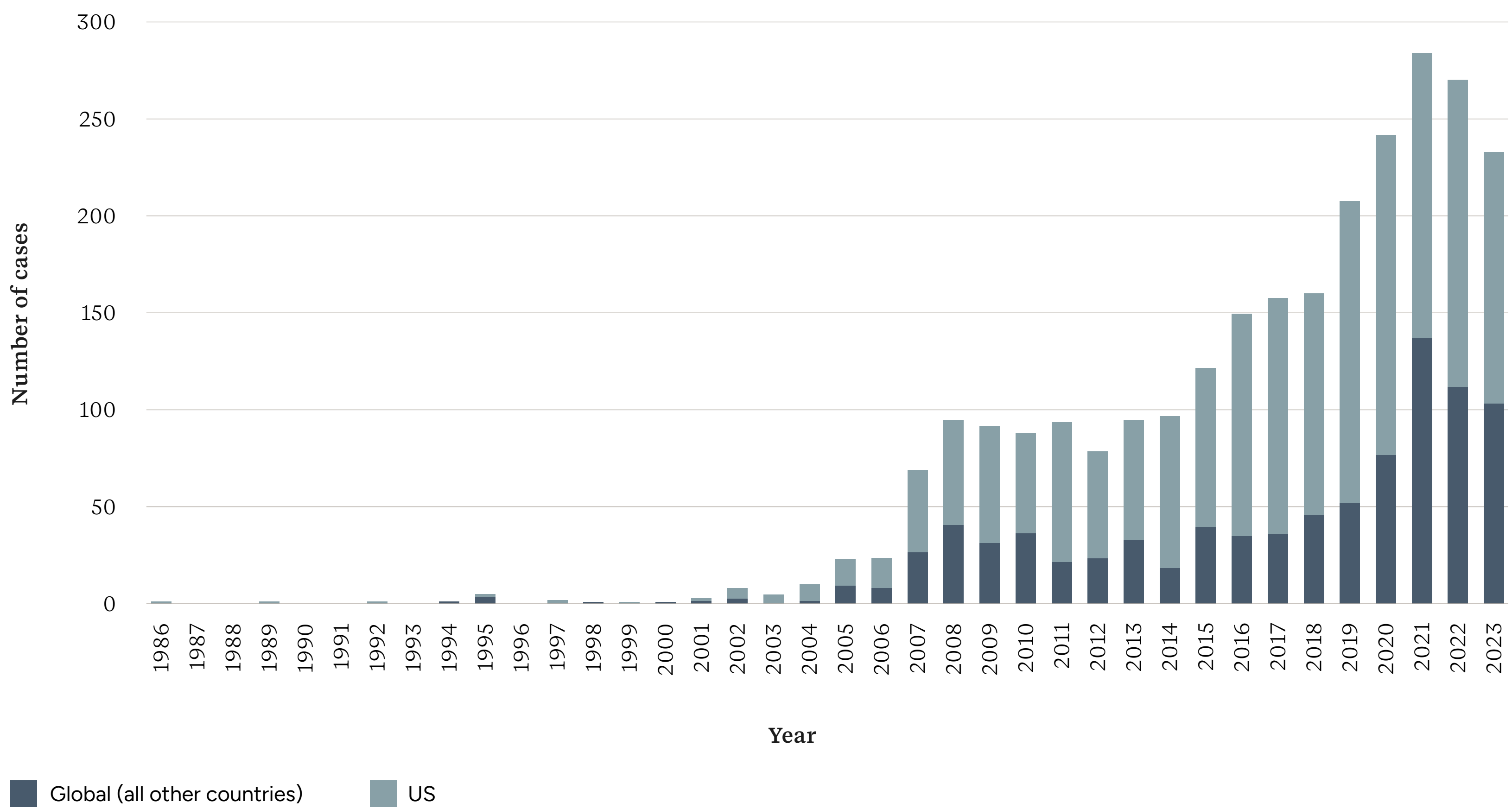
However, as during the first Trump administration, states are expected to advance climate disclosure rules of their own. Foremost among these are California’s proposed Senate Bill 253 and 261 disclosure regulations, which will likely require most large U.S.-based companies to disclose GHG emissions and climate-related risks regardless of what happens at the federal level.³³³

Courts are increasingly shaping sustainability action

Election results are not the only political developments that may complicate sustainability action, several 2024 judicial rulings are likely to as well. The U.S Supreme Court’s overturning of the Chevron Deference, which required judges to defer to executive branch interpretations of laws when they were ambiguous, will have a significant effect on the U.S. policy landscape.³³⁴ The verdict means that third parties can now challenge many sustainability-related regulations in court, varying from mandates to reduce GHG emissions to rules for considering environmental, social, and governance (ESG) factors in investment decisions.³³⁵ In the Netherlands, an appeals court overturned a 2021 ruling requiring Shell to reduce its greenhouse gas (GHG) emissions by 45 percent by 2030, saying that while Shell had an obligation to decarbonize, it is the government’s ultimate responsibility to protect human rights through climate mitigation.³³⁶ The rule was a blow to future court-based climate action as many hoped its success would spur similar lawsuits elsewhere.

In May 2024, the International Tribunal for the Law of the Sea ruled that GHG emissions constitute marine pollution because they are absorbed by the Earth’s oceans and that countries must act to mitigate these emissions to prevent harming small island countries.³³⁷ In the corporate space, a 2024 study found that of the 77 cases brought against companies for “climate-washing” that have been decided since 2016, 70 percent were successful.³³⁸

Figure 10: Climate litigation cases rise globally



Climate litigation cases globally and within the U.S. between 1986 and 2023.

Source: [Grantham Research Institute on Climate Change and the Environment](#)



A surge in global trade disputes interferes with business operations

Geopolitical developments in 2024 cause challenges for companies. The relationship between China and the West was top of mind globally. Late in the year, the U.S. targeted China's semiconductor sector, adding new restrictions on chip and machinery exports.³³⁹ China quickly responded by banning the export of minerals key to semiconductor and energy transition applications.³⁴⁰ China also added 28 U.S. companies to an export control list and banned the export of items that can be used in civilian and military applications (as the U.S. has also done) in January 2025.³⁴¹

Electric vehicles were another contentious issue. In October 2024, higher EU tariffs on Chinese electric vehicles went into effect under allegations of improper state support.³⁴² That same month, Canada also raised tariffs on Chinese EVs.³⁴³ Both of these moves followed similar U.S. tariffs in September 2024.³⁴⁴ While what is next for Canadian and U.S. tariffs is unclear, China and the EU have since begun to discuss solutions to limit the effects of China's state support of EV manufacturers.³⁴⁵

Another prominent geopolitical topic in 2024 was the implementation of the EU's Carbon Border Adjustment Mechanism (CBAM). The rule, which will put a carbon price on products imported into the EU, has been criticised by countries as a protectionist trade barrier. A few countries are moving to limit CBAM's impact. For instance, Indian officials have discussed the challenges the rule poses with their EU counterparts, while China has lobbied to include CBAM on COP30's official agenda over concerns that it is a unilateral move that will slow global decarbonization.^{346, 347}

The corporate response

Amid an evolving political environment, companies are adjusting how they communicate and approach decarbonization projects. While companies navigate shifting public opinions, they are also changing how they engage governments on sustainability policies.

U.S. companies rethink their communications

Our 2024 Annual Trends Report noted that companies were beginning to reconsider their positioning on issues. What was a nascent phenomenon became a comprehensive shift in how companies communicate. Nowhere was this more apparent than the U.S. During the 2020 general election, companies called on consumers to vote via public relations campaigns. Four years later, companies scaled back election communications to avoid upsetting customers, investors, and other stakeholders who increasingly want companies to stay quiet on political issues.³⁴⁸

There was also a shift in communications within companies. After internal protests over the Israel-Gaza conflict, some dismissed workers for organizing workplace disruptions and making charged social media posts.³⁴⁹ This is in contrast to recent years where companies worked to foster internal discussions around social issues. Other companies who want to speak out about social issues are finding it harder to do so. In November 2024, Ben & Jerry’s sued its parent company Unilever for allegedly censoring its attempts to communicate its support for Palestinian refugees.³⁵⁰

Political changes impacting decarbonization

Twenty-twenty-four’s global elections are likely to impact decarbonization efforts. In the U.S., TotalEnergies paused an offshore wind farm off the coast of New York following President Trump’s election, with the company’s CEO stating that the company could restart it in four years.³⁵¹ In North Carolina, Duke Energy announced it was pausing its consideration

to participate in the Department of Energy’s Energy Infrastructure Reinvestment program, which was created by the Inflation Reduction Act, over concerns that funding may not be available under President Trump’s administration.³⁵² The Trump administration could also impact decarbonization investments from outside the U.S. South Korean firms involved in EV supply chains are slowing or pausing plans to build U.S. battery plants over worries that the administration could end EV tax credits.³⁵³

Similar trends are emerging elsewhere. In the EU, ArcelorMittal halted green steel investments after the supportive policy landscape it based plans on failed to reach the levels needed to overcome the technical challenges associated with low carbon steelmaking.³⁵⁴

In Indonesia, where the new government has pledged to phase out coal-fired power plants in the next 15 years, more positive developments are occurring.³⁵⁵ In August 2024, the state-owned power generator PLN announced it will close 13 coal-fired power plants that generate a combined 66 million tonnes of CO₂ annually.³⁵⁶ Private sector movement is also occurring. PT Adaro Energy Indonesia announced in September 2024 that it will sell its coal mining business as it transitions away from fossil fuels.³⁵⁷

Companies increasingly try to shape government sustainability policies

As government compositions change after elections, so too will policies. In 2025 and beyond, companies will consider responsible policy engagement (RPE) principles to push for more ambitious sustainability policies. RPE was first coined by Ceres in 2020 when it published recommendations for how companies could align their policy engagement with climate science.³⁵⁸ The RPE space has evolved since. In 2023, the We Mean Business Coalition and other NGOs released an RPE framework that builds upon Ceres’ initial work by outlining a set of resources for companies to advance their RPE practices.³⁵⁹,³⁶⁰ Investors are also pushing companies. In August 2024, Norges Bank published its expectation that companies’ policy engagement should align with their own stated policies.³⁶¹

Companies have responded with increased activity. Unilever launched its first Climate Policy Engagement Review in March 2024 and called for the industry associations it participates in to improve their own engagement.³⁶² Walmart is another company acting. The retailer includes extensive information on RPE in its sustainability reporting, including disclosures on its advocacy positions on key sustainability issues and the structures and processes it uses to manage policy engagements.³⁶³ Beyond disclosure, 153 Japanese companies called on the Japanese government to set a 2035 nationally determined contribution aligned with 1.5°C and set a target to triple renewable energy capacity by 2035.³⁶⁴ Similarly, major fossil fuel and industrial firms including Shell and Tata Steel published a letter

in December 2024 calling on the EU to explore requiring consumers to purchase sustainable products.³⁶⁵ The companies argued that without government support to create consumer demand, it will be difficult to invest in sustainable production solutions.



Action recommendations

Companies keen to respond to the political trends outlined above should consider the following actions:

- Regularly assess the impacts of climate-related policy and regulatory changes on your company’s decarbonization efforts.
- Evaluate, invest, and participate in a broad range of climate action opportunities such as carbon capture and storage, nuclear energy, electric vehicles, and infrastructure permitting reform.
- Establish a responsible policy engagement strategy to positively shape future sustainability-related policy. When developing this strategy, ensure it aligns with your organization’s broader business and sustainability objectives and that you have a plan to transparently disclose RPE activities to build stakeholder trust that the organization is pursuing these activities with society’s best interests in mind.
- Clearly define a governance structure for your organization’s responsible policy engagement. Consider giving the Board of Directors a central governance role, as many standards and guidance documents have endorsed, given their responsibility for the organization’s long-term success.

“Most CEOs will likely take a long-term view on decarbonization and resist the temptation to change plans in the short-term just because political winds are shifting. The investments their companies are making to reduce emissions have very long time horizons. Stalling on progress now would likely make it impossible to meet 2050 net zero targets, which could be a big risk if policy changes again under a future administration, or in non-US jurisdictions.”

Henry Hall | Consulting Partner, ERM

“Many companies are already committed to the energy transition and broader sustainability objectives. Even though they are locked in, there will likely be less sustainability-related policy support in the short term to help them accelerate action. In this environment, companies must step up and responsibly advocate for a level playing field of supportive policies in line with global standards for transparent and accountable lobbying.”

Jules Peck | Consulting Partner, ERM

Endnotes

1 World Meteorological Organization. 2024. *Greenhouse Gas Concentrations Surge Again to New Record in 2023*. Online posting. World Meteorological Organization. Accessed 8 January 2025. <https://wmo.int/media/news/greenhouse-gas-concentrations-surge-again-new-record-2023>

2 United Nations Environment Programme. 2024. *Nations Must Close Huge Emissions Gap in New Climate Pledges and Deliver Immediate Action, or 1.5°C Lost*. Online posting. United Nations Environment Programme. Accessed 8 January 2025. <https://www.unep.org/news-and-stories/press-release/nations-must-close-huge-emissions-gap-new-climate-pledges-and>

3 Copernicus Climate Change Service. 2025. *Global Climate Highlights 2024*. Online posting. Copernicus Climate Change Service. Accessed 10 January 2025. <https://climate.copernicus.eu/global-climate-highlights-2024>

4 Copernicus Climate Change Service. 2024. *Surface Air Temperature for October 2024*. Online posting. Copernicus Climate Change Service. Accessed 8 January 2025. <https://climate.copernicus.eu/surface-air-temperature-october-2024>

5 Planetary Health Check. 2024. *Planetary Boundary: Climate Change*. Online posting. Planetary Health Check. Accessed 8 January 2025. <https://www.planetaryhealthcheck.org/boundary-pages/planetary-boundary-climate-change>

6 Maximilian, K. et al. *The Economic Commitment of Climate Change*. Online posting. Nature. Accessed 8 January 2025. <https://www.nature.com/articles/s41586-024-07219-0>

7 International Energy Agency. 2024. *Renewables 2023*. Online posting. International Energy Agency. Accessed 8 January 2025. <https://www.iea.org/reports/renewables-2023>

8 International Energy Agency. 2024. *Renewables 2024*. Online posting. International Energy Agency. Accessed 8 January 2025. <https://www.iea.org/reports/renewables-2024>

9 BloombergNEF. 2024. *Global Clean Energy Investment Jumps 17%, Hits \$1.8 Trillion in 2023*. Online posting. BloombergNEF. Accessed 8 January 2025. <https://about.bnef.com/blog/global-clean-energy-investment-jumps-17-hits-1-8-trillion-in-2023-according-to-bloombergnef-report/>

10 International Energy Agency. 2024. *Investment in Clean Energy This Year Is Set to Be Twice the Amount Going to Fossil Fuels*. Online posting. International Energy Agency. Accessed 8 January 2025. <https://www.iea.org/news/investment-in-clean-energy-this-year-is-set-to-be-twice-the-amount-going-to-fossil-fuels>

11 Landers, P. 2024. *This Year’s Hottest Climate Bash Isn’t COP*. Online posting. The Wall Street Journal. Accessed 8 January 2025. <https://www.wsj.com/articles/this-years-hottest-climate-bash-isnt-cop-22ec42bf>

12 Mooney, A. et al. 2024. ‘You only go to the party if everyone is going’: finance bosses to skip COP29. Online posting. The Financial Times. Accessed 8 January 2025. <https://www.ft.com/content/f88b53be-0a2a-4dbe-a4a8-f8870ba928a7>

13 Club of Rome. 2024. *Open Letter on COP Reform*. Online posting. Club of Rome. Accessed 8 January 2025. <https://www.clubofrome.org/cop-reform-2024>

14 UNFCCC. 2024. *COP29 UN Climate Conference Agrees to Triple Finance to Developing Countries, Protecting Lives and Livelihoods*. Online posting. UNFCCC. Accessed 8 January 2025. <https://unfccc.int/news/cop29-un-climate-conference-agrees-to-triple-finance-to-developing-countries-protecting-lives-and>

15 Brazilian Government. 2024. *Brazil presents its new climate target aligned with Mission 1.5°C*. Online posting. Brazilian Government. Accessed 8 January 2025. <https://www.gov.br/planalto/en/latest-news/2024/11/brazil-presents-its-new-climate-target-aligned-with-mission-1.5oc>

16 European Union. 2024. *Regulation (EU) 2024/573 on Fluorinated Greenhouse Gases*. Online posting. Official Journal of the European Union. Accessed 8 January 2025. <https://eur-lex.europa.eu/eli/reg/2024/573/oj>

17 High Court of Justice. 2024. *Friends of the Earth and Others v. Secretary of State for Energy Security and Net Zero*. Online posting. Courts and Tribunals Judiciary. Accessed 8 January 2025. <https://www.judiciary.uk/judgments/friends-of-the-earth-and-others-v-secretary-of-state-for-energy-security-and-net-zero/>

18 Choe, S. 2024. *South Korean Court Rules in Favor of Youth Climate Activists*. Online posting. The New York Times. Accessed 8 January 2025. <https://www.nytimes.com/2024/08/29/world/asia/south-korea-climate-action-verdict-youth.html>

19 Procton, A. 2024. *State of the Voluntary Carbon Markets 2024*. Online posting. Ecosystem Marketplace. Accessed 8 January 2025. https://3298623.fs1.hubspotusercontent-na1.net/hubfs/3298623/SOVCM%202024/State_of_the_Voluntary_Carbon_Markets_20240529%201.pdf

20 Turner, G. 2025. *Frozen Carbon Credit Market May Thaw as 2030 Gets Closer*. Online posting. MSCI. Accessed 8 January 2025. <https://www.msci.com/www/blog-posts/frozen-carbon-credit-market-may/05232727859>

21 Borjigin-Wang, E. et al. 2024. *Evidence Synthesis Report Part 1: Carbon Credits*. Online posting. Science Based Targets initiative. Accessed 8 January 2025. <https://sciencebasedtargets.org/resources/files/Evidence-Synthesis-Report-Part-1-Carbon-Credits.pdf>

22 International Emissions Trading Association. 2024. *Guidelines for High Integrity Use of Carbon Credits*. Online posting. International Emissions Trading Association. Accessed 8 January 2025. <https://www.ieta.org/ieta-issues-guidelines-for-high-integrity-use-of-carbon-credits/>

23 Integrity Council for the Voluntary Carbon Market. 2024. *Integrity Council Announces First High-Integrity CCP-Labelled Carbon Credits as Assessments Continue*. Online posting. Integrity Council for the Voluntary Carbon Market. Accessed 8 January 2025. <https://icvcm.org/integrity-council-announces-first-high-integrity-ccp-labelled-carbon-credits-as-assessments-continue/>

24 Energy & Climate Intelligence Unit. 2024. *Net Zero Tracker*. Online posting. Energy & Climate Intelligence Unit. Accessed 8 January 2025. <https://zerotracker.net/>

25 ERM. 2024. *Ahead of the Climate Curve: Leveraging Climate Transition Planning to Prepare for a Low-Carbon Future*. Online posting. ERM. Accessed 8 January 2025. <https://www.erm.com/insights/ahead-of-the-climate-curve/>

26 CDP. 2024. *The State of Play: 2023 Climate Transition Plan Disclosure*. Online posting. CDP. Accessed 8 January 2025. https://cdn.cdp.net/cdp-production/cms/reports/documents/000/007/783/original/CDP_Climate_Transition_Plans_2024.pdf

27 International Financial Reporting Standards Foundation. 2024. *ISSB Delivers Further Harmonisation of the Sustainability Disclosure Landscape as It Embarks on New Work Plan*. Online posting. International Financial Reporting Standards Foundation. Accessed 8 January 2025. <https://www.ifrs.org/news-and-events/news/2024/06/issb-delivers-further-harmonisation-of-the-sustainability-disclosure-landscape-new-work-plan/>

28 Moody’s Investors Service. 2024. *Net Zero Assessment (NZA)*. Online posting. Moody’s Investors Service. Accessed 8 January 2025. <https://ratings.moodys.io/products/nza>

29 World Resources Institute. 2013. *Do We Need a Standard to Calculate “Avoided Emissions”?* Online posting. World Resources Institute. Accessed 8 January 2025. <https://www.wri.org/insights/do-we-need-standard-calculate-avoided-emissions>

30 Pacific Gas and Electric Company. 2022. *Climate Strategy Report*. Online posting. Pacific Gas and Electric Company. Accessed 8 January 2025. <https://www.pge.com/assets/pge/docs/about/corporate-responsibility-and-sustainability/pge-climate-strategy-report.pdf>

31 Pacific Gas and Electric Company. 2024. *Corporate Sustainability Report*. Online posting. Pacific Gas and Electric Company. Accessed 8 January 2025. https://www.pgecorp.com/assets/pgecorp/csr/csr_2024/assets/pge-csr-2024.pdf

32 Veolia Environnement. 2024. *GreenUp: Veolia Launches Its New Strategic Plan to Accelerate Ecological Transformation to Meet Growing Global Demand*. Online posting. Veolia Environnement. Accessed 8 January 2025. <https://www.veolia.com/en/our-media/press-releases/greenup-veolia-launches-its-new-strategic-plan-accelerate-ecological>

33 ReNew Energy Global Plc. 2024. *Annual Integrated Report FY 2023-24*. Online posting. ReNew Energy Global Plc. Accessed 8 January 2025. <https://dg4e57nn4fnta.cloudfront.net/irr/pdf/ReNew-Annual-Integrated-Report-FY-2023-24.pdf>

34 Verdantix. 2024. *Scope 4 Emissions: More a Narrative Than a Metric*. Online posting. Verdantix. Accessed 8 January 2025. <https://www.verdantix.com/insights/blogs/scope-4-avoided-emissions-more-a-narrative-than-a-metric>

35 International Energy Agency. 2024. *Electricity 2024*. Online posting. International Energy Agency. Accessed 8 January 2025. <https://www.iea.org/reports/electricity-2024>

36 Wade, W. 2024. *Coal-Black Swans Threaten the Green Transition*. Online posting. Bloomberg. Accessed 8 January 2025. <https://www.bloomberg.com/news/newsletters/2024-12-17/coal-black-swans-threaten-the-green-transition>

37 Natter, A. and Saul, J. 2024. *Duke Plans to Delay Coal Plant Closing Despite Climate Goals*. Online posting. Bloomberg. Accessed 8 January 2025. <https://www.bloomberg.com/news/articles/2024-10-03/duke-extends-life-of-biggest-coal-plant-despite-climate-goals>

38 Microsoft Corporation. 2024. *2024 Environmental Sustainability Report*. Online posting. Microsoft Corporation. Accessed 8 January 2025. <https://www.microsoft.com/en-us/corporate-responsibility/sustainability/report>

39 Sellars, C. 2024. *Decarbonization and Sustainable Procurement: A Strategic Imperative*. Online posting. LinkedIn. Accessed 8 January 2025. https://www.linkedin.com/posts/charlessellars_decarbonization-sustainable-procurement-activity-7235726893038116864-2MIE/

40 Mandler, C. 2024. *Three Mile Island Nuclear Plant Will Reopen to Power Microsoft Data Centers*. Online posting. NPR. Accessed 8 January 2025. <https://www.npr.org/2024/09/20/nx-s1-5120581/three-mile-island-nuclear-power-plant-microsoft-ai>

41 Amazon. 2024. *Amazon Partners to Develop Small Modular Reactors to Achieve Net-Zero Carbon Emissions*. Online posting. Amazon. Accessed 8 January 2025. <https://www.aboutamazon.com/news/sustainability/amazon-nuclear-small-modular-reactor-net-carbon-zero>

42 Google. 2024. *New Nuclear Clean Energy Agreement with Kairos Power*. Online posting. Google. Accessed 8 January 2025. <https://blog.google/outreach-initiatives/sustainability/google-kairos-power-nuclear-energy-agreement/>

43 Tractor Supply Company. 2024. *Tractor Supply Company Statement*. Online posting. Tractor Supply Company. Accessed 8 January 2025. <https://corporate.tractorsupply.com/newsroom/news-releases/news-releases-details/2024/Tractor-Supply-Company-Statement/default.aspx>

44 Repko, M. 2024. *Walmart Pulls Back on DEI Efforts, Removes Some LGBTQ Merchandise*. Online posting. CNBC. Accessed 8 January 2025. <https://www.cnbc.com/2024/11/26/walmart-pulls-back-on-dei-efforts-removes-some-lbgtq-merchandise-.html>

45 Ramonas, A. 2024. *Nasdaq Board Diversity Regulations Struck Down by Fifth Circuit*. Online posting. Bloomberg Law. Accessed 8 January 2025. <https://news.bloomberglaw.com/esg/nasdaq-board-diversity-regulations-struck-down-by-fifth-circuit>

46 Wiessner, D. 2024. *US Judge Says Southwest Must Face Bias Claims Over Free Flights for Hispanic Students*. Online posting. Reuters. Accessed 8 January 2025. <https://www.reuters.com/legal/us-judge-says-southwest-must-face-bias-claims-over-free-flights-hispanic-2024-12-06/>

47 Green, J. et al. 2024. *Corporate America Hired More Black Workers. Then It Stopped*. Online posting. Bloomberg. Accessed 8 January 2024. <https://www.bloomberg.com/graphics/2024-anti-dei-corporate-america-stalls-black-workers-gains/>

48 LeanIn.Org and McKinsey & Company. 2024. *Women in the Workplace 2024: The 10th Anniversary Report*. Online posting. LeanIn.Org. Accessed 8 January 2025. <https://cdn-static.leanin.org/women-in-the-workplace/2024-pdf>

49 World Economic Forum. 2024. *Gender Gap: This is the State of Work for Women in 2024*. Online posting. World Economic Forum. Accessed 8 January 2025. <https://www.weforum.org/stories/2024/06/women-work-gender-gap-2024/>

50 VoxEU. 2024. *The Role of Workforce Ageing in Closing the Gender Pay Gap*. Online posting. VoxEU. Accessed 8 January 2025. <https://cepr.org/voxeu/columns/role-workforce-ageing-closing-gender-pay-gap>

51 Statista. 2024. *Global Gender Pay Gap*. Online posting. Statista. Accessed 8 January 2025. <https://www.statista.com/statistics/1212140/global-gender-pay-gap/>

52 Gallup. 2024. *State of the Global Workplace Report*. Online posting. Gallup. Accessed 8 January 2025. <https://www.gallup.com/workplace/349484/state-of-the-global-workplace.aspx>

53 Weber, L. 2023. *One Company’s Trick to Getting 95,000 Hours Back? Canceling Meetings*. Online posting. The Wall Street Journal. Accessed 8 January 2025. <https://www.wsj.com/articles/bosses-reduce-meetings-employee-productivity-11675263710>

54 Logitech. 2024. *Are You Maintaining Fair, Equitable Hybrid Meetings?* Online posting. Logitech. Accessed 8 January 2025. <https://info.logitech.com/fair-equitable-hybrid-meetings-sea.html>

55 Chen, T.-P. 2024. *The Loneliness of the American Worker*. Online posting. Wall Street Journal. Accessed 8 January 2025. <https://www.wsj.com/lifestyle/workplace/american-workers-loneliness-research-35793dc4>

56 HR Asia. 2023. *Employees in Asia are spending the most time looking busy at work*. Online posting. HR Asia. Accessed 8 January 2025. <https://hr.asia/featured-news/employees-in-asia-are-spending-the-most-time-looking-busy-at-work/>

57 Newman, J. 2024. *Two in five UK workers check their emails on holiday*. Online posting. The Times. Accessed 8 January 2025. <https://www.thetimes.com/business-money/economics/article/two-in-five-uk-workers-check-their-emails-on-holiday-0kmtqshgs>

58 HMC Wellbeing. 2023. *Workplace Wellbeing and Firm Performance*. Online posting. HMC Oxford. Accessed 8 January 2025. <https://wellbeing.hmc.ox.ac.uk/wp-content/uploads/2023/11/2304-WP-Workplace-Wellbeing-and-Firm-Performance-DOI-2024.pdf>

59 Houston, L. Shah, D. Wang, X. 2023. *Social Risks and Opportunities for Corporates: Long-Term Performance in Global Equity Markets*. Online posting. MSCI. Accessed 8 January 2025. <https://www.msci.com/www/blog-posts/social-risks-and-opportunities/04829288964>

60 BCG. 2024. *Joy at Work Matters More Than You Realize*. Online posting. BCG. Accessed 8 January 2025. <https://www.bcg.com/publications/2024/joy-at-work-matters-more-than-you-realize>

61 Moms First. 2024. *ROI Childcare Report*. Online posting. Moms First. Accessed 8 January 2025. <https://momsfirst.us/roi-childcare-report/>

62 Isidore, C. and Yurkevich, V. 2024. *U.S. Port Workers Strike on Tuesday Over Wage and Automation Disputes*. Online posting. CNN. Accessed 8 January 2025. <https://www.cnn.com/2024/10/01/business/us-port-workers-strike-tuesday/index.html>

63 France24. 2024. *Guinea’s Capital Conakry Grinds to a Halt as General Strike Begins*. Online posting. France24. Accessed 8 January 2025. <https://www.france24.com/en/africa/20240226-guinea-s-capital-conakry-grinds-to-a-halt-as-general-strike-begins>

64 Harrold, M. 2024. *Doctors on Strike: Why Are South Korea’s Government and Medical Community at Odds?* Online posting. Wilson Center. Accessed 8 January 2025. <https://www.wilsoncenter.org/blog-post/doctors-strike-why-are-south-koreas-government-and-medical-community-odds>

65 Gong, S.E. 2024. *As Medical Strike Drags on in South Korea, Patients Are on Edge*. Online posting. NPR. Accessed 8 January 2025. <https://www.npr.org/2024/09/15/nx-s1-5113082/as-medical-strike-drag-on-in-south-korea-patients-are-on-edge>

66 Green, J. and Kishan, S. 2024. *Best Buy, Chipotle, Carnival Downplay DEI Executive Pay Goals*. Online posting. Bloomberg. Accessed 8 January 2025. <https://www.bloomberg.com/news/articles/2024-06-18/best-buy-chipotle-carnival-downplay-dei-executive-pay-goals>

67 WTW. 2024. *North American Companies Continue to Link Executive Pay Programs to ESG Measures, WTW Study Finds*. Online posting. WTW. Accessed 8 January 2025. <https://www.wtwco.com/en-us/news/2024/01/north-american-companies-continue-to-link-executive-pay-programs-to-esg-measures-wtw-study-finds>

68 Darrow, C. and Borneman, J. 2024. *2024 ESG + Incentives Reports*. Online posting. Semler Brossy. Accessed 8 January 2025. <https://semlerbrossy.com/insights/2024-esg-incentives-reports/>

69 Fisher, J. et al. 2024. *The Important Role of Leaders in Advancing Human Sustainability*. Online posting. Deloitte Insights. Accessed 8 January 2025. <https://www2.deloitte.com/us/en/insights/topics/talent/workplace-well-being-research-2024.html>

70 Gallup. 2024. *Talking Politics at Work: A Double-Edged Sword*. Online posting. Gallup. Accessed 8 January 2025. <https://www.gallup.com/workplace/648581/talking-politics-work-double-edged-sword.aspx>

71 Monster. 2024. *Monster Poll: Politics in the Workplace*. Online posting. Monster. Accessed 8 January 2025. <https://monsterworkwatch24.my.canva.site/monster-poll-politics-in-the-workplace>

72 Herbert Smith Freehills. 2023. *Activism in the Workplace. In Future of Work Report 2023*. Online posting. Herbert Smith Freehills. Accessed 8 January 2025. <https://www.herbertsmithfreehills.com/insights/reports/future-of-work-report-2023/fow-2023-activism-in-the-workplace>

73 Schmidt, L. 2024. *How Gap Inc., Nextdoor, and Others Are Supporting Employees on Election Day*. Online posting. Fast Company. Accessed 8 January 2025. <https://www.fastcompany.com/91213256/how-gap-inc-nextdoor-and-others-are-supporting-employees-on-election-day>

74 General Mills. 2024. *Courageous Conversations*. Online posting. General Mills. Accessed 8 January 2025. <https://www.generalmills.com/-/media/Project/GMI/corporate/corporate-master/Files/How-we-make-it/People/Courageous-Conversations-720.pdf>

75 Siemens USA. 2024. *Siemens USA’s Commitment to Racial Justice*. Online posting. Siemens USA. Accessed 8 January 2025. <https://www.siemens.com/us/en/company/press/siemens-stories/usa/siemens-usa-commitment-to-racial-justice.html>

76 The Hartford. 2024. *Courageous Conversations Build a Sense of Community at The Hartford*. Online posting. The Hartford. Accessed 8 January 2025. <https://www.thehartford.com/careers/employee-stories/courageous-conversations-build-community>

77 Rogers, A. 2024. *Conservative activist launches \$1bn crusade to ‘crush’ liberal America*. Online posting. The Financial Times. Accessed 8 January 2025. <https://www.ft.com/content/0b38aaed-ec58-40cd-9047-0c7b7b83164a>

78 Kishan, S. 2024. *GOP State Treasurers Urge Business Group to Put Shareholders First*. Online posting. Bloomberg. Accessed 8 January 2025. <https://www.bloomberg.com/news/articles/2024-08-28/gop-treasurers-urge-business-group-to-put-shareholders-first>

79 Stempel, J. and Mandl, C. 2024. *BlackRock, Vanguard, State Street sued by Republican states over climate push*. Online posting. Reuters. Accessed 8 January 2025. <https://www.reuters.com/legal/blackrock-state-street-vanguard-sued-by-republican-states-over-climate-accords-2024-11-27/>

80 Federal Reserve Board. 2025. *Federal Reserve Board announces it has withdrawn from the Network of Central Banks and Supervisors for Greening the Financial System (NGFS)*. Online posting. The Federal Reserve. Accessed 17 January 2025. <https://www.federalreserve.gov/newsevents/pressreleases/bcreg20250117a.htm>

81 Lichtenstein, J.A. et al. 2024. *Ropes & Gray Issues State ESG Update and Analysis for Asset Managers and Financial Institutions*. Online posting. Ropes & Gray. Accessed 8 January 2025. <https://www.ropesgray.com/en/news-and-events/news/2024/11/ropes-gray-issues-state-esg-update-and-analysis-for-asset-managers-and-financial-institutions>

82 Pleiades Strategy. 2024. *2024 STATEHOUSE REPORT Anti-ESG State Legislation Tracker & Analysis*. Online posting. Pleiades Strategy. Accessed 8 January 2025. <https://www.pleiadesstrategy.com/state-house-report-bill-tracker-republican-anti-esg-state-legislative-attacks-on-responsible-investing-continue-weakened-and-reshaped-by-their-costly-reality-and-a-year-of-continued-opposition>

83 Gayle, D. 2025. *Six big US banks quit net zero alliance before Trump inauguration*. Online posting. The Guardian. Accessed 8 January 2025. <https://www.theguardian.com/business/2025/jan/08/us-banks-quit-net-zero-alliance-before-trump-inauguration>

84 Mirza, Z. 2025. *Northern Trust AM exits Climate Action 100+, Net-Zero Asset Managers initiative*. Online posting. ESG Dive. Accessed 24 January 2025. <https://www.esgdive.com/news/northern-trust-am-exits-climate-action-100-net-zero-assert-managers-initiative/738272/>

85 Jessop, S. et al. 2024. *Europe stands firm against US-driven ESG backlash*. Online posting. Reuters. Accessed 8 January 2025. <https://www.reuters.com/sustainability/sustainable-finance-reporting/europe-stands-firm-against-us-driven-esg-backlash-2024-04-12/>

86 Morningstar. 2024. *Global Sustainable Fund Flows: Q3 2024 in Review*. Online posting. Morningstar. Accessed 8 January 2025. <https://www.morningstar.com/lp/global-esg-flows>

87 Langeland, T. and Santos, L.B. 2024. *Sustainable Bond Market Posts Strong Growth in ASEAN+3 Economies*. Online posting. Asian Development Bank. Accessed 8 January 2025. <https://www.adb.org/news/sustainable-bond-market-posts-strong-growth-asean3-economies>

88 Latham and Watkins. 2024. *EU Commission Suggests Potential Consolidation of ESG Reporting Frameworks in 2025*. Online posting. Latham and Watkins. Accessed 8 January 2025. <https://www.lw.com/en/insights/eu-commission-suggests-potential-consolidation-of-esg-reporting-frameworks-in-2025>

89 McNally, F. 2025. *EU Omnibus Proposal: What can we expect from the February meeting?* Online posting. Responsible Investor. Accessed 16 January 2025. <https://www.responsible-investor.com/eu-omnibus-proposal-what-can-we-expect-from-the-february-meeting/90>

90 New York State Attorney General. 2024. *Attorney General James Sues World’s Largest Beef Producer for Misrepresenting Environmental Impact of Their Products*. Online posting. New York State Attorney General. Accessed 8 January 2025. <https://ag.ny.gov/press-release/2024/attorney-general-james-sues-worlds-largest-beef-producer-misrepresenting>

91 Australian Securities and Investments Commission. 2024. *ASIC’s Vanguard greenwashing action results in record \$12.9 million penalty*. Online posting. Australian Securities and Investments Commission. Accessed 8 January 2025. <https://asic.gov.au/about-asic/news-centre/find-a-media-release/2024-releases/24-213mr-asic-s-vanguard-greenwashing-action-results-in-record-12-9-million-penalty/>

92 Reccessary. 2024. *South Korea industry giants accused of greenwashing over double counting*. Online posting. Reccessary. Accessed 8 January 2025. <https://www.reccessary.com/en/news/world-regulation/south-korea-industry-giants-accused-of-greenwashing-over-double-counting>

93 Doris, N. 2024. *TotalEnergies slapped with historic greenwashing ruling*. Online posting. African Law and Business. Accessed 8 January 2025. <https://www.africanlawbusiness.com/news/21348-totalenergies-slapped-with-historic-greenwashing-ruling/>

94 Dr. Bell, M. et al. 2024. *EY 2024 Institutional Investor Survey*. Online posting. EY. Accessed 8 January 2025. https://www.ey.com/en_gl/insights/climate-change-sustainability-services/institutional-investor-survey

95 European Commission. 2023. *Consumer protection: enabling sustainable choices and ending greenwashing*. Online posting. European Commission. Accessed 8 January 2025. https://ec.europa.eu/commission/presscorner/detail/en/ip_23_1692

96 Sidley. 2024. *New EU Directive Strengthens Consumer Protection Laws on Greenwashing and Circularity*. Online posting. Sidley. Accessed 8 January 2025. <https://www.sidley.com/en/insights/newsupdates/2024/04/new-eu-directive-strengthens-consumer-protection-laws-on-greenwashing-and-circularity>

97 European Parliament. 2024. *‘Green claims’ directive: Protecting consumers from greenwashing*. Online posting. European Parliament. Accessed 8 January 2025. [https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI\(2023\)753958](https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2023)753958)

98 McNaughton, M. et al. 2024. *Bill C-59 Enacted: New Laws Targeting Greenwashing*. Online posting. BD&P. Accessed 8 January 2025. <https://www.bdplaw.com/insights/bill-c-59-enacted-new-laws-targeting-greenwashing>

99 Jones, H. 2024. *EU finalises investment fund labels to combat greenwashing*. Online posting. Reuters. Accessed 8 January 2025. <https://www.reuters.com/business/environment/eu-finalises-investment-fund-labels-combat-greenwashing-2024-05-14/>

100 Financial Conduct Authority (FCA). 2024. *Extending the Sustainability Disclosure Requirements (SDR) regime to Portfolio Management*. Online posting. FCA. Accessed 8 Janurary 2025. <https://www.fca.org.uk/publication/consultation/cp24-8.pdf>

101 Simeon, L. 2024. *41% of consumers in YouGov’s multi-market poll say they only somewhat trust sustainability logos*. Online posting. YouGov. Accessed 8 January 2025. <https://business.yougov.com/content/48360-41-of-consumers-in-yougovs-multi-market-poll-say-they-only-somewhat-trust-sustainability-logos>

102 Capgemini. 2024. *A world in balance 2024*. Online posting. Capgemini. Accessed 8 January 2025. https://www.capgemini.com/wp-content/uploads/2024/09/CRI_world-in-balance-2024_13112024_web.pdf

103 Sustainable Brands. 2024. *EU Consumers the Most Skeptical of Corporate Sustainability Claims*. Online posting. Sustainable Brands. Accessed 7 January 2025. <https://sustainablebrands.com/read/eu-consumers-most-skeptical-sustainability-claims>

104 Yuen, V. 2024. *Survey: 70% of APAC online shoppers prioritise sustainability in their purchases*. Online posting. Marketing-Interactive. Accessed 7 January 2025. <https://www.marketing-interactive.com/survey-apac-online-shoppers-prioritise-sustainability-in-their-purchases>

105 Bain & Company. 2024. *The Visionary CEO’s Guide to Sustainability 2024*. Online posting. Bain & Company. Accessed 7 January 2025. <https://www.bain.com/insights/topics/ceo-sustainability-guide/>

106 GlobeScan. 2024. *Retail Investors Want Funds and Pension Plans to Take an Active Role in Addressing Climate Change*. Online posting. GlobeScan. Accessed 7 January 2025. <https://globescan.com/2024/03/14/investment-funds-to-address-climate-change/>

107 RepRisk. 2024. *A turning tide in greenwashing? Exploring the first decline in six years*. Online posting. RepRisk. Accessed 7 January 2025. <https://www.reprisk.com/research-insights/reports/a-turning-tide-in-greenwashing-exploring-the-first-decline-in-six-years>

108 Sustainable Brands. 2024. *‘Greenhushing’ Diminishing Returns for 58% of US’s 100 Biggest Companies*. Online posting. Sustainable Brands. Accessed 7 January 2025. <https://sustainablebrands.com/read/greenhushing-diminishing-returns-58-companies>

109 Afanasieva, D. 2024. *After Year of Culture Wars, Bosses Are Talking Less About ESG*. Online posting. Bloomberg. Accessed 7 January 2025. <https://www.bloomberg.com/news/articles/2024-05-28/bosses-talking-less-about-esg-diversity-climate-change-after-culture-wars>

110 Butters, J. 2024. *Lowest Number of S&P 500 Companies Citing “ESG” on Earnings Calls Since Q2 2019*. Online posting. FactSet. Accessed 7 January 2025. <https://insight.factset.com/lowest-number-of-sp-500-companies-citing-esg-on-earnings-calls-since-q2-2019>

111 Afanasieva, D. 2024. *ESG Poster Child Unilever Waters Down Green Pledges*. Online posting. Bloomberg. Accessed 7 January 2025. <https://www.bloomberg.com/news/features/2024-04-19/esg-unilever-scales-back-sustainability-goals>

112 The Coca-Cola Company. 2024. *The Coca-Cola Company Evolves Voluntary Environmental Goals*. Online posting. The Coca-Cola Company. Accessed 8 January 2025. <https://www.coca-colacompany.com/media-center/the-coca-cola-company-evolves-voluntary-environmental-goals>

113 Reuters. 2024. *Shell waters down 2030 carbon emissions target in latest fossil fuel industry backslide*. Online posting. CNN. Accessed 8 January 2025. <https://www.cnn.com/2024/03/14/climate/shell-carbon-emissions-targets-climate/index.html>

114 Altavilla, C. et al. 2024. *Climate risk, bank lending and monetary policy*. Online posting. European Central Bank. Accessed 8 January 2025. <https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2969~0f4c56a156.en.pdf?b6e005d7334de68ad976f24bd9ae5759>

115 IBM Institute for Business Value. 2024. *Sustainability as a business imperative*. Online posting. IBM. Accessed 8 January 2025. <https://www.ibm.com/thought-leadership/institute-business-value/en-us/report/sustainability-business-value>

116 Capgemini Research Institute. *Embracing a brighter future: Investment priorities for 2024*. Online posting. Capgemini. Accessed 7 January 2025. <https://www.capgemini.com/insights/research-library/investment-trends-2024/>

117 Carrier. 2024. *Carrier survey: US executives prioritize sustainability for 2025, with building decarbonization leading the way*. Online posting. Carrier. Accessed 8 January 2025. https://www.corporate.carrier.com/news/news-articles/202409_carrier-survey-us-executives-prioritize-sustainability-for-2025-with-building-decarbonization-leading-way.html

118 EY. 2024. *CEO Outlook Global Report*. Online posting. EY. Accessed 8 January 2025. https://www.ey.com/en_gl/ceo/ceo-outlook-global-report

119 Lightle, B. 2024. *Global ESG M&A survey*. Online posting. Deloitte. Accessed 8 January 2025. <https://www.deloitte.com/global/en/services/financial-advisory/analysis/global-esg-ma-survey.html>

120 Johnson, L. 2024. *M&A market outlook 2024: ESG major market feature, Norton Rose Fulbright*. Online posting. ESG Dive. Accessed 8 January 2025. <https://www.esgdive.com/news/m-a-market-outlook-2024-esg-major-market-feature-norton-rose-fulbright/706856/>

121 KPMG. 2024. *Global ESG due diligence study 2024*. Online posting. KPMG. Accessed 8 January 2025. <https://kpmg.com/xx/en/our-insights/esg/global-esg-due-diligence-study-2024.html>

122 Forest Declaration Assessment. 2024. *Forests Under Fire: Tracking progress on 2030 forest goals*. Online posting. Forest Declaration Assessment. Accessed 6 January 2025. <https://forestdeclaration.org/wp-content/uploads/2024/10/2024ForestDeclarationAssessment.pdf>

123 Eschenbacher, S. 2024. *Fires in Brazil’s Amazon rainforest for July surge to highest in two decades*. Online posting. Reuters. Accessed 6 January 2025. <https://www.reuters.com/business/environment/fires-brazils-amazon-rainforest-july-surge-highest-two-decades-2024-08-01/>

124 Flores, B.M., Montoya, E., Sakschewski, B. et al. 2024. *Critical transitions in the Amazon forest system*. Online posting. Nature. Accessed 6 January 2025. <https://www.nature.com/articles/s41586-023-06970-0>

125 World Wildlife Foundation. 2024. *2024 Living Planet Report*. Online posting. World Wildlife Foundation. Accessed 6 January 2025. <https://www.worldwildlife.org/publications/2024-living-planet-report>

126 European Commission. 2024. *Degraded ecosystems to be restored across Europe as Nature Restoration Law enters into force*. Online posting. European Commission. Accessed 6 January 2025. https://environment.ec.europa.eu/news/nature-restoration-law-enters-force-2024-08-15_en

127 European Commission. 2024. *Regulation on Deforestation-free Products*. Online posting. European Commission. Accessed 6 January 2025. https://environment.ec.europa.eu/topics/forests/deforestation/regulation-deforestation-free-products_en

128 Cohen, P. 2024. *Backlash Erupts Over Europe’s Anti-Deforestation Law*. Online posting. The New York Times. Accessed 6 January 2025. <https://www.nytimes.com/2024/09/19/business/european-union-deforestation.html>

129 Ainger, J. and Krukowska, E. 2024. *EU Reaches Deal to Delay Contentious Deforestation Law*. Online posting. Bloomberg. Accessed 6 January 2025. <https://www.bloomberg.com/news/articles/2024-12-03/eu-reaches-deal-to-delay-contentious-deforestation-law-by-a-year>

130 United Nations. 2024. *Biodiversity COP 16: Important Agreement Reached Towards Goal of “Making Peace with Nature”*. Online posting. United Nations. Accessed 6 January 2025. <https://www.un.org/sustainabledevelopment/blog/2024/11/biodiversity-cop-16-important-agreement-reached-towards-goal-of-making-peace-with-nature-2/>

131 Keating, C. 2024. *‘Strengthen — not weaken’: Big Business calls for policies that drive action on nature*. Online posting. Trellis. Accessed 6 January 2025. <https://trellis.net/article/strengthen-not-weaken-big-business-calls-for-policies-that-drive-action-on-nature/>

132 Bromley, H. 2024. *Biodiversity Finance Factbook*. Online posting. BloombergNEF. Accessed 6 January 2025. https://assets.bbhub.io/professional/sites/24/Biodiversity-Finance-Factbook_COP16.pdf

133 Spring, J. 2024. *Public funding for nature conservation stalls at COP16*. Online posting. Reuters. Accessed 6 January 2025. <https://www.reuters.com/business/environment/public-funding-nature-conservation-stalls-cop16-eyes-private-investment-2024-11-03/>

134 Australian Government Department of Climate Change, Energy, the Environment and Water. 2024. *The Global Nature Positive Summit 2024*. Online posting. Australian Government. Accessed 6 January 2025. <https://www.dcceew.gov.au/environment/international/nature-positive-summit>

135 Australian Government Department of Climate Change, Energy, the Environment and Water. 2024. *About Nature Positive Matters*. Online posting. Australian Government. Accessed 6 January 2025. <https://www.naturepositivematters.org.au/about-nature-positive-matters>

136 TNFD. 2024. *GRI and TNFD Make Reporting on Biodiversity Easier*. Online posting. TNFD. Accessed 8 January 2025. <https://tnfd.global/gri-and-tnfd-make-reporting-on-biodiversity-easier/>

137 EFRAG. 2024. *TNFD-ESRS Correspondence Mapping*. Online posting. EFRAG. Accessed 8 January 2025. <https://www.efrag.org/sites/default/files/sites/webpublishing/SiteAssets/TNFD%20ESRS%20Correspondence%20mapping%20Final.pdf>

138 TNFD. 2024. *TNFD adoption now over 400 organisations and new sector guidance released*. Online posting. TNFD. Accessed 6 January 2025. <https://tnfd.global/wp-content/uploads/2024/06/240628-TNFD-LCAW-press-release-adopters-and-sector-guidance.pdf>

139 TNFD. 2024. *Discussion paper on nature transition plans*. Online posting. TNFD. Accessed 6 January 2025. <https://tnfd.global/publication/discussion-paper-on-nature-transition-plans/>

140 CDP. 2024. *Boom in business nature tracking, says CDP*. Online posting. CDP. Accessed 6 January 2025. <https://www.cdp.net/en/articles/media/boom-in-business-nature-tracking-says-cdp>

141 WBCSD. 2024. *Reporting matters 2024, Changing Gears*. Online posting. WBCSD. Accessed 6 January 2025. <https://www.webwire.com/ViewPressRel.asp?aId=328725>

142 Nature Action 100. 2024. *Company Benchmark*. Online posting. Nature Action 100. Accessed 6 January 2025. <https://www.natureaction100.org/company-benchmark/>

143 Ceres. 2024. *Deforestation Scorecard: Assessing Corporate Action on Deforestation Amid Growing Regulatory Risk*. Online posting. Ceres. Accessed 6 January 2025. <https://www.ceres.org/resources/reports/deforestation-scorecard-assessing-corporate-action-deforestation-amid-growing>

144 White, N. 2024. *Investors Pressure Banks Over Client Exposures to Deforestation*. Online posting. Bloomberg. Accessed 6 January 2025. <https://www.bloomberg.com/news/articles/2024-09-03/investors-pressure-banks-over-client-exposures-to-deforestation>

145 JDE Peet’s. 2024. *Forest Policy*. Online posting. JDE Peet’s. Accessed 6 January 2025. <https://www.jdepeets.com/siteassets/policies/jde-peets-forest-policy.pdf>

146 General Mills. 2024. *General Mills Stands for People and Planet in 2024 Global Responsibility Report*. Online posting. General Mills. Accessed 6 January 2025. <https://www.generalmills.com/news/press-releases/general-mills-stands-for-people-and-planet-in-2024-global-responsibility-report>

147 TNFD. 2023. *Guidance on engagement with Indigenous Peoples, Local Communities and affected stakeholders*. Online posting. TNFD. Accessed 6 January 2025. <https://tnfd.global/publication/guidance-on-engagement-with-indigenous-peoples-local-communities-and-affected-stakeholders/>

148 TC Energy. 2022. *Reconciliation Action Plan Update*. Online posting. TC Energy. Accessed 6 January 2025. <https://www.tcenergy.com/siteassets/pdfs/sustainability/indigenous/journey-towards-reconciliation/tce-energy-reconciliation-action-plan-november-2022.pdf>

149 Longreach Maris. 2024. *Innovative Reconciliation Action Plan*. Online posting. Longreach Maris. Accessed 6 January 2025. <https://longreachalternatives.com/wp-content/uploads/2024/05/Longreach-Maris-Innovate-RAP.pdf>

150 Torre, G. 2024. *First Nations Fishing Initiative aims to break down barriers for Indigenous fishing businesses*. Online posting. National Indigenous Times. Accessed 6 January 2025. <https://nit.com.au/01-07-2024/12286/first-nations-fishing-initiative-aims-to-break-down-barriers-for-indigenous-fishing-businesses>

151 Hupart, J. 2024. *California States It Will Exercise “Enforcement Discretion” for First Year of Climate Disclosures If Companies Act in Good Faith*. Online posting. National Law Review. Accessed 8 January 2025. <https://natlawreview.com/article/california-states-it-will-exercise-enforcement-discretion-first-year-climate>

152 Financial Stability Board. 2024. *Achieving consistent and comparable climate-related disclosures: 2024 progress report*. Online posting. Financial Stability Board. Accessed 8 January 2025. <https://www.fsb.org/2024/11/achieving-consistent-and-comparable-climate-related-disclosures-2024-progress-report/>

153 Anyaogu, I. 2024. *Nigeria gives businesses four years to adopt eco-friendly reporting standards*. Online posting. Reuters. Accessed 8 January 2025. <https://www.reuters.com/world/africa/nigeria-gives-businesses-four-years-adopt-eco-friendly-reporting-standards-2024-03-22/>

154 Sustainability Standards Board of Japan. 2024. *SSBJ issues Exposure Drafts of Sustainability Disclosure Standards to be applied in Japan*. Online posting. Sustainability Standards Board of Japan. Accessed 8 January 2025. https://www.ssb-j.jp/en/exposure_drafts/y2024/2024-0329.html

155 Segal, M. 2024. *China stock exchanges announce mandatory sustainability reporting requirements for listed companies*. Online posting. ESG Today. Accessed 8 January 2025. <https://www.esgtoday.com/china-stock-exchanges-announce-mandatory-sustainability-reporting-requirements-for-listed-companies/>

156 Azizuddin, K. 2024. *China tables ISSB-aligned disclosure framework after early doubts*. Online posting. Responsible Investor. Accessed 8 January 2025. <https://www.responsible-investor.com/china-tables-issb-aligned-disclosure-framework-after-early-doubts/>

157 Clark, L. 2024. *Trump SEC pick wants to ditch landmark climate disclosure rule*. Online posting. E&E News. Accessed 8 January 2025. <https://www.eenews.net/articles/trump-sec-pick-wants-to-ditch-landmark-climate-disclosure-rule/>

158 Financial Services Commission. 2024. *Taskforce on ESG finance holds meeting and discusses key details of ESG disclosure standards*. Online posting. Financial Services Commission. Accessed 8 January 2025. <https://www.fsc.go.kr/eng/pr010101/82159>

159 Roy, A and Singh, P. 2024. *India to make climate risk disclosures mandatory for banks*. Online posting. Bloomberg. Accessed 8 January 2025. <https://www.bloomberg.com/news/articles/2024-02-29/india-to-make-climate-risk-disclosures-mandatory-for-banks>

160 IFRS Foundation. 2024. *GRI and IFRS Foundation collaboration to deliver full interoperability that enables seamless sustainability reporting*. Online posting. IFRS Foundation. Accessed 8 January 2025. <https://www.ifrs.org/news-and-events/news/2024/05/gri-and-ifrs-foundation-collaboration-to-deliver-full-interoperability/>

161 CDP. 2024. *CDP’s alignment with disclosure frameworks and standards*. Online posting. CDP. Accessed 8 January 2025. <https://www.cdp.net/en/about/framework-alignment>

162 CDP and EFRAG. 2024. *CDP and EFRAG announce extensive interoperability between CDP questionnaire and EU Sustainability Reporting Standards*. Online posting. EFRAG. Accessed 8 January 2025. https://www.efrag.org/sites/default/files/media/document/2024-11/Press%20Release_CDP-EFRAG%20Joint%20Announcement%20vers241112.pdf

163 IFRS Foundation. 2024. *IFRS Foundation publishes ISSB voluntary application guide*. Online posting. IFRS Foundation. Accessed 8 January 2025. <https://www.ifrs.org/news-and-events/news/2024/09/ifrs-foundation-publishes-issb-voluntary-application-guide/>

164 Global Reporting Initiative (GRI). 2024. *GRI Best Prepares Companies for CSRD Reporting Rules*. Online posting. GRI. Accessed 8 January 2025. <https://www.globalreporting.org/news/news-center/gri-best-prepares-companies-for-csrd-reporting-rules/>

165 Hannay, J. 2024. *ESRS sector-specific standards officially delayed*. Online posting. Sustainability News. Accessed 8 January 2025. <https://sustainability-news.net/policy-and-regulation/esrs-sector-specific-standards-officially-delayed/>

166 The Sun. 2024. *CMM enhances ESG disclosure guidelines for SMEs in five sectors*. Online posting. The Sun. Accessed 8 January 2025. <https://thesun.my/business-news/cmm-enhances-esg-disclosure-guidelines-for-smes-in-five-sectors-FH12512997>

167 Global Reporting Initiative (GRI). 2024. *Schedule of standards projects*. Online posting. GRI. Accessed 8 January 2025. <https://www.globalreporting.org/standards/standards-development/schedule-of-standards-projects/>

168 IFRS Foundation. 2024. *IFRS Foundation work plan*. Online posting. IFRS Foundation. Accessed 8 January 2025. <https://www.ifrs.org/projects/work-plan/#ifrs-sustainability-projects>

169 IFRS Foundation. 2024. *IFRS Sustainability Disclosure Taxonomy*. Online posting. IFRS Foundation. Accessed 8 January 2025. <https://www.ifrs.org/projects/completed-projects/2024/ifrs-sustainability-disclosure-taxonomy/>

170 EFRAG. 2024. *ESRS XBRL Taxonomy: Concluded*. Online posting. EFRAG. Accessed 8 January 2025. <https://www.efrag.org/en/projects/esrs-xbtl-taxonomy/concluded>

171 Global Reporting Initiative (GRI). 2024. *Streamlining digital reporting with GRI’s new taxonomy*. Online posting. GRI. Accessed 8 January 2025. <https://www.globalreporting.org/news/news-center/streamlining-digital-reporting-with-gri-s-new-taxonomy-1/>

172 IAASB. 2024. *International Standard on Sustainability Assurance 5000, General Requirements for Sustainability Assurance Engagements*. Online posting. IAASB. Accessed 8 January 2025. <https://www.iaasb.org/publications/international-standard-sustainability-assurance-5000-general-requirements-sustainability-assurance>

173 Australian Government Treasury. 2024. *Mandatory climate-related financial disclosures - Policy position statement*. Online posting. Australian Government Treasury. Accessed 8 January 2025. <https://treasury.gov.au/sites/default/files/2024-01/c2024-466491-policy-state.pdf>

174 KPMG. 2024. *Sustainability Organization Survey*. Online posting. KPMG. Accessed 8 January 2025. <https://kpmg.com/us/en/articles/2024/sustainability-organization-survey.html>

175 PwC. 2024. *CSRD reporting as the accelerator for sustainable business transformation*. Online posting. PwC. Accessed 8 January 2025. <https://www.pwc.lu/en/sustainable-finance/pwc-csrd-reporting-nov-24.html>

176 Eccles, R., Taylor, A., GlobeScan. 2024. *The Gap in Sustainable Value Creation*. Online posting. Salesforce. Accessed 8 January 2025. <https://www.salesforce.com/resources/research-reports/sustainable-value-creation-report/>

177 IBM. 2024. *State of Sustainability Readiness Report*. Online posting. IBM. Accessed 8 January 2025. <https://www.ibm.com/think/reports/sustainability-readiness>

178 Potter, B. 2024. *Streamline ESG disclosures with new and expanded reporting solutions*. Online posting. Microsoft. Accessed 8 January 2025. <https://www.microsoft.com/en-us/industry/blog/sustainability/2024/08/07/streamline-esg-disclosures-with-new-and-expanded-reporting-solutions/>

179 DeKeyrel, K. 2024. *Streamline CSRD disclosures with new features from IBM Envizi*. Online posting. IBM. Accessed 8 January 2025. <https://www.ibm.com/new/announcements/streamline-csrd-disclosures-with-new-features-from-ibm-envizi>

180 Workiva. 2024. *2024 Executive Benchmark on Integrated Reporting*. Online posting. Workiva. Accessed 8 January 2025. <https://www.workiva.com/resources/integrated-reporting-executive-benchmark>

181 Bousso, R. *Shell loosens 2030 carbon emissions target*. Online posting. Reuters. Accessed 8 January 2025. <https://www.reuters.com/sustainability/climate-energy/shell-loosens-2030-carbon-emissions-target-2024-03-14/>

182 Reuters. 2024. *Norway’s wealth fund asks Shell for more climate policy details*. Online posting. Reuters. Accessed 8 January 2025. <https://www.reuters.com/sustainability/norway-wealth-fund-asks-shell-more-climate-policy-disclosure-2024-05-17/>

183 McNally, F. *BNP Paribas AM mulls vote against companies with inadequate double materiality assessments*. Online posting. Responsible Investor. Accessed 8 January 2025. <https://www.responsible-investor.com/bnp-paribas-am-mulls-vote-against-companies-with-inadequate-double-materiality-assessments/>

184 Lander, B. *NYC Comptroller Lander and NYC Public Pension Boards Reach Agreement on Climate Finance Disclosures with JPMorgan Chase, Citi, and Royal Bank of Canada*. Online posting. New York City Comptroller. Accessed 8 January 2025. <https://comptroller.nyc.gov/newsroom/nyc-comptroller-lander-and-nyc-public-pension-boards-reach-agreement-on-climate-finance-disclosures-with-jpmorgan-chase-citi-and-royal-bank-of-canada/>

185 International Capital Market Association. *Impact Disclosure Guidance*. Online posting. International Capital Market Association (ICMA). Accessed 8 January 2025. <https://www.icmagroup.org/sustainable-finance/other-sustainable-finance-guidance-publications-and-initiatives/other-initiatives>

186 United Nations Environment Programme Finance Initiative (UNEP FI). 2024. *New Global Investor Statement Launches with the Backing of Hundreds of Investors Urging a Whole-of-Government Approach to Addressing the Climate Crisis*. Online posting. UNEP FI. Accessed 8 January 2025. <https://www.unepfi.org/themes/climate-change/new-global-investor-statement-launches-with-the-backing-of-hundreds-of-investors-urging-a-whole-of-government-approach-to-addressing-the-climate-crisis/>

187 Asia Investor Group on Climate Change (AIGCC). 2024. *USD 3.5 Trillion Investor Group Urges Korea’s Financial Services Commission for Mandatory Sustainability Disclosures by 2026*. Online posting. AIGCC. Accessed 8 January 2025. <https://aigcc.net/usd-3-5-trillion-investor-group-urges-koreas-financial-services-commission-for-mandatory-sustainability-disclosures-by-2026/>

188 KPMG International. *ESG Assurance Maturity Index 2024*. Online posting. KPMG International. Accessed 8 January 2025. <https://assets.kpmg.com/content/dam/kpmg/lv/pdf/2024/ESG%20assurance%20maturity%20index.pdf>

189 The World Business Council for Sustainable Development (WBCSD). 2024. *Reporting matters 2024*. Online posting. WBCSD. Accessed 8 January 2025. https://www.wbcd.org/wp-content/uploads/2024/11/RY-WBCSD_Reporting_Matters_2024.pdf

190 Carter, M., Filosa, M., and Lee, D. 2024. *Stand by ESG? The State of 2024 U.S. Sustainability Reports*. Online posting. Harvard Law School Forum on Corporate Governance. Accessed 8 January 2025. <https://corpgov.law.harvard.edu/2024/09/20/stand-by-esg-the-state-of-2024-u-s-sustainability-reports/>

191 Mishra, V. 2024. *Global trade to hit record \$33 trillion in 2024, but uncertainties over tariffs loom*. Online posting. United Nations. Accessed 8 January 2025. <https://news.un.org/en/story/2024/12/1157826>

192 Neuffer, P. 2024. *Biden orders up to 50% tariffs on some solar energy components from China*. Online posting. Utility Dive. Accessed 8 January 2025. <https://www.utilitydive.com/news/ustr-biden-tariff-increase-wafers-polysilicon-tungsten/735300/>

193 Goldman, D. 2024. *Trump Ups the Ante on Tariffs, Vowing Massive Taxes on Goods from Mexico, Canada, and China on Day 1*. Online posting. CNN. Accessed 8 January 2025. <https://www.cnn.com/2024/11/25/politics/trump-tariffs-mexico-canada-china/index.html>

194 The Economist. 2024. *How China Will Strike Back at Trump*. Online posting. The Economist. Accessed 8 January 2025. <https://www.economist.com/finance-and-economics/2024/12/01/how-china-will-strike-back-at-trump>

195 Su, H. 2024. *China Proposes Export Ban on Battery Cathode and Lithium Processing Technology — Here Are the Specifics*. Online posting. Shanghai Metals Market. Accessed 8 January 2025. https://news.metal.com/newscontent/103121013/china-proposes-export-ban-on-battery-cathode-and-lithium-processing-technology-here-are-the-specifics?trk=feed_main-feed-card_feed-article-content

196 Strangio, Sebastian. 2024. *Indonesia Announces Hefty Tariffs on Chinese-Made Goods*. Online posting. The Diplomat. Accessed 8 January 2025. <https://thediplomat.com/2024/07/indonesia-announces-hefty-tariffs-on-chinese-made-goods/>

197 Reuters Staff. 2024. *India to Impose Up to 30% Tariffs on Some Steel Imports from China, Vietnam*. Online posting. Reuters. Accessed 8 January 2025. <https://www.reuters.com/markets/commodities/india-impose-up-30-tariffs-some-steel-imports-china-vietnam-2024-09-11/>

198 Pérez, S. 2024. *Mexico Wants to Curb Chinese Imports with Help from U.S. Companies*. Online posting. The Wall Street Journal. Accessed 8 January 2025. <https://www.wsj.com/economy/trade/mexico-wants-to-curb-chinese-imports-with-help-from-u-s-companies-bf169302>

199 Swanson, A. and Romero, S. 2024. *For First Time in Two Decades, U.S. Buys More From Mexico Than China*. Online posting. The New York Times. Accessed 8 January 2025. <https://www.nytimes.com/2024/02/07/business/economy/united-states-china-mexico-trade.html>

200 Darvas, Z., Luca Léry Moffat, L.L. and McCaffrey, C. 2024. *Emerging Countries Have Replaced Most of Russia’s Lost Trade with Advanced Economies*. Online posting. Bruegel. Accessed 8 January 2025. <https://www.bruegel.org/analysis/emerging-countries-have-replaced-most-russias-lost-trade-advanced-economies>

201 The Economist. 2024. *China’s Presence in Latin America Has Expanded Dramatically*. Online posting. The Economist. Accessed 8 January 2025. <https://www.economist.com/the-americas/2024/07/04/chinas-presence-in-latin-america-has-expanded-dramatically>

202 Reuters. 2024. *Xi Jinping Opens Huge Port in Peru Funded by China*. Online posting. NBC News. Accessed 8 January 2025. <https://www.nbcnews.com/news/world/xi-jinping-opens-huge-port-peru-funded-china-rcna180289>

203 International Energy Agency. 2024. *Global Critical Minerals Outlook 2024*. Online posting. International Energy Agency. Accessed 8 January 2025. <https://iea.blob.core.windows.net/assets/ee01701d-1d5c-4ba8-9df6-abeeac9de99a/GlobalCriticalMineralsOutlook2024.pdf>

204 Morina, E. 2024. *Rare Earth Prices Are in the Doldrums. China Wants to Keep Them That Way*. Online posting. The Wall Street Journal. Accessed 8 January 2025. <https://www.wsj.com/finance/commodities-futures/rare-earth-prices-are-in-the-doldrums-china-wants-to-keep-them-that-way-bf0477da>

205 Gherasim, D. 2024. *The Troubled Reorganization of Critical Raw Materials Value Chains: An Assessment of European De-risking Policies*. Online posting. Ifri. Accessed 8 January 2025. <https://www.ifri.org/en/papers/troubled-reorganization-critical-raw-materials-value-chains-assessment-european-de-risking>

206 Pickard, J., and Hodgson, C. 2024. *UK Chancellor to Unlock Financing for Critical Minerals Supply*. Online posting. Financial Times. Accessed 8 January 2025. <https://www.ft.com/content/8f070865-e033-4f78-a1c8-a121047536e4>

207 U.S. Department of State. *Minerals Security Partnership*. Online posting. U.S. Department of State. Accessed 8 January 2025. <https://www.state.gov/minerals-security-partnership/>

208 Dempsey, H. and Cornish, C. 2024. *How Gulf States Are Putting Their Money into Mining*. Online posting. Financial Times. Accessed 8 January 2025. <https://www.ft.com/content/59298650-540a-43cd-86f8-a6c6db0aa906>

209 ClimateTrade. 2024. *2024 Transport Legislations Supporting Supply Chain Decarbonization*. Online posting. ClimateTrade. Accessed 8 January 2025. <https://climatetrade.com/2024-transport-legislations-supporting-supply-chain-decarbonization/>

210 International Carbon Action Partnership. 2024. *UK Outlines Details for Carbon Border Adjustment Mechanism Introduction from 2027*. Online posting. International Carbon Action Partnership. Accessed 8 January 2025. <https://icapcarbonaction.com/en/news/uk-outlines-details-carbon-border-adjustment-mechanism-introduction-2027>

211 Department for Transport and The Rt Hon Louise Haigh MP. 2024. *Sustainable Aviation Fuel Initiatives*. Online posting. GOV.UK. Accessed 8 January 2025. <https://www.gov.uk/government/speeches/sustainable-aviation-fuel-initiatives>

212 Prevljak, N.H. 2024. *India Rolls Out Program to Support Green Hydrogen Ship Retrofits*. Online posting. Offshore Energy. Accessed 8 January 2025. <https://www.offshore-energy.biz/india-rolls-out-program-to-support-green-hydrogen-ship-retrofits/>

213 Peyton, N. 2024. *South Africa Passes Its First Sweeping Climate Change Law*. Online posting. Reuters. Accessed 8 January 2025. <https://www.reuters.com/world/africa/south-africa-passes-its-first-sweeping-climate-change-law-2024-07-23/>

214 Straight, B. 2024. *The 10 Top Disruptions in 2024*. Online posting. Supply Chain Management Review. Accessed 8 January 2025. <https://www.scmr.com/article/the-10-top-disruptions-in-2024>

215 De Muynck, D.B. 2024. *Weathers’ Wrath: Supply Chains Reel from 2024’s Extreme Events*. Online posting. FreightWaves. Accessed 8 January 2025. <https://www.freightwaves.com/news/weathers-wrath-supply-chains-reel-from-2024s-extreme-events>

216 Wright, R. 2024. *The Mounting Strains on Global Shipping*. Online posting. Financial Times. Accessed 8 January 2025. <https://www.ft.com/content/a03da8f6-b468-4a86-8db5-83838f7d6409>

217 Pfeifer, S. 2024. *Boeing Strike Woes Ripple Through Aerospace Supply Chain*. Online posting. Financial Times. Accessed 8 January 2025. <https://www.ft.com/content/84e29507-fd30-428c-8b73-22a3a830296d>

218 Avila, La. 2024. *Canada’s Major Rail Carriers Have Recovered from Labor Strife*. Online posting. Supply Chain Dive. Accessed 8 January 2025. <https://www.supplychaindive.com/news/canada-rail-strike-cpkc-canadian-national-network-normal/726821/>

219 Baertlein, L. et al. 2024. *U.S. Shippers Avoid East Coast Ports at Risk of Second Strike*. Online posting. Reuters. Accessed 8 January 2025. <https://www.reuters.com/world/us/us-shippers-avoid-east-coast-ports-risk-second-strike-2024-10-30/>

220 Weil, J. 2024. *Stanley Black & Decker Warns of Lower Profits, Higher Prices Due to Expected Tariff Increases*. Online posting. Wall Street Journal. Accessed 8 January 2025. <https://www.wsj.com/livecoverage/stock-market-today-dow-sp500-nasdaq-live-11-12-2024/card/stanley-black-decker-warns-of-lower-profits-higher-prices-due-to-expected-tariff-increases-fTY2Et2jjj9oAGNeIt5b?page=1>

221 Schwartz, B. 2024. *Trump Tariff Plan Faces Intense Business Lobbying*. Online posting. Wall Street Journal. Accessed 8 January 2025. <https://www.wsj.com/economy/trade/trump-tariff-plan-business-lobbying-8f02ccea>

222 Steitz, C. 2024. *EU Tariff Vote on China EVs a ‘Fatal Signal’ for Sector, German Carmakers Warn, Urging Compromise*. Online posting. Reuters. Accessed 8 January 2025. <https://www.reuters.com/business/autos-transportation/fatal-signal-german-car-industry-slams-eu-china-tariffs-calls-deal-2024-10-04/>

223 Milne, R. 2024. *Maersk Says Companies Are Bringing Orders Forward on US-China Trade War Threat*. Online posting. Financial Times. Accessed 8 January 2025. <https://www.ft.com/content/9b6f0595-f6d5-4629-8a56-db3b0ecca19a>

224 Valentini, M. and Durham, M.P. 2024. *Are Companies Moving Production Out of China?* Online posting. J.P. Morgan Asset Management. Accessed 8 January 2025. <https://am.jpmorgan.com/us/en/asset-management/adv/insights/market-insights/market-updates/on-the-minds-of-investors/are-companies-moving-production-out-of-china/>

225 Neumann, J, and Patton, L. 2024. *Steven Madden Targets 40% Cut to China Imports to Avoid Tariffs*. Online posting. Bloomberg. Accessed 8 January 2025. <https://www.bloomberg.com/news/articles/2024-11-07/steven-madden-targets-40-cut-to-china-imports-to-avoid-tariffs>

226 Jones, C. et al. 2024. *China Circumvents US Tariffs by Shipping More Goods via Mexico*. Online posting. Financial Times. Accessed 8 January 2025. <https://www.ft.com/content/2ca4da83-f858-4215-88e7-544adf0aa18e>

227 UN Trade and Development (UNCTAD). 2024. *Review of Maritime Transport 2024*. Online posting. UNCTAD. Accessed 8 January 2025. <https://unctad.org/publication/review-maritime-transport-2024>

228 CDP. 2024. *Corporates’ Supply Chain Scope 3 Emissions Are 26 Times Higher Than Their Operational Emissions*. Online posting. CDP. Accessed 8 January 2025. <https://www.cdp.net/en/articles/media/corporates-supply-chain-scope-3-emissions-are-26-times-higher-than-their-operational-emissions#footnotes>

229 MSCI. 2024. *The MSCI Sustainability Institute Net-Zero Tracker*. Online posting. MSCI. Accessed 8 January 2025. <https://www.msci.com/research-and-insights/net-zero-tracker>

230 Reuters. 2024. *How Amazon, IKEA Are Pushing Ocean Shipping Industry to Meet Net-Zero Emission Goals*. Online posting. Fast Company. Accessed 8 January 2025. <https://www.fastcompany.com/91227977/how-amazon-ikea-pushing-ocean-shipping-industry-meet-net-zero-emission-goals>

231 The Fashion Pact. 2024. *The Future Supplier Initiative Press Release*. Online posting. The Fashion Pact. Accessed 8 January 2025. <https://www.thefashionpact.org/the-future-supplier-initiative-press-release/>

232 DP World. 2024. *Carbon Inset Programme*. Online posting. DP World. Accessed 8 January 2025. <https://www.dpworld.com/news/releases/dp-world-launches-worlds-first-container-port-carbon-inset-programme/>

233 ASDA. 2024. *ASDA Launches Sustainable Supply Chain Finance Scheme*. Online posting. ASDA. Accessed 8 January 2025. <https://corporate.asda.com/newsroom/2024/26/09/asda-launches-sustainable-supply-chain-finance-scheme>

234 European Commission. 2024. *EU’s Digital Product Passport: Advancing Transparency and Sustainability*. Online posting. European Commission. Accessed 8 January 2025. <https://data.europa.eu/en/news-events/news/eus-digital-product-passport-advancing-transparency-and-sustainability>

235 European Commission. 2024. *Ecodesign for Sustainable Products Regulation*. Online posting. European Commission. Accessed 8 January 2025. https://commission.europa.eu/energy-climate-change-environment/standards-tools-and-labels/products-labelling-rules-and-requirements/ecodesign-sustainable-products-regulation_en

236 European Commission. 2024. *Regulation (EU) 2023/1542 of the European Parliament and of the Council of 12 July 2023 concerning batteries and waste batteries, amending Directive 2008/98/EC and Regulation (EU) 2019/1020 and repealing Directive 2006/66/EC (Text with EEA relevance)*. Online posting. European Union. Accessed 8 January 2025. <https://eur-lex.europa.eu/eli/reg/2023/1542/oj>

237 Brewster, M. 2024. *Preparing For The EU’s Digital Product Passport: A New Mandate For Sustainability*. Online posting. Textile World. Accessed 8 January 2025. <https://www.textileworld.com/textile-world/features/2024/07/preparing-for-the-eus-digital-product-passport-a-new-mandate-for-sustainability/>

238 EON. 2022. *H&M Case Study*. Online posting. EON. Accessed 8 January 2025. <https://www.eon.xyz/clients/h-m>

239 Woolfson, D. 2024. *Tesco Introduces ‘Passports’ for Clothes as EU Clampdown Looms*. Online posting. The Telegraph. Accessed 8 January 2025. <https://www.telegraph.co.uk/business/2024/08/11/tesco-signs-up-passports-clothes-eu-clampdown-loom/>

240 Raghavan, Madhava Venkatesh, and Forbes Tech Council. 2024. *Digital Product Passports Are Coming: Here’s How Fashion Companies Can Prepare*. Online posting. Forbes. Accessed 8 January 2025. <https://www.forbes.com/councils/forbestechcouncil/2024/01/16/digital-product-passports-are-coming-heres-how-fashion-companies-can-prepare/>

241 CAV+S. 2024. *We Launched the First Pilot for Digital Passport for Textile Products in Latin America*. Online posting. CAV Sustentables. Accessed 8 January 2025. <https://en.cavsustentables.com/post/we-launched-the-first-pilot-for-digital-passport-for-textile-products-in-latin-america>

242 Carey, N. 2024. *Volvo to Issue World’s First EV Battery Passport Ahead of EU Rules*. Online posting. Reuters. Accessed 8 January 2025. <https://www.reuters.com/business/autos-transportation/volvo-issue-worlds-first-ev-battery-passport-ahead-eu-rules-2024-06-04/>

243 Circularise. 2024. *Circularise’s Digital Product Passports Prove Successful in Japan’s Plastic Recycling Trials*. 2024. Online posting. Circularise. Accessed 8 January 2025. <https://www.circularise.com/press-releases/circularises-digital-product-passports-prove-successful-in-japans-plastic-recycling-trials>

244 Carter, L. and Cokelaere, H. 2024. *UN plastic treaty talks end without a deal*. Online posting. Politico. Accessed 8 January 2025. <https://www.politico.eu/article/un-plastic-treaty-talks-end-without-a-deal/>

245 Mazzoni, M. 2024. *Even Without a Global Treaty, More Plastic Waste Reduction Laws Are Coming in 2025*. Online posting. Triple Pundit. Accessed 8 January 2025. <https://www.triplepundit.com/story/2024/plastic-regulations-2025/814776>

246 Mazzoni, M. 2024. *Even Without a Global Treaty, More Plastic Waste Reduction Laws Are Coming in 2025*. Online posting. Triple Pundit. Accessed 8 January 2025. <https://www.triplepundit.com/story/2024/plastic-regulations-2025/814776>

247 Ho, S. 2024. *Malaysia to begin implementing mandatory EPR for manufacturing sector within five years*. Online posting. Eco-Business. Accessed 8 January 2025. <https://www.eco-business.com/news/malaysia-to-begin-implementing-mandatory-epr-for-manufacturing-sector-within-five-years/>

248 Government of Canada. 2024. *The Government of Canada requires producers to take more responsibility for the plastic they put on the market*. Online posting. Government of Canada. Accessed 8 January 2025. <https://www.canada.ca/en/environment-climate-change/news/2024/04/the-government-of-canada-requires-producers-to-take-more-responsibility-for-the-plastic-they-put-on-the-market0.html>

249 Trivium Packaging. 2023. *Buying Green Report*. Online posting. Trivium Packaging. Accessed 8 January 2025. <https://www.triviumpackaging.com/media/pe5hfxsp/2023buyinggreenreport.pdf>

250 PWC. 2024. *Consumers willing to pay 9.7% sustainability premium, even as cost-of-living and inflationary concerns weigh: PwC 2024 Voice of the Consumer Survey*. Online posting. PWC. Accessed 8 January 2025. <https://www.pwc.com/gx/en/news-room/press-releases/2024/pwc-2024-voice-of-consumer-survey.html>

251 Winters, J. 2024. *Investors Are Pushing More Big Brands to Disclose and Reduce Plastic Use*. Online posting. Triple Pundit. Accessed 8 January 2025. <https://www.triplepundit.com/story/2024/shareholder-advocacy-plastic-waste/797731>

252 Green Century Funds. 2024. *Preventing Plastic Pollution*. Online posting. Green Century Funds. Accessed 8 January 2025. https://www.greencentury.com/wp-content/uploads/Plastics-2-pager-Indesign-file-6.30.2024_STAMPED-2-2.pdf

253 Temple-West, P. 2024. *Proxy season results show support for ESG efforts continues to ebb*. Online posting. Financial Times. Accessed 8 January 2025. <https://www.ft.com/content/1089ff59-47b9-41a2-83b1-98a205587b23>

254 Earth Action. 2024. *Plastic Overshoot Day 2024 Report Summary*. Online posting. Earth Action. Accessed 8 January 2025. https://plasticovershoot.earth/wp-content/uploads/2024/04/EA_POD_report_2024_summary.pdf

255 United Nations Environment Programme. 2024. *Global Waste Management Outlook 2024*. Online posting. UNEP. Accessed 8 January 2025. <https://www.unep.org/resources/global-waste-management-outlook-2024>

256 UNITAR. 2024. *Global e-Waste Monitor 2024: Electronic Waste Rising Five Times Faster than Documented E-waste Recycling*. Online posting. UNITAR. Accessed 8 January 2025. <https://unitar.org/about/news-stories/press/global-e-waste-monitor-2024-electronic-waste-rising-five-times-faster-documented-e-waste-recycling>

257 De Vynck, G. 2024. *The AI boom may unleash a global surge in electronic waste*. Online posting. The Washington Post. Accessed 8 January 2025. <https://www.washingtonpost.com/technology/2024/10/29/ai-electronic-waste-recycling/>

258 The Business Research Company. 2025. *Green Cement Global Market Report*. Online posting. The Business Research Company. Accessed 8 January 2025. <https://www.thebusinessresearchcompany.com/report/green-cement-global-market-report>

259 Vattenfall. 2024. *Vattenfall and Cemvision in new cooperation to supply near-zero emission cement*. Online posting. Vattenfall. Accessed 8 January 2025. <https://group.vattenfall.com/press-and-media/pressreleases/2024/vattenfall-and-cemvision-in-new-cooperation-to-supply-near-zero-emission-cement>

260 Beumelberg, C. 2023. *The future of construction: Heidelberg Materials launches evoZero®, the world's first carbon captured net-zero cement*. Online posting. Heidelberg Materials. Accessed 8 January 2025. <https://www.heidelbergmaterials.com/en/pr-2023-11-28>

261 Gallucci, M. 2024. *Big steel buyers make a request for 1M tons of green steel*. Online posting. Canary Media. Accessed 8 January 2025. <https://www.canarymedia.com/articles/green-steel/big-steel-buyers-make-a-request-for-1m-tons-of-green-steel>

262 Stegra. 2024. *H2 Green Steel raises more than €4 billion in debt financing for the world's first large-scale green steel plant*. Online posting. Stegra. Accessed 8 January 2025. <https://stegra.com/news-and-stories/h2-green-steel-raises-more-than-4-billion-in-debt-financing-for-the-worlds-first-large-scale-green-steel-plant>

263 Jindal Steel & Power. 2024. *Net Zero Steel*. Online posting. Jindal Steel & Power. Accessed 8 January 2025. <https://www.jindalsteel.com/net-zero-steel.html>

264 Tata Steel. 2024. *Green Steel Plan*. Online posting. Tata Steel. Accessed 8 January 2025. <https://www.tatasteelnederland.com/duurzaamheid/groen-staal-plan>

265 CDP. 2024. *New data shows majority of companies are overlooking plastic-related risks*. Online posting. CDP. Accessed 8 January 2025. <https://www.cdp.net/en/press-releases/new-data-shows-majority-of-companies-are-overlooking-plastic-related-risks>

266 CDP. 2024. *Plastics disclosure 2023 snapshot*. Online posting. CDP. Accessed 8 January 2025. <https://www.cdp.net/en/insights/disclosure-data>

267 As You Sow. 2024. *2024 Plastic Promises Scorecard*. Online posting. As You Sow. Accessed 8 January 2025. <https://www.asyousow.org/report-page/2024-plastic-promises-scorecard>

268 Humanscale. 2024. *Refreshed*. Online posting. Humanscale. Accessed 8 January 2025. <https://www.humanscale.com/refreshed/>

269 Sustainable Packaging News. 2024. *The Success Story of Gualapack's Mono-material Pouches*. Online posting. Sustainable Packaging News. Accessed 8 January 2025. <https://spnews.com/gualapack/>

270 Rachal, M. 2024. *Unilever reality-checked its 2025 plastic packaging targets. Will more companies do the same?*. Online posting. Packaging Dive. Accessed 8 January 2025. <https://www.packagingdive.com/news/changing-2025-plastic-packaging-goals-unilever/714063/>

271 Rachal, M. 2024. *Coca-Cola lowers ambition with new 2035 packaging sustainability targets*. Online posting. Packaging Dive. Accessed 8 January 2025. <https://www.packagingdive.com/news/coca-cola-new-packaging-sustainability-goals-2035/734379/>

272 Pyzyk, K. 2024. *PepsiCo anticipates missing certain 2025 packaging sustainability goals*. Online posting. Packaging Dive. Accessed 8 January 2025. <https://www.packagingdive.com/news/pepsico-anticipates-missing-2025-sustainability-goals-ESG-report/719441/>

273 Environment + Energy Leader. 2024. *Recyclable Packaging Market to Top \$41 Billion by 2031*. Online posting. Environment + Energy Leader. Accessed 8 January 2025. <https://www.environmentenergyleader.com/stories/recyclable-packaging-market-to-top-41-billion-by-2031,1459>

274 Amazon. 2024. *One in two Amazon shipments in Europe are delivered without a box, thanks to packaging reduction innovation*. Online posting. Amazon. Accessed 8 January 2025. <https://www.aboutamazon.eu/news/innovation/one-in-two-amazon-shipments-in-europe-are-delivered-without-a-box-thanks-to-packaging-reduction-innovation>

275 Colgate-Palmolive. 2024. *Colgate’s Innovative Tube: Transforming the Landscape*. Online posting. Colgate-Palmolive. Accessed 8 January 2025. <https://www.colgatepalmolive.com/en-us/who-we-are/stories/colgates-innovative-tube-transforming-the-landscape>

276 Electric Power Research Institute (EPRI). 2024. *Powering Intelligence: Analyzing Artificial Intelligence and Data Center Energy Consumption*. Online posting. EPRI. Accessed 8 January 2025. <https://www.epri.com/research/products/3002028905>

277 Shehabi, A. 2024. *2024 United States Data Center Energy Usage Report*. Online posting. Lawrence Berkeley National Laboratory. Accessed 8 January 2025. <https://eta-publications.lbl.gov/sites/default/files/2024-12/lbnl-2024-united-states-data-center-energy-usage-report.pdf>

278 Haas, R. 2024. *Artificial Intelligence’s ‘Insatiable’ Energy Needs Not Sustainable, Arm CEO Says*. Online posting. The Wall Street Journal. Accessed 8 January 2025. <https://www.wsj.com/tech/ai/artificial-intelligences-insatiable-energy-needs-not-sustainable-arm-ceo-says-a11218c9>

279 Mooney, A. 2024. *Data Centres Must Work ‘Within Climate Limits’, Says Irish Minister*. Online posting. Financial Times. Accessed 8 January 2025. <https://www.ft.com/content/21cbc670-9db0-4f94-9832-7e06b880f944>

280 International Telecommunication Union. 2024. *New UN initiative to reduce disaster risk with AI*. Online posting. United Nations. Accessed 8 January 2025. <https://www.itu.int/hub/2024/08/new-un-initiative-to-reduce-disaster-risk-with-ai/>

281 U.S. Department of Labor. 2024. *Artificial Intelligence and Worker Well-being: Principles and Best Practices for Developers and Employers*. Online posting. U.S. Department of Labor. Accessed 8 January 2025. <https://www.dol.gov/sites/dolgov/files/general/ai/AI-Principles-Best-Practices.pdf>

282 European Commission. 2024. *Artificial Intelligence Act*. Online posting. European Commission. Accessed 8 January 2025. <https://artificialintelligenceact.eu/>

283 Prabhu, S. 2024. *AR/VR Trends and Predictions For 2025 & Beyond*. Online posting. Ciklum. Accessed 8 January 2025. <https://www.ciklum.com/resources/blog/ar/vr-trends-and-predictions-for-2025-beyond>

284 Jayaprakash, B. 2024. *Towards Carbon-Aware Spatial Computing: Challenges and Opportunities*. Online posting. Purdue University. Accessed 8 January 2025. <https://docs.lib.purdue.edu/iguide/2023/presentations/14/>

285 PwC. 2024. *2024 US Responsible AI Survey*. Online posting. PwC. Accessed 8 January 2025. <https://www.pwc.com/us/en/tech-effect/ai-analytics/responsible-ai-survey.html>

286 IBM AI Ethics Board. 2024. *Balancing Innovation and Trust: IBM AI Ethics Board Members Reflect on IBM Implementing Responsible AI Principles*. Online posting. IBM. Accessed 8 January 2025. <https://www.ibm.com/think/insights/balancing-innovation-and-trust>

287 IBM. 2024. *IBM watsonx as a Service*. Online posting. IBM. Accessed 8 January 2025. <https://www.ibm.com/docs/en/watsonx/saas>

288 Goldman, P. and Baxter, K. 2023. *Generative AI: 5 Guidelines for Responsible Development*. Online posting. Salesforce. Accessed 8 January 2025. <https://www.salesforce.com/news/stories/generative-ai-guidelines/>

289 Alibaba Group. 2024. *ESG Ratings and Awards*. Online posting. Alibaba Group. Accessed 8 January 2025. <https://www.alibabagroup.com/en-US/esg#esg-ratings-awards>

290 Novartis. 2024. *Our Commitment to Ethical and Responsible Use of Artificial Intelligence (AI)*. Online posting. Novartis. Accessed 8 January 2025. <https://www.novartis.com/esg/ethics-risk-and-compliance/compliance/our-commitment-ethical-and-responsible-use-artificial-intelligence-ai>

291 Amazon. 2024. *Orbital Materials and AWS enter strategic partnership to develop technologies for data center decarbonization and efficiency*. Online posting. Amazon. Accessed 8 January 2025. <https://press.aboutamazon.com/2024/12/orbital-materials-and-aws-enter-strategic-partnership-to-develop-and-pilot-technologies-for-data-center-decarbonization-and-efficiency>

292 Meta. 2024. *Advancing Low Carbon Concrete in our Data Centers*. Online posting. Meta Accessed 8 January 2025. <https://sustainability.atmeta.com/blog/2024/12/19/advancing-low-carbon-concrete-in-our-data-centers/>

293 Bayesian Health. N.D. *Solving Pressure Injuries with AI at the Bedside to Improve Patient Outcomes*. Online posting. Bayesian Health. Accessed 8 January 2025. <https://www.bayesianhealth.com/solving-pressure-injuries-with-ai-at-the-bedside/>

294 Johnson & Johnson. 2024. *6 ways Johnson & Johnson is using AI to help advance healthcare*. Online posting. Johnson & Johnson. Accessed 8 January 2025. <https://www.jnj.com/innovation/artificial-intelligence-in-healthcare>

295 Georgia-Pacific. 2023. *Virtual Reality Training Helps Employees Understand Risks Before Facing Them*. Online posting. Georgia-Pacific. Accessed 8 January 2025. <https://news.gp.com/2023/10/virtual-reality-training-helps-employees-understand-risks-before-facing-them>

296 ArborXR. 2024. *Customer Story: How Delta Air Lines Revolutionized Employee Training with VR*. Online posting. ArborXR. Accessed 8 January 2025. <https://arborxr.com/blog/customer-story-how-delta-air-lines-revolutionized-employee-training-with-vr/>

297 Toyota. 2024. *Augmented Reality or Real Life?*. Online posting. Toyota. Accessed 8 January 2025. <https://careers.toyota.com/us/en/blogarticle/augmented-reality>

298 Council of the European Union. 2023. *Corporate Sustainability Due Diligence: Council and Parliament Strike Deal to Protect Environment and Human Rights*. Online posting. Council of the European Union. Accessed 8 January 2025. <https://www.consilium.europa.eu/en/press/press-releases/2023/12/14/corporate-sustainability-due-diligence-council-and-parliament-strike-deal-to-protect-environment-and-human-rights/>

299 Blenkinsop, P. 2024. *EU Postpones Decision on Proposed Supply Chain Due Diligence Law*. Online posting. Reuters. Accessed 8 January 2025. <https://www.reuters.com/markets/europe/eu-postpones-decision-proposed-supply-chain-due-diligence-law-2024-02-09/>

300 European Commission. 2024. *Corporate Sustainability Due Diligence*. Online posting. European Commission. Accessed 8 January 2025. https://commission.europa.eu/business-economy-euro/doing-business-eu/sustainability-due-diligence-responsible-business/corporate-sustainability-due-diligence_en

301 U.S. Chamber of Commerce. 2024. *U.S. Chamber of Commerce Coalition Letter to Congress Voicing Concerns Over EU Corporate Sustainability Due Diligence Directive*. Online posting. U.S. Chamber of Commerce. Accessed 8 January 2025. <https://www.uschamber.com/finance/u-s-chamber-of-commerce-coalition-letter-to-congress-voicing-concerns-over-eu-corporate-sustainability-due-diligence-directive>

302 Peseckyte, G. 2024. *Qatar Warned to Halt EU Gas Supplies if Fined Under Due Diligence Law*. Online posting. Politico. Accessed 8 January 2025. <https://www.politico.eu/article/qatar-warned-to-halt-eu-gas-supplies-if-fined-under-due-diligence-law/>

303 Council of the European Union. 2024. *Products Made with Forced Labour: Council Adopts Ban*. Online posting. Council of the European Union. Accessed 8 January 2025. <https://www.consilium.europa.eu/en/press/press-releases/2024/11/19/products-made-with-forced-labour-council-adopts-ban/>

304 U.S. Department of State. 2024. *2024 United States Government National Action Plan on Responsible Business Conduct*. Online posting. U.S. Department of State. Accessed 8 January 2025. <https://www.state.gov/wp-content/uploads/2024/03/2024-United-States-Government-National-Action-Plan-on-Responsible-Business-Conduct.pdf>

305 UNDP. 2024. *Launch of the Taskforce on Inequality and Social-Related Financial Disclosures (TISFD)*. Online posting. UNDP. Accessed 8 January 2025. <https://sdgfinance.undp.org/news-events/launch-taskforce-inequality-and-social-related-financial-disclosures-tisfd>

306 EFRAG. 2024. *EFRAG and TISFD Sign Cooperation Agreement to Advance Social-Related Financial Disclosures*. Online posting. EFRAG. Accessed 8 January 2025. <https://www.efrag.org/en/news-and-calendar/news/efrag-and-tisfd-sign-cooperation-agreement-to-advance-socialrelated-financial-disclosures>

307 Abnett, K. 2024. *Belgian Farmer Takes TotalEnergies to Court Seeking Climate Damages*. Online posting. Reuters. Accessed 8 January 2025. <https://www.reuters.com/sustainability/climate-energy/belgian-farmer-takes-totalenergies-court-seeking-climate-damages-2024-03-13/>

308 Quell, M. and Casert, R. 2024. *EU Court Hears Landmark Climate Case on Human Rights Violations*. Online posting. AP News. Accessed 8 January 2025. <https://apnews.com/article/europe-eu-climate-court-human-rights-3b540a965aff7e2b49f1451c7a328e77>

309 Foulkes, I. 2024. *Swiss parliament defies ECHR on climate women’s case*. Online posting. BBC News. Accessed 8 January 2025. <https://www.bbc.com/news/articles/cl55ggjqvx7o>

310 Scheyder, E. 2024. *Indigenous Group Asks U.S. Supreme Court to Block Rio Tinto’s Arizona Copper Project*. Reuters. Online posting. Accessed 8 January 2025. <https://www.reuters.com/legal/indigenous-group-asks-us-supreme-court-block-rio-tintos-arizona-copper-project-2024-09-11/>

311 Hoskins, P. 2024. *UK Companies’ Commitments to Carbon Reduction See Little Progress, Study Shows*. BBC. Online posting. Accessed 8 January 2025. <https://www.bbc.com/news/business-68102511>

312 Gray, A. et al. 2024. *How BHP is facing a record London lawsuit over a Brazilian dam disaster*. Online posting. The Financial Times. Accessed 8 January 2025. <https://www.ft.com/content/0bc35108-4adb-4dd0-a049-59e0933dbc55>

313 Business & Human Rights Resource Centre. 2024. *Minerals Essential to Energy Transition Linked to Human Rights Abuses*. Online posting. Business & Human Rights Resource Centre. Accessed 8 January 2024. <https://www.business-humanrights.org/en/from-us/media-centre/minerals-essential-to-energy-transition-linked-to-human-rights-abuses/>

314 Global Witness. 2024. *Critical Mineral Mines Tied to 111 Violent Incidents and Protests on Average Each Year*. Online posting. Global Witness. Accessed 8 January 2024. <https://www.globalwitness.org/en/campaigns/natural-resource-governance/critical-mineral-mines-tied-111-violent-incidents-and-protests-average-year/>

315 Sang-Hun, C. 2024. *South Korea Lithium Battery Fire*. Online posting. The New York Times. Accessed 8 January 2025. <https://www.nytimes.com/2024/06/25/world/asia/south-korea-lithium-battery-fire.html>

316 European Commission. 2024. *International community commits to improving industrial safety*. Online posting. European Commission. Accessed 8 January 2025. https://environment.ec.europa.eu/news/international-community-commits-improving-industrial-safety-2024-12-02_en

317 Natural Resources Canada. 2024. *National Benefits-Sharing Framework*. Online posting. Natural Resources Canada. Accessed 8 January 2025. <https://natural-resources.canada.ca/our-natural-resources/indigenous-peoples-and-natural-resources/national-benefits-sharing-framework/25261>

318 TC Energy. 2024. *TC Energy Announces Canada’s Largest Indigenous Equity Ownership Agreement*. Online posting. TC Energy. Accessed 8 January 2025. <https://www.tcenergy.com/announcements/2024/2024-07-30-tc-energy-announces-canadas-largest-indigenous-equity-ownership-agreement/>

319 Tuttle, R. 2024. *Enbridge Seeks Approval to Sell Stake to Indigenous Communities*. Online posting. Bloomberg. Accessed 8 January 2025. <https://www.bloomberg.com/news/articles/2024-08-02/enbridge-seeks-approval-to-sell-stake-to-indigenous-communities>

320 Tauhara North No2 Trust. 2024. *The Nga Awa Purua Geothermal Project, Rotokawa, New Zealand*. Online posting. Tauhara North No2 Trust. Accessed 8 January 2025. https://media.business-humanrights.org/media/documents/Tauhara_North_No2_Trust_paper.pdf

321 Greenwood Energy. 2024. *The Arhuaco People and Greenwood Energy Officialize the TERR Initiatives Framework Agreement in Nabusimake with Strategic Allies*. Online posting. Greenwood Energy. Accessed 8 January 2025. <https://www.greenwood.energy/2024/07/03/the-arhuaco-people-and-greenwood-energy-officialize-the-terr%CA%8C-initi%CA%8Ctive-framework-agreement-in-nabusimake-with-strategic-allies/>

322 World Benchmarking Alliance. 2024. *Social Benchmark Press Release*. Online posting. World Benchmarking Alliance. Accessed 8 January 2025. <https://www.worldbenchmarkingalliance.org/news/social-benchmark-press-release-2024/>

323 Business & Human Rights Resource Centre. 2023. *Renewable Energy Benchmark 2023*. Online posting. Business & Human Rights Resource Centre. Accessed 8 January 2025. <https://www.business-humanrights.org/en/from-us/briefings/renewable-energy-benchmark-2023/>

324 Business & Human Rights Resource Centre. 2024. *Southeast Asia Renewable Energy Analysis*. Online posting. Business & Human Rights Resource Centre. Accessed 8 January 2025. <https://www.business-humanrights.org/en/from-us/briefings/southeast-asia-renewable-energy-analysis-2024/>

325 The Economist. 2023. *2024 Is the Biggest Election Year in History*. Online posting. The Economist. Accessed 8 January 2025. <https://www.economist.com/interactive/the-world-ahead/2023/11/13/2024-is-the-biggest-election-year-in-history>

326 Fournier, C. 2024. *Indonesia’s Election and Its Impact on Climate, Coal, and Nickel*. Online posting. The New York Times. Accessed 8 January 2025. <https://www.nytimes.com/2024/02/14/climate/indonesia-election-climate-coal-nickel.html>

327 South African Government. 2024. *Climate Change Act 22 of 2024*. Online posting. Government of South Africa. Accessed 8 January 2025. <https://www.gov.za/documents/acts/climate-change-act-22-2024-english-tshivenda-23-jul-2024>

328 Saul, J. and Mathis, W. 2024. *Green Energy Stocks Sink With Trump Poised to Win US Election*. Online posting. Bloomberg. Accessed 8 January 2025. <https://www.bloomberg.com/news/articles/2024-11-06/green-energy-stocks-sink-with-trump-poised-to-win-us-election>

329 Siegel, J. 2024. *Ali Zaidi Is Poised to Become Key Republican Target Over Clean Energy Spending*. Online posting. Politico. Accessed 8 January 2025. <https://www.politico.com/news/2024/09/24/ali-zaidi-republicans-clean-energy-spending-00180308>

330 Rep. Garbarino, A. et al. 2024. *Letter to Speaker Mike Johnson*. Online posting. U.S. House of Representatives. Accessed 8 January 2025. <https://garbarino.house.gov/sites/evo-subsites/garbarino.house.gov/files/evo-media-document/FINAL%20Credits%20Letter%202024.08.06.pdf>

331 Naishadham, S. 2024. *Amid Legal Challenges, SEC Pauses Its Climate Disclosure Rule*. Online posting. PBS NewsHour. Accessed 8 January 2025. <https://www.pbs.org/newshour/economy/amid-legal-challenges-sec-pauses-its-climate-disclosure-rule>

332 Hood, D. and Ramonas, A. 2024. *SEC poised for slow regulatory unraveling under Trump, explained*. Bloomberg Law. Online posting. Accessed January 9, 2025. <https://news.bloomberglaw.com/esg/sec-poised-for-slow-regulatory-unraveling-under-trump-explained>

333 Persefoni. 2024. *California SB 253 and SB 261: What Businesses Need to Know*. Online posting. Persefoni. Accessed January 9, 2025. <https://www.persefoni.com/blog/california-sb253-sb261>

334 Howe, A. 2024. *Supreme Court Strikes Down Chevron, Curtailing Power of Federal Agencies*. Online posting. SCOTUSblog. Accessed 8 January 2025. <https://www.scotusblog.com/2024/06/supreme-court-strikes-down-chevron-curtailling-power-of-federal-agencies/>

335 Hayes, S. and Charles, G. 2024. *Supreme Court Decisions Increase Risk for Businesses in the U.S. Energy Sector*. Online posting. ERM. Accessed 8 January 2025. <https://www.erm.com/insights/supreme-court-decisions-increase-risk-for-businesses-in-the-us-energy-sector/>

336 Reed, S. 2024. *Shell Wins Appeal in Landmark Dutch Climate Case*. Online posting. The New York Times. Accessed 8 January 2025. <https://www.nytimes.com/2024/11/12/business/shell-emissions-ruling.html>

337 Jaynes, C.H. 2024. *Ocean Tribunal: Small Island Nations Climate Fight*. Online posting. World Economic Forum. Accessed 8 January 2025. <https://www.weforum.org/stories/2024/07/ocean-tribunal-small-island-nations-climate-fight/>

338 Setzer, J., and Higham, C. 2024. *Global Trends in Climate Change Litigation: 2024 Snapshot*. Online posting. London School of Economics and Political Science. Accessed 8 January 2025. <https://www.lse.ac.uk/granthaminstitute/wp-content/uploads/2024/06/Global-trends-in-climate-change-litigation-2024-snapshot.pdf>

339 Swanson, A. 2024. *Biden Targets China’s Chip Industry With Wider Trade Bans*. Online posting. The New York Times. Accessed 8 January 2025. <https://www.nytimes.com/2024/12/02/business/economy/biden-china-chips-exports.html>

340 Bloomberg News. 2024. *China Dials Up US Trade Tension With Tit-for-Tat Metals Ban*. Online posting. Bloomberg. Accessed 8 January 2025. <https://www.bloomberg.com/news/articles/2024-12-03/china-bans-germanium-gallium-exports-to-us-in-tit-for-tat-move>

341 Stevenson, A. 2025. *China Hits Dozens of U.S. Companies With Trade Controls*. Online posting. The New York Times. Accessed 8 January 2025. <https://www.nytimes.com/2025/01/02/business/china-us-companies-entity-list.html>

342 Kiderlin, S. 2024. *European Union Votes to Impose Tariffs on Chinese Electric Vehicles*. Online posting. CNBC. Accessed 8 January 2025. <https://www.cnbc.com/2024/10/04/european-union-votes-to-impose-tariffs-on-chinese-electric-vehicles.html>

343 Thompson Hine LLP. 2024. *Following U.S. Lead, Canada Announces New Tariffs on Chinese EVs, Steel, and Aluminum*. Online posting. Thompson Hine LLP. Accessed 8 January 2025. <https://www.thompsonhinesmartrade.com/2024/08/following-u-s-lead-canada-announces-new-tariffs-on-chinese-evs-steel-and-aluminum/>

344 Barghini, T. 2024. *New U.S. Tariffs Begin on Chinese Goods*. Online posting. Global Finance. Accessed 8 January 2025. <https://gfmag.com/economics-policy-regulation/new-us-tariffs-begin-on-chinese-goods/>

345 Teng, T. 2024. *EU and China advance towards alternative solution for EV tariffs*. Online posting. Euronews. Accessed 8 January 2025. <https://www.euronews.com/business/2024/11/29/eu-and-china-advance-towards-alternative-solution-for-ev-tariffs>

346 European Commission, 2024. *EU-India advance cooperation on CBAM*. Online posting. European Commission. Accessed 8 January 2025. https://taxation-customs.ec.europa.eu/news/eu-india-advance-cooperation-cbam-2024-07-05_en

347 Yin, I. 2024. *COP29: China to seek inclusion of CBAM in official COP30 agenda in Brazil, official says*. Online posting. S&P Global Commodity Insights. Accessed 8 January 2025. <https://cilive.com/commodities/metals-mining/news-and-insight/111524-cop-29-china-seek-inclusion-cbam-official-cop-30-agenda-brazil>

348 Yurkevich, V. 2024. *This election is so divisive, some companies have gone silent even on basic civics*. Online posting. CNN. Accessed 8 January 2025. <https://www.cnn.com/2024/11/03/business/election-companies-voting-marketing/index.html>

349 Furhmans, V., et al. 2024. *Company Bosses Draw a Red Line on Office Activists*. Online posting. The Wall Street Journal. Accessed 8 January 2025. <https://www.wsj.com/lifestyle/workplace/company-bosses-draw-a-red-line-on-office-activists-bd11b7aa>

350 Alderman, L. 2024. *Ben & Jerry’s Accuses Unilever of Seeking to Muzzle Its Gaza Stance*. Online posting. The New York Times. Accessed January 9, 2025. <https://www.nytimes.com/2024/11/14/business/ben-and-jerrys-unilever-lawsuit-israel-gaza.html>

351 Zilber, A. 2024. *\$4.4B wind farm project off New York coast ‘on pause’ after Trump election victory*. Online posting. New York Post. Accessed January 9, 2025. <https://nypost.com/2024/11/27/business/wind-farm-project-off-new-york-coast-worth-4-4b-on-pause-after-trump-election-victory/>

352 Howland, E. 2024. *Duke pauses consideration of DOE loan program with Trump election, new Congress*. Online posting. Utility Dive. Accessed January 9, 2025. <https://www.utilitydive.com/news/duke-energy-carolina-ncuc-carbon-plan-doe-loan/734249/>

353 Kim, H. 2024. *Trump EV skepticism threatens \$54 billion in Korea plans*. Online posting. Bloomberg. Accessed January 9, 2025. <https://www.bloomberg.com/news/articles/2024-12-08/trump-ev-skepticism-threatens-54-billion-in-korean-investments>

354 Pfeifer, S. 2024. *ArcelorMittal delays green investments in Europe over policy uncertainty*. Online posting. Financial Times. Accessed January 9, 2025. <https://www.ft.com/content/94c174d0-cfde-4ef9-9d92-a16792232fd7>

355 Milko, V. 2024. *Indonesia’s Prabowo plans to retire all fossil fuel plants in 15 years, but experts are skeptical*. Online posting. AP News. Accessed January 9, 2025. <https://apnews.com/article/indonesia-coal-energy-transition-fossil-g20-cop-2d8fd110a855a37167d49211e65fc51d>

356 The Jakarta Post. 2024. *Government to shut down 13 coal-fired power plants*. Online posting. The Jakarta Post. Accessed January 9, 2025. <https://www.thejakartapost.com/business/2024/08/22/government-to-shut-down-13-coal-fired-power-plants.html>

357 Spence, E. 2024. *Adaro plans \$2.5 billion coal mines sale as part of green pivot*. Online posting. Bloomberg. Accessed January 9, 2025. <https://www.bloomberg.com/news/articles/2024-09-12/adaro-plans-2-5-billion-coal-mines-sale-as-part-of-green-pivot>

358 Ramani, V. et al. 2020. *Blueprint for Responsible Policy Engagement on Climate Change*. Online posting. Ceres. Accessed January 9, 2025. <https://www.ceres.org/resources/reports/blueprint-responsible-policy-engagement-climate-change>

359 We Mean Business Coalition. 2023. *A Framework for Responsible Policy Engagement – RPE*. Online posting. We Mean Business Coalition. Accessed January 9, 2025. <https://www.wemeanbusinesscoalition.org/wp-content/uploads/2023/06/A-Framework-for-Responsible-Policy-Engagement-%E2%80%93-RPE.pdf>

360 Peck, J. and Dodson, J. 2024. *Pushing Policy - Boardroom engagement with climate policy is crucial to net zero goals*. Online posting. ERM. Accessed January 9 2025. <https://www.erm.com/insights/pushing-policy-boardroom-engagement-with-climate-policy-is-crucial-to-net-zero-goals/>

361 Norges Bank Investment Management. 2024. *Responsible corporate policy engagement*. Online posting. Norges Bank Investment Management. Accessed January 9, 2025. <https://www.nbim.no/en/publications/our-views/2024/responsible-corporate-policy-engagement/>

362 Marmot, R. 2024. *Unilever calls on industry associations to step up climate efforts*. Online posting. Unilever. Accessed January 9, 2025. <https://www.unilever.com/news/news-search/2024/unilever-calls-on-industry-associations-to-step-up-climate-efforts/>

363 Walmart. *Responsible Engagement in Public Policy*. Online posting. Walmart. Accessed January 9, 2025. <https://corporate.walmart.com/purpose/esgreport/governance/engagement-in-public-policy>

364 Japan Climate Initiative. 2024. *JCI Message on 2035 NDC Release*. Online posting. Japan Climate Initiative. Accessed January 9, 2025. <https://japanclimate.org/english/news-topics/jci-message-2035ndc-release/>

365 Millard, R. 2024. *EU should force customers to buy less polluting products, companies say*. Online posting. Financial Times. Accessed January 9, 2025. <https://www.ft.com/content/3db4ee9b-ab5e-489e-8137-3701207f7eb3>



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