Bloomberg Intelligence BI

# ESG 2.0

## 2026 Outlook

## Getting ESG Right Is Crucial To Identify Risk, Opportunity

When done right, ESG is critical to identifying industry-specific risk and opportunity, and themes that will shape company fundamentals. Bloomberg Intelligence's focus on financial materiality can unearth potential share price outperformance and identify key ESG themes for 2026 likely to shape companies such as Eaton, Mitsubishi Heavy, and Cloudflare.

- **ESG Events Can Move Stock Prices, Credit Spreads:** Limiting exposure to event risk helps reduce losses—for instance, Equinor's oil spills captured in our Market Moving News model since 2016 led to an average -1.1% relative return on the event day.
- **ESG Funds Reach $3 Trillion Despite Backlash:** Fund managers face competing realities, with assets in labeled funds surpassing $3 trillion despite more than 700 funds dropping or revising ESG-related terms in their names.
- **Emerging Themes:** Carbon capture and storage, the implications of AI, climate adaptation and resilience, unintended policy boosts, and the rise of ESG in emerging and private markets are key themes that will drive investments beyond ESG.

**Oct. 27, 2025**

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**More detailed analysis and interactive graphics are available on the Bloomberg Terminal**

# Section 1. Executive Summary

## Refocusing on ESG Materiality Critical for Investors

**$3 Trillion**
Assets in ESG-labeled funds, including $8 billion of inflows in 1H25

**19.39%**
Bloomberg Global Aggregate Green Social Sustainability bond index returns since the beginning of 2023 vs. Bloomberg Global Aggregate bond index's return of 11.42%

**8%**
Excess returns for companies with a low carbon impact in high-emitting global industries over the trailing five years

As the ESG label is de-emphasized, the underlying analysis continues to support positive risk-adjusted returns by highlighting industry-specific risks, opportunities and themes that shape company fundamentals. Investors ignoring these issues may miss significant market shifts. This is the reality of ESG 2.0, and within this new context, Bloomberg Intelligence's focus on financial materiality yields unique insights, including 3.5% annualized outperformance for mining and chemicals companies that do well on safety vs. peers in industry-specific backtests. Similarly, oil and gas companies with better environmental records outperformed by 2.2%. We also identify key ESG themes likely to shape company and industry fundamentals in 2026.

### Key Research Topics

- **Event-Driven Threats:** Though ESG analysis often focuses on key performance metrics, event-driven risks can trigger underperformance and limiting exposure can help reduce losses.
- **Regulatory Scrutiny:** Assets in labeled funds surpassed $3 trillion, yet greenwashing concerns can force investors to shift strategies or face significant fines, as more than 700 funds dropped or revised ESG-related terms in their names and DWS was hit with a €25 million penalty earlier this year.
- **Emerging Themes:** The carbon-capture and storage market is expected to grow 4x to 2032, while other notable themes include AI, climate adaptation and resilience. The BI Prepare and Repair theme has outperformed the S&P 500 by 7.7% annually over the past five years.
- **Political Push and Pull:** Amid a changing political environment, Wells Fargo earlier this year abandoned its net-zero financed-emissions goals, leaving up to 0.7% of its market cap held by ESG and climate funds at risk of divestment. A fraught environment for diversity initiatives has also emerged in the US, often with share-price consequences including Target facing pressure from the left and Cracker Barrell from the right.
- **The Predictive Power of ESG Data:** ESG data can often shed light on a company's risk exposures. For example, leading performance on Tier 1 PSE rates -- a key safety metric among oil and gas companies – often indicated fewer spills going forward.

### Performance and Valuation

The Bloomberg Future Energy Aggregate Total Return Index (BFEAT) represents companies that derive revenues from "Future Energy," including hydrogen, biofuels, nuclear, solar, wind, and decentralized energy. The index returned 25.3% this year through September, outperforming the Bloomberg World Large & Mid Cap Price Return Index's 18.3% increase by 662 basis points. The theme's price-to-earnings ratio of 22.2x is slightly above the benchmark's 21.8x.

On the fixed income side, the Bloomberg Global Aggregate Green Social Sustainability bond index (GSS) returned 11.99% this year through September, besting the Bloomberg Global Aggregate bond index's return of 7.91% by 408 bps.

# Section 2. Catalysts to Watch

## Carbon Schemes, More Regulation, Disclosure Ahead

Airlines will need to increase efforts to cut their carbon emissions, Japan is expected to make a final investment decision on building out a carbon capture and storage system, and new or revised regulations from the EU are among pivotal events that will help shape the ESG landscape over the coming five years.

### Critical Milestones:

- **November 2025:** Global airlines face carbon charges under the Carbon Offsetting and Reduction Scheme for International Aviation for the first time, placing added cost pressure on laggards in managing carbon emissions.
- **December 2025:** Large UK asset managers must make product and entity-level disclosures for ESG labeled funds under the Sustainability Disclosure Requirement. This would result in more detailed data disclosure on how fund holdings have a direct or indirect link to positive environmental or social outcomes.
- **1Q 2026:** The European Union will finalize its Omnibus proposal, streamlining reporting requirements under EU sustainability regulations (CSRD, CSDDD, EU Taxonomy) and significantly narrowing their scope. The move would reduce compliance burdens on smaller companies starting with 2028 reporting but widen the data gap for ESG investors.
- **2026:** Japan is to take final investment decision on building a nationwide Carbon Capture and Storage system. Such a large scale investment out to 2030 will benefit key players throughout the value chain, including engineering, transportation, compression, and finance.
- **2027:** The EU will launch ETS2, bringing buildings, road transport and fuel suppliers (covering combustion in smaller industries) under the emissions trading framework, increasing the number of tradeable credits and potentially the costs for consumers of fossil-based heating and transport fuels.
- **2028:** Mandated reporting under the Hong Kong Sustainability Disclosure Standards for large publicly accountable entities. Listed companies in Hong Kong will need to make sustainability-related financial disclosures in accordance with ISSB Standards, greatly improving ESG transparency.

# Section 3. ESG+ Asset Trends

## Sentiment Leans Environmental, Flows Suggest Otherwise

ESG funds drew $8 billion of inflows in 1H even as sentiment shifts toward narrower environmental themes, which saw outflows, and withdrawals from clean energy despite outperformance suggest political risk is a bigger consideration than returns. More than 700 funds dropped ESG labels due to stricter EU rules, yet bright spots emerged: biodiversity funds gained inflows and 'E' funds were largely shielded from renaming.

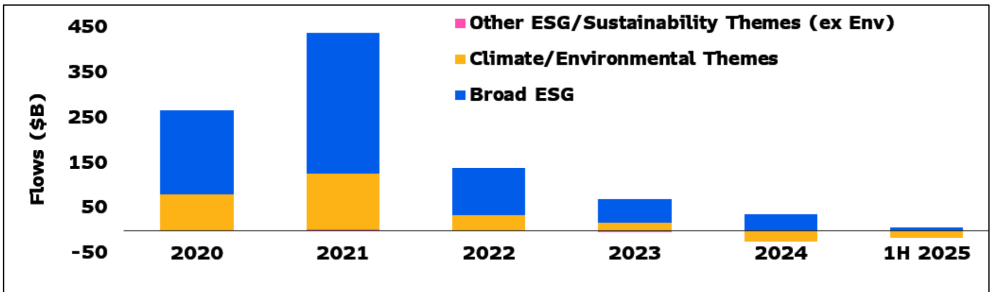
## 3.1 Broad ESG Funds Draw Inflows, Environment Outflows

Rhetoric has shifted toward environmental themes from broader ESG and related terms, yet fund flows tell a different story. As shown in Fig. 1, flows in 1H to ESG-labeled funds, such as ESG, sustainability or socially responsible investing, reached $8 billion, while those with solely environmental labels had outflows exceeding $10 billion, likely due to policy uncertainty. Regional patterns diverged: Europe drove most flows into broad ESG labels, while North America saw outflows amid sharp political backlash in the US. Inflows are significantly smaller than the high of $450 billion in 2021, in part reflecting global views, but also weakness in climate themes and political uncertainty.

We cover more than 3,500 funds with assets over $100 million that have ESG, values-based, sustainability or impact labels or benchmarks (SRI, climate, among others referred to as ESG+).

**Environmental themes hard hit as rhetoric ramps up**

**Figure 1: Flows: Broad ESG vs. Themes**

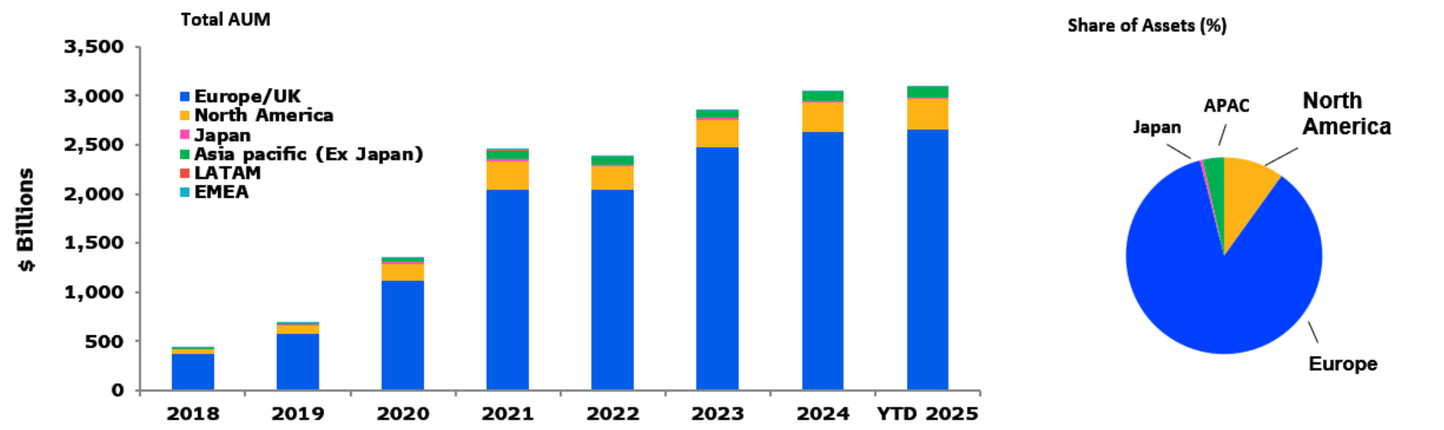



Source: Bloomberg Intelligence

ESG+ funds have topped $3 trillion so far this year, with Europe expected to extend its lead over the US amid pointed opposition from the administration and slowing ETF growth. Historically, US expansion had been driven by ETFs, which made up over 40% of assets, yet growth remains at risk, due partly to investor concentration and a tougher political climate. This reliance on a small pool of investors causes cyclicality and raises the risk of further weakness if large investors exhaust allocations or change course.

BlackRock, Vanguard and Dimensional Fund Advisors dominate market share in North America, while Amundi (with Credit Agricole its majority shareholder), BlackRock and UBS lead in Europe.

**Figure 2: ESG+ Labeled Fund Assets**



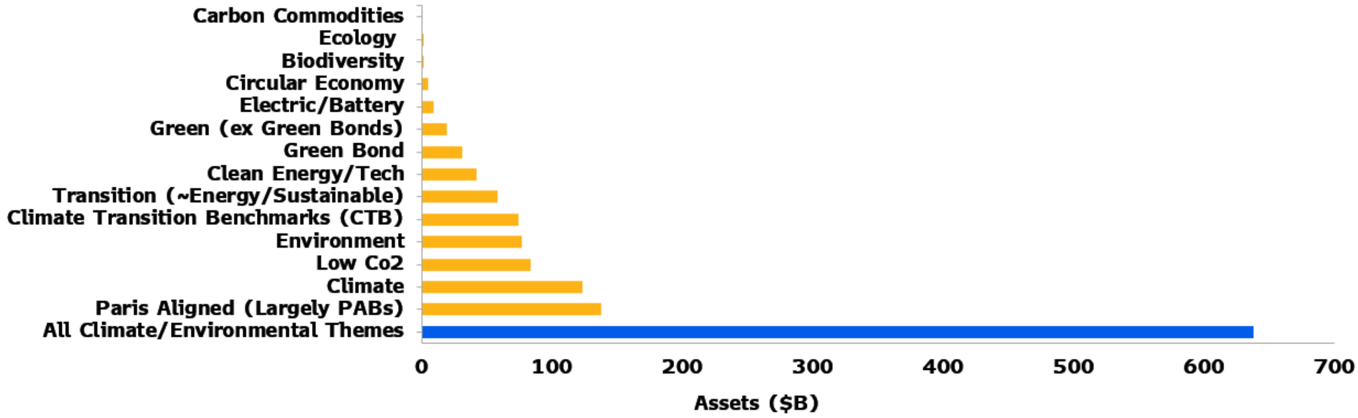

Funds created as of April 2025 with over $100 M in assets. We include all ESG, sustaianbility, ethical labelled funds (as per key words in the name and benchmark).

Source: Bloomberg Intelligence

More than 700 funds -- 20% of the assets we track -- dropped or revised ESG-related labels in their names since 2023, a trend we expect will persist, albeit at a slower pace. The European Securities and Markets Authority guidelines require funds with ESG-related names to allocate 80% of assets to stated environmental or social goals. Most renaming has already happened, given the deadline, yet it may extend to other regions worldwide, particularly in the US. Broad ESG terms accounted for 97% of those relabeled, while environmental themes made up just 3%. Funds with environmental labels tend to have more specific and narrowly defined criteria -- such as decarbonization or renewable energy -- making it easier for managers to demonstrate compliance than those using the more loosely defined ESG labels.

Funds with labels around climate and environmental themes reached $630 billion in assets, with clean energy making the slowest gains -- taking up only 6% of environmental assets, down from 18% in 2021. Clean energy logged around $4 billion of outflows in 1H despite major indexes, such as the S&P Clean Energy Transition Index, outperforming the broader market (MSCI ACWI) by 5.6%, suggesting sentiment carries more weight than performance in times of political unease. Though funds with climate and environmental themes experienced pullback, biodiversity funds and those focused on climate transition benchmarks were among the few categories that saw positive flows.

**Figure 3: Assets by Climate/Environmental Themes**




Note: Funds with assets over $100 Million as of April. Assets are dissected based on key words in the name or benchmark. We exclude words for stratgies that mean the same to avoid double counting but when a fund has multiple stratgies, assets are counted for each. (~5% of assets are double counted). Climate: Excludes 'PAB/CTBs' capturing stratgies like 'climate change/impact'. Environment: excludes 'climate' to avoid double counting. Low Co2/Co2 transition: includes low CO2, fossil free, net zero etc. Transition excludes 'climate' to avoid double couting with CTB & climate. Few APAC funds are named 'low Co2' but focus on clean energy causing some scews.

Source: Bloomberg Intelligence

# Section 4. Political & Regulatory Outlook

## Investors Have Scant Wiggle Room Amid Rules, Politics

Precise strategies guided by financial materiality are essential to using and marketing ESG analysis, and navigating varied regulatory landscapes, from challenging US conditions to more supportive Japanese policies, is crucial. Despite political pressure, asset managers like Aberdeen and Robeco continue to integrate sustainability, while peers who retreat risk losing mandates.

## 4.1 US Regulators Seek to Limit ESG Analysis, Disclosures

The Trump administration has sought to rapidly scale back private-sector efforts to address some of the most financially significant ESG risks and opportunities, including climate, diversity, equity and inclusion, and shareholder rights. The SEC is looking to tear up the Biden-era climate-disclosure rule, without which US investors must rely on voluntary disclosures that could prove inconsistent vs. other developed markets, while Republicans are also using regulations and litigation to thwart ESG offerings.

The Department of Labor may revive a late-2020 directive that put significant onus on the then-estimated 150,000 private funds using allegedly "non-pecuniary" ESG factors. State attorneys general, led by Texas, are also suing asset managers, alleging their participation in climate initiatives constitutes an antitrust violation.

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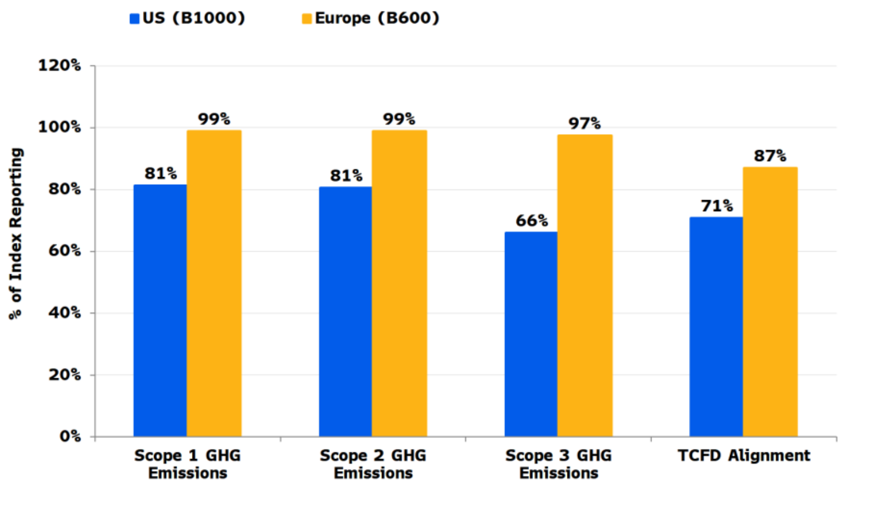
**US begins to retreat from disclosures**

**Figure 4: Climate Disclosures: B1000 (US) vs. B600 (Europe)**




Source: Bloomberg Intelligence

The administration's efforts to unwind ESG have garnered the most attention, yet other jurisdictions have also weakened ESG regulations, reflecting practical and political realities that could give companies some operating and financial relief. The EU is reevaluating its corporate reporting, supply chain and carbon-tax rules, with significant simplification of required reporting and far fewer companies expected to be subject to it. Canada rolled back plans for a consumer carbon tax. To address its housing-supply crisis, California weakened some environmental-permitting regulations and may adjust its profit cap on refineries to improve transport fuel supply.

Though shifting toward more pragmatic policy, these governments still maintain broader goals, with the EU targeting a 90% reduction in greenhouse gases by 2040.

## 4.2 Pull Back or Embrace? Global Reactions Vary

Japanese investors are increasingly embedding sustainability and ESG perspectives into their strategies as more institutions sign on to the Asset Owner Principles. Introduced by the Financial Services Agency (FSA) in August 2024, the principles call for stronger stewardship, the adoption of sustainability-focused investment policies and encouragement to join the Principles for Responsible Investment (PRI). Since then, commitments have surged, with nearly 300 asset owners on board.

Signatories include the Government Pension Investment Fund (GPIF), Japan's largest asset owner with $2 trillion under management, as well as over 200 private pension funds, representing a powerful shift toward sustainable investment across the country's financial system.

BI **Japan going all in, Singapore not so sure**

In August, Singaporean regulators postponed climate disclosure requirements by up to five years for all but its 30 biggest listed companies in the Straits Times Index (STI), citing global economic uncertainty and industry feedback that smaller companies need more time to comply. Listed companies must still report Scope 1 and 2 emissions starting with the 2025 financial year, yet other disclosures based on International Sustainability Standards Board standards are delayed to fiscal 2028 or later. Scope 3 emissions reporting is now voluntary for all but the 30 STI members.

Regulators said the extension can help companies develop reporting capabilities needed to maintain their place in global supply chains. Some of the biggest companies have a long lead. City Developments published its first sustainability report in 2008.

EU revisions proposed in February would shrink companies' due diligence obligations on harmful impacts to direct business partners and limit the data they can request from smaller companies. The proposals call for full due diligence on business partners deeper in a company's value chain only when it has "plausible information" suggesting there are harmful impacts. And companies will no longer be obliged to cut ties with partners that don't comply. Together, the changes could significantly weaken companies' ability to map high-risk links embedded in value chains, especially companies with vast, multi-layered supply networks, such as ADM, Bunge and Cargill.

Some asset managers and banks are also rolling back ESG commitments, in part to avoid political blowback, yet such a retreat isn't without consequences from asset owners that are maintaining or expanding sustainability goals. In September, Dutch pension fund PFZW pulled sizable mandates from BlackRock (€14.5 billion), Legal & General (€15 billion) and AQR (€4 billion), citing "a new investment strategy where financial performance, risk and sustainability are weighed equally," implying that backtracking on ESG analysis and stewardship played a role.

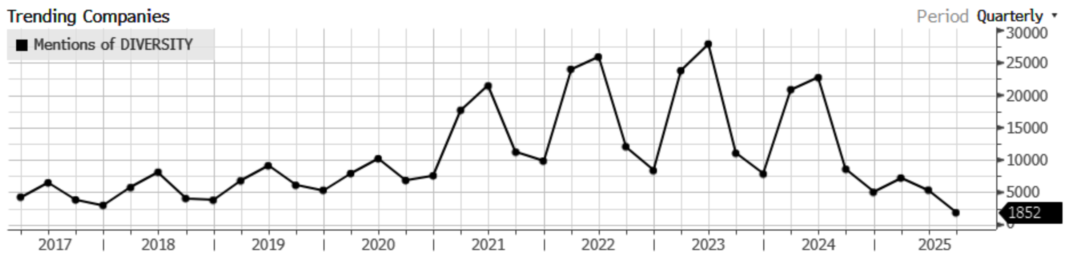
Conversely, Aberdeen, Robeco and PGIM won credit mandates from PFZW worth a combined €11 billion, with each emphasizing a continued incorporation of sustainability factors. Greenwashing is a risk, with DWS fined €25 million in Germany this year after a similar fine in the US in 2023.

Today's political pressure on company diversity, equity and inclusion programs is likely to remain intense into 2026, raising business risk. Large companies like Ford, McDonalds and Walmart have publicly walked back commitments to DEI, but often substantive changes in operations have been far less dramatic as companies seek to balance business needs and the competing interests of different stakeholders. A few, like Costco, earned plaudits and even a "buycott" after robustly defending DEI, and Target's disappointed customer base called for a boycott. As companies grapple with this balancing act, some are delaying or skipping publication of sustainability reports.

There's no risk-free strategy, but companies that articulate their values, linking them to business performance, might better withstand pressure.

BI **As pressure mounts, companies talk less about diversity.**

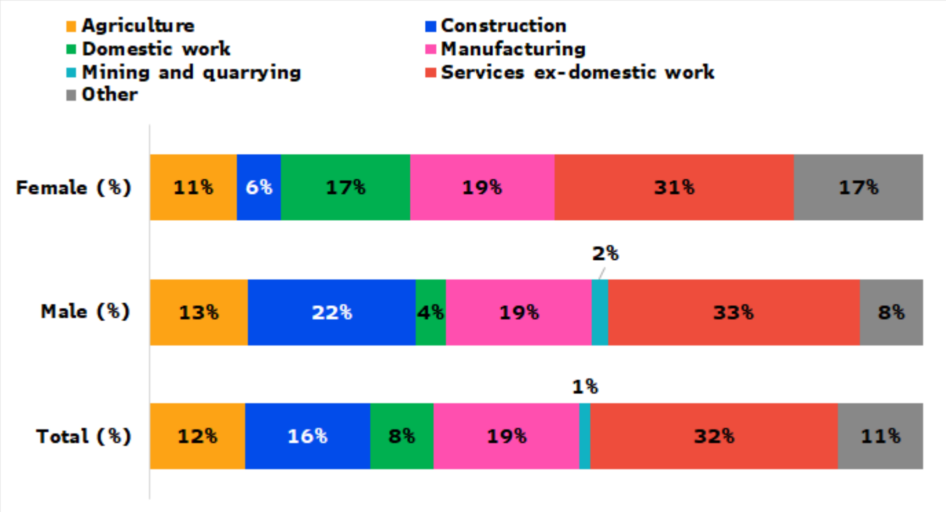
**Figure 5: Mentions of Diversity in S&P 500 Company Filings**




Source: DS <GO>, Bloomberg Intelligence

BI **EU revisions mean less due diligence on parts of the supply chain**

**Figure 6: Forced Labor by Economic Activity (Global)**




Note: Chart shows the percentage distribution of adults in privately imposed forced labor in sectors other than commercial sexual exploitation, by economic activity and sex, totaling 17 million people (11 million male, 6 million female) in 2021. "Services ex-domestic work" includes trade, transport, hospitality, and non-market social and other services. "Other" includes begging and involvement in illicit activities

Source: International Labour Organization (ILO), 2022 Global Estimates of Modern Slavery, Bloomberg Intelligence

# Section 5. Stewardship & Engagement

## Shareholder Engagement, Voting Must Adapt

New rules designed to ease companies' compliance burdens may curb shareholder rights, forcing investors to rethink their engagement with issuers on ESG themes. Stewardship aims to bolster long-term value, yet it has now become even more critical for these efforts to focus on financial materiality to avoid irking regulators. Our works suggests that global efforts to improve shareholder rights can boost activism and ultimately returns.

## 5.1 Changes Create Chilling Effect in 2025 Proxy Season

Shareholder resolutions declined 23% in the 2025 proxy season amid a retreat in ESG voting policies from major investors and a sudden shift in guidance from the Securities and Exchange Commission on proposal eligibility (see Fig. 7). The SEC in February released Staff Legal Bulletin (SLB) 14M, rescinding the Biden-era SLB 14L that had advised staffers not to allow companies to exclude most shareholder proposals regarding issues with broad societal impact like climate change or human rights. The drop was particularly noteworthy for proposals addressing social issues (down 40%) and environmental concerns (21% lower). Governance-related proposals, usually considered less politically controversial, fell a more modest 5%.

Still, the 52 approved proposals were in line with 2024, and average support of 23% was flat with the past two years amid continued interest in governance-focused proposals. But 14M advocated a much narrower, company-specific view of what would transcend day-to-day matters and a proposal's significance to a company's core business.

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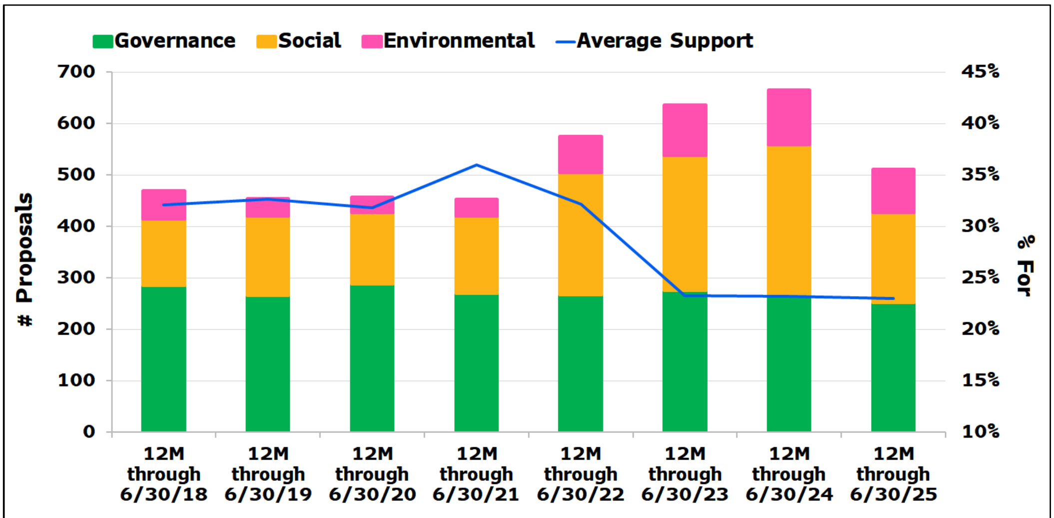
**Shareholder proposals fall nearly 25% in 2025 proxy season**

**Figure 7: Shareholder Proposals (Russell 3000)**




Note: Date reflects date of shareholder meeting

Source: Bloomberg Intelligence

The SEC's regulatory agenda update on Sept. 4 included "Shareholder Proposal Modernization" to reduce Rule 14a-8 compliance burdens for filers, possibly by again raising the bar for shareholder proposals. Under previous Republican leadership in 2020, the SEC increased the requirements for submitting resolutions, claiming "nuisance" proposals were a waste of corporate resources and detrimental to the broader shareholder base. To submit a proposal, investors must hold at least $25,000 of voting shares for a year, $15,000 for two years or $2,000 for three years, up from $2,000 for a year previously. Minimum support levels to resubmit a failed proposal were also increased.

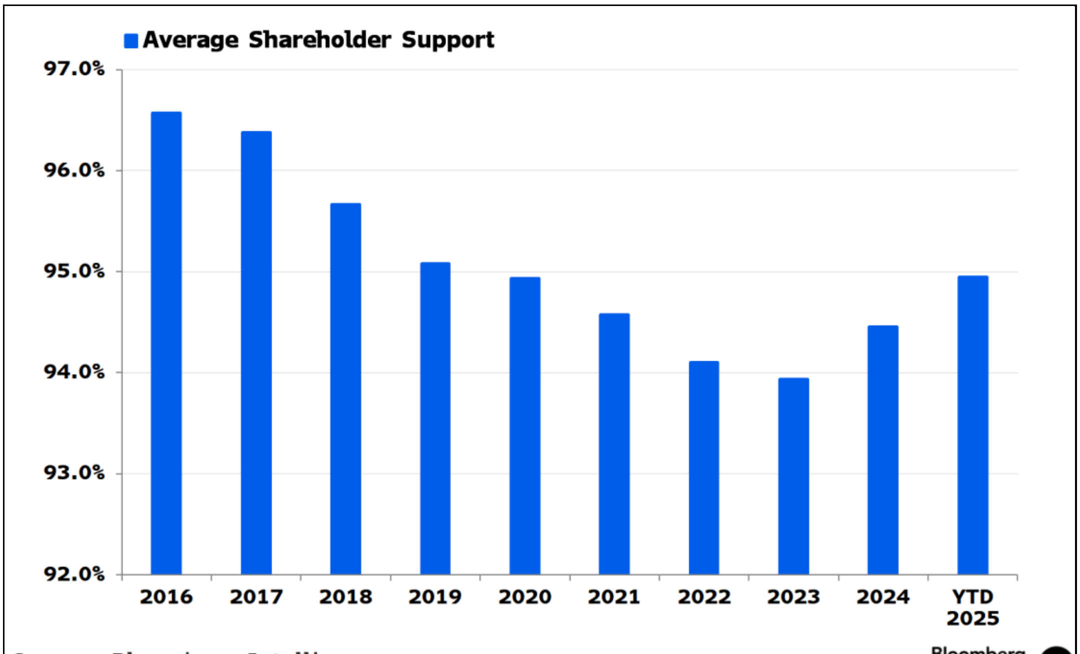
Still, 14a-8 changes could be a lower priority compared with other deregulation efforts to facilitate capital formation and might not be finalized until mid-2027.

The SEC also issued a new interpretation of beneficial ownership reporting in February that may force large investors to either switch to more onerous trading requirements or change how they engage with management, particularly on ESG issues. Index funds typically report large holdings using a 13G filing, but the new advice suggests any engagement that implies failure to meet expectations on a specific issue -- and that would affect upcoming director voting -- could be deemed activism, mandating timelier 13D disclosures.

Results are already being felt: State Street abandoned a 2023 policy of "taking voting action if a company's board is not composed of at least 30% women," and BlackRock and Vanguard now offer voter-choice options while taking a more hands-off approach to ESG in primary stewardship activities.

BI **Support for management-nominated directors edging higher**

**Figure 8: Support for Management-Nominated Directors (R3000)**




Source: Bloomberg Intelligence

## 5.2 Global Activism Drops Again, But Japan Remains Elevated

Global activism campaigns totaled 385 in 1H, down 11% from a year earlier, continuing 2024's decline, yet the capital behind these efforts rebounded 14% to $41 billion. In Japan, activity dipped only modestly after a 70% surge in 1H24, driven by governance reforms to boost corporate value, while US campaigns were little changed after a double-digit drop last year.

Health-care activism surged 61% to 61 campaigns, but most other sectors declined, including materials (down 30%) and technology (18%).

The next two years may see global activism re-accelerate as policy uncertainty clears, and the extension of US tax cuts provides a further boost, particularly with regard to breakups. Potential targets identified by the Bloomberg Activism screen include Xerox and Newell Brands.

**Global activism seen picking up again over the next two years**

Activism campaigns in Japan rose steeply to 151 in 2024 from 66 in 2020, behind only the US, which had 325. The trend continues with 130 campaigns launched in the first nine months of this year, driven by the Tokyo Stock Exchange's 2023 corporate governance overhaul, which prioritized boosting shareholder value and enhancing engagement between listed companies and their investors.

Companies are required to evaluate shareholder proposals under the exchange's code of corporate governance, a shift from the past when such proposals were often dismissed. Stock price gains around campaign announcements, along with a string of successes, might offer further support for such efforts.

One notable campaign was from City Index Eleventh, an activist fund led by Yoshiaki Murakami and his daughter Aya Nomura. The fund, which held about 11% of Piolax in February, urged the firm to strengthen its dividend payout policy, and after discussions, Piolax decided to substantially raise its dividend payout ratio to 179% in the fiscal year ended March. It announced a share buyback in February as well, offering an 8.6% premium over the stock price the day before the announcement, and a 7.4% premium to the one-month average.

Another example was Eiken Chemical, which accepted two board nominees proposed by Dalton Investments. The proposed nominees were approved at June's annual general meeting. Eiken said its dialogue with Dalton was part of broader efforts to improve shareholder value.

# Section 6. Sustainable Debt

## Performs on Investor Demand and Scarcity Value

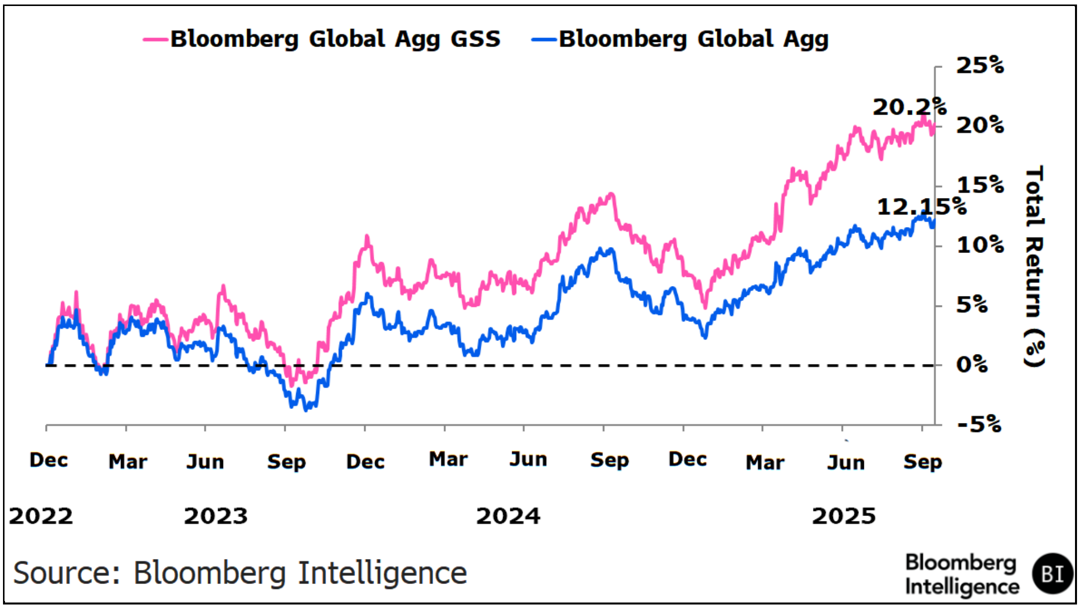
Sustainable bonds have outperformed most other global fixed income markets since 2023, and in 2025, the Bloomberg Global Aggregate GSS Index returned 11.99% through September, outpacing the Global Aggregate by 408 bps, with all GSS sectors positive, led by financials. Green bond premiums or "greeniums" have improved in the Americas on scarcity of issuance, while APAC greeniums have gained from government support. Issuance reached $1.67 trillion year to date, the second-strongest start on record.

## 6.1 Sustainable Bonds Beat Global Agg as Demand Rises

Since the start of 2023 The Bloomberg Global Aggregate Green Social Sustainability bond index (GSS) returned 20.2% through September (see Fig. 9), besting the Bloomberg Global Aggregate bond index's return of 12.15% by 805 bps. This outperformance has been fueled by factors such as strong investor demand outweighing supply due to growing awareness of sustainability issues, and easier financial conditions in 2025. The alignment of sustainable bonds with environmental, climate, social and sustainability goals has attracted more capital, with a strong commitment to the asset class, contributing to its positive performance against a backdrop of potentially greater environmental uncertainty in conventional-bond markets.

**Sustainable bond returns outpace global aggregate**

**Figure 9: Global Agg GSS vs. Global Agg Returns Since 2023**




All sectors within the Global Aggregate GSS index have had positive total returns year to date, with financials on top at 10.8% through September as investor demand for the high-quality senior bonds of the sector pushed spreads toward historically low levels. The real estate sector follows at 9.7%, and utilities is No. 3 at 9.6%, as typically longer-duration bonds in these sectors benefited from the ECB's interest-rate reduction cycle. Consumer staples, health care and technology, which had very light issuance in 2024 and year to date, are trailing as the bottom three sectors, though with still strong respective returns of 8.3%, 8.2% and 6.9%, as demand for sustainable bonds has outpaced issuance, creating scarcity value.

**High-quality senior bonds propel financials to the front**

**Figure 10: Sector Returns in Global Aggregate GSS Index**

| Sector | MTD Tot Ret | YTD Tot Rtn |
|---|---|---|
| Financials | 0.60% | 10.81% |
| Real Estate | 0.58% | 9.70% |
| Utilities | 1.06% | 9.59% |
| Consumer Discretionary | 0.83% | 9.36% |
| Materials | 0.98% | 8.88% |
| Government | 0.66% | 8.56% |
| Industrials | 0.45% | 8.47% |
| Communications | 0.84% | 8.40% |
| Energy | 0.68% | 8.10% |
| Consumer Staples | 0.80% | 7.42% |
| Health Care | 0.61% | 7.09% |
| Technology | 0.91% | 6.88% |

As of September 30, 2025

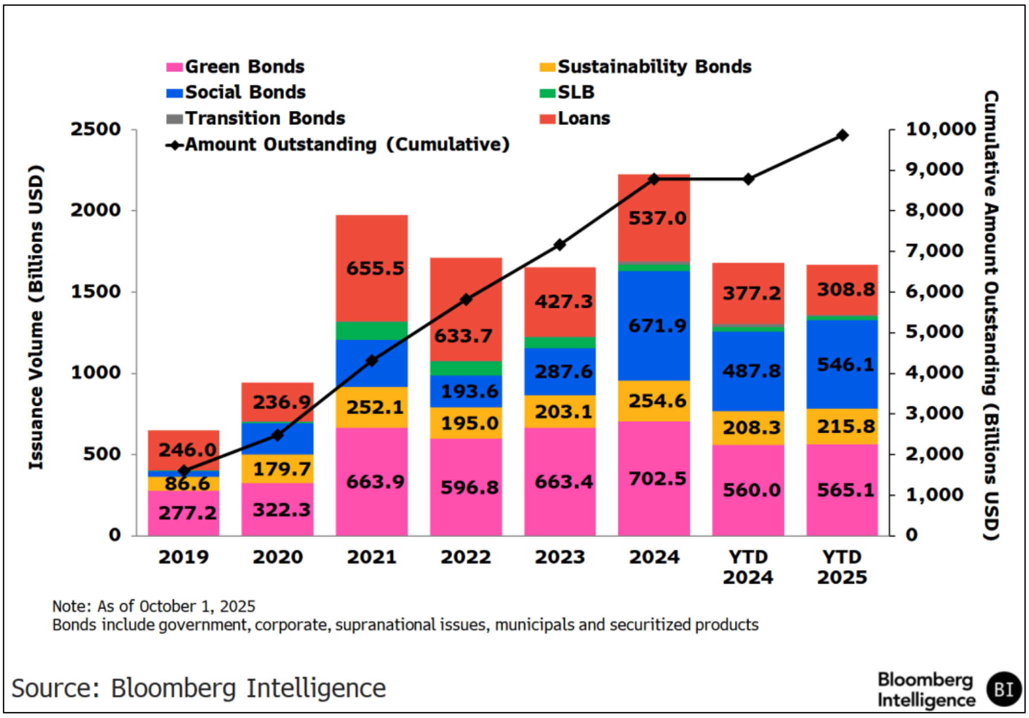
Source: Bloomberg Intelligence

Spreads reached the lowest levels of 2025 in mid-August before widening slightly at the end of the month amid weaker jobs growth and expectations for a Federal Reserve rate cut. Greeniums tend to improve when spreads begin to widen, due to the buy-and-hold nature of the bonds. The Americas premium led, at 3.6 bps below conventional bonds, driven by a lack of corporate issuance creating scarcity value, while APAC's 3.2 bps green premium at the end of August was helped by government support and initiatives. Europe, the Middle East and Africa (EMEA) remained at a discount, which declined from the end of 2Q.

## 6.2 Sustainable Debt Issuance Down 3% Through August

Sustainable debt issuance is set to top $1.7 trillion for the second straight year, nearly matching the record offerings of 2024. Green bond issuance had its top month of the year in September, with strong issuance from EMEA, pushing ahead of social for top type and accounting for 34% of the ESG total. Issuance from green, social and sustainability bond types exceeded the same period last year. Ginnie Mae was the driving force behind gains in social bonds, while sustainability bonds had robust supranational issuance. There has been a drop in corporate ESG issuance, leaving investor demand unmet, as issuers are wary of a potential political backlash in the US.

**Figure 11: YTD Global Sustainable Debt Issuance ($ Billion)**




**Sustainable debt issuance to top $1.5 trillion again**

Securitized was the top sector for issuance through September, with $472 billion, on a record pace for the year. Governments, historically the top sector, were No. 2, while corporate issuance was light, down 9% from the previous period. Within government-sector issuance, supranationals represented 41%, at $183 billion, while sovereign dropped from the previous two years. Financials were third and showed stronger issuance than the previous year, followed by utilities, with $133 billion. Sustainable debt issuance declined 8%, excluding securitized.

# Section 7. ESG Scores: A Roadmap

## A Tool to Dissect Industry-Specific Risk, Opportunity

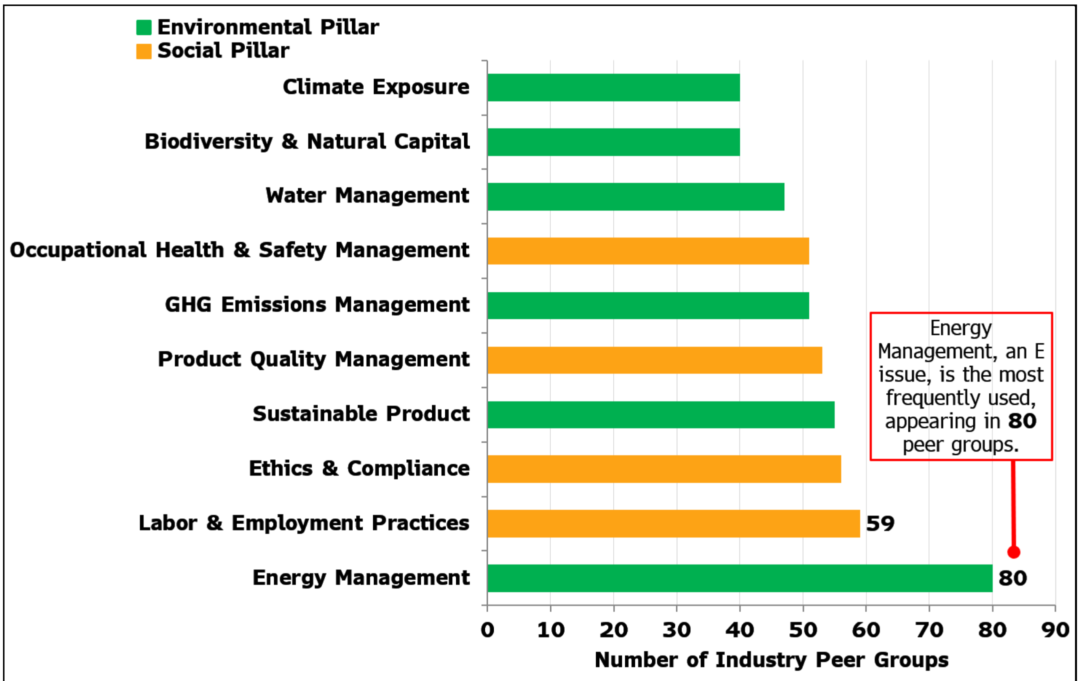
Industry specificity and financial materiality are at the core of effective ESG analysis, and our ESG scores provide a lens into the issues that matter most across more than 100 industries and reflect a materiality framework based on the probability, magnitude and timing of potential financial impacts. Issue selection and weighting give unique insight into underlying risk and opportunity.

## 7.1 Environmental, Social Signals Vary by Industry

Bloomberg's ESG scoring framework captures the different effects that environmental and social issues have across industries by assessing the probability, magnitude and timing of a financial impact and weighting issues accordingly. As illustrated in Fig. 12 below, Energy Management, an Environmental issue, is the most frequently scored, appearing in 80 peer groups, while among Social issues, Labor & Employment Practices and Ethics & Compliance are scored for more than 50 industries each. More specialized topics, like Sustainable Finance (nine) and Customer Welfare (six), appear in fewer than 10% of peer groups. Governance themes (Board Composition, Executive Compensation, Shareholder Rights and Audit) are assessed across all 106 peer groups, but their weightings differ.

BI **Using BI's ESG scores to analyze effects of different issues**

**Figure 12: Top 10 Most Frequently Scored E and S Issues**




Note: Based on Bloomberg's ESG scoring templates across 106 industry peer groups. Environmental and Social issues are scored based on industry-specific, financial materiality.

Source: Bloomberg Intelligence

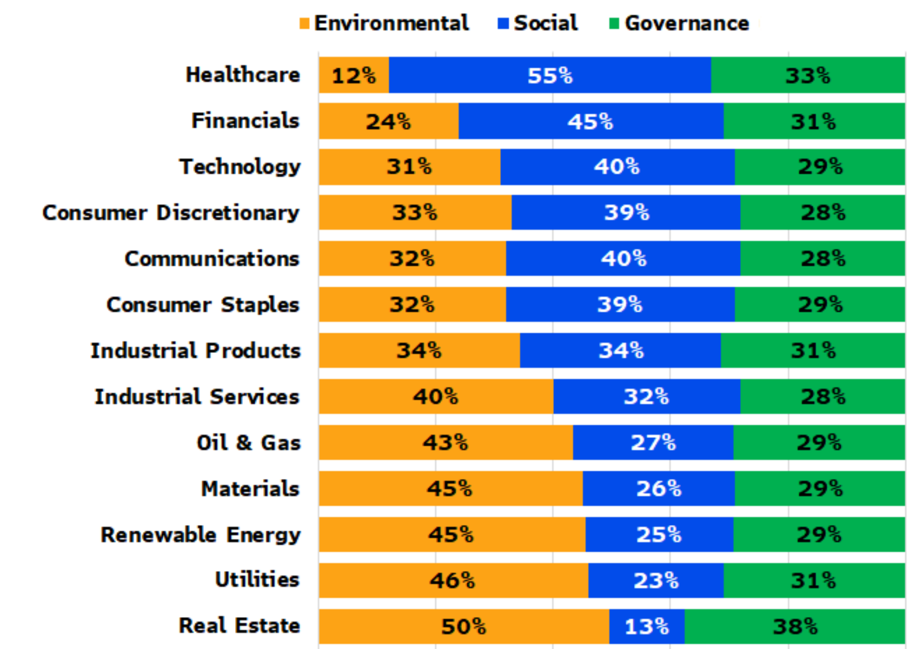
In the Environmental pillar, Sustainable Finance averages a 91% weighting and is only scored within the financials sector, indicating the industry-specific risk and opportunity these peer

**Weight by pillars identifies broader financial risk**

groups face with respect to lending, underwriting transition risk and more. Greenhouse Gas Emissions Management is material to more than 50 industries but holds an average weighting of 23%, indicating that for many top emitting industries, other environmental issues, such as Air Quality and Water Management, are also likely material. On the Social side, Occupational Health & Safety and Product Quality average above 35%.

Besides the weightings behind individual E and S issues, overall pillar weightings help identify potential financial risk on a broader basis. In Real Estate, Environmental issues account for 50% of the ESG score and incorporate topics including Energy Management and Water Management. Utilities rank second, with Environmental risks such as GHG Emissions, Climate Exposure and Energy Management carrying the most weight. In Health Care, Social issues dominate, driven by the importance of Data Security & Customer Privacy and Product Quality. These differences reflect which types of risk are most financially material by industry.

**Figure 13: E, S and G Pillar Weights by Sector**




Note: Based on average materiality weighting across Bloomberg's Environmental and Social (ES) scoring templates. Higher weightings signal greater financial significance within the industries where each issue appears.

Source: Bloomberg Intelligence

Governance themes -- Board Composition, Executive Compensation, Shareholder Rights and Audit -- are material across all 106 peer groups in Bloomberg's ESG Scores. Governance is industry-agnostic and holds a fixed priority rank of No. 3 across all sectors, reflecting its universal potential to affect value. Any variation in its ESG weight reflects the materiality of Environmental and Social issues in a specific industry. Governance weightings stay relatively tight, such as Real Estate at 37.5% and Financials, Health Care and Utilities closer to 30%, yet the materiality of Governance issues may vary across markets based on differences in corporate governance structures, disclosure standards, shareholder rights and regulatory norms.

# Section 8. ESG, Climate Alpha

## Backtests Showcase Materiality; What Did We Find?

Our analysis finds that ESG and climate factors can drive performance, reinforcing financial materiality. For example, mining companies with robust safety scores outperformed by 3% annually over 6 1/2 years, pointing to poor safety as a proxy for operational risk, while low-carbon firms in high-emitting sectors beat peers by an average 8% over five years. Strong shareholder rights had the greatest performance benefit across sectors tested.

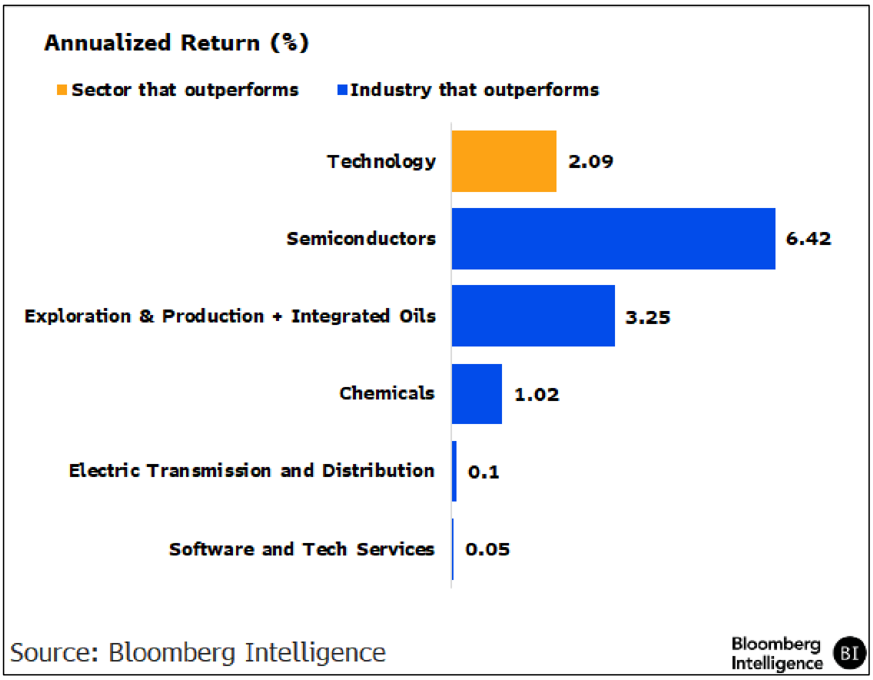
## 8.1 'E' Scores Lift Semis, Oil, Gas; 'G' a Multi-Sector Boost

Our backtests demonstrate outperformance for semiconductors, E&P/integrated oils and chemicals, where top scorers beat laggards by over 1% annually. Within 'E' scores, greenhouse-gas management was a key driver, with positive return differentials across technology, energy and utilities.

We analyze the effects of Bloomberg's ESG Scores to answer what key issues have affected performance and to highlight sectors and industries seeing outperformance for better vs. worse scores. Coverage includes materials, energy, utilities, technology and health care. For governance, we also include consumer staples.

**Tech, semis lead returns based on environmental issues**

**Figure 14: Environment Scores: Returns Best vs. Worst Scores**



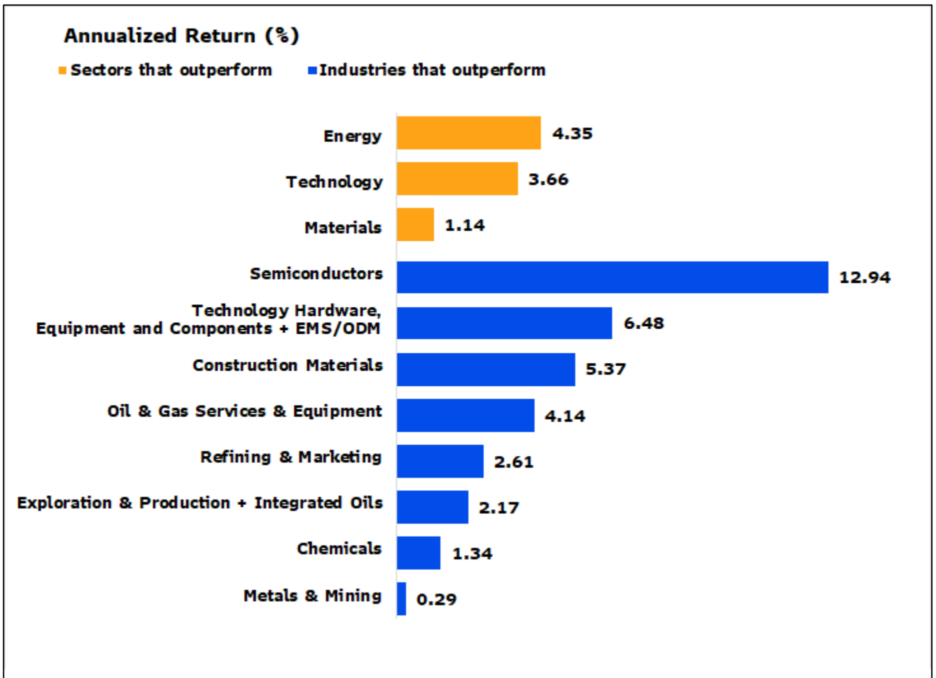

For mining, an industry that tends to have a high risk of fatalities, poor safety can lead to production halts, fines and lawsuits. Sibanye Stillwater and Harmony Gold have had consistently poor scores for several years, and in 2021, Sibanye forecast gold production at the lower end of guidance following closings due to safety incidents and regulatory measures.

Among governance scores, the shareholder-rights theme (Fig. 15) appears to have the biggest effect across industries, with better-scoring companies seeing annual outperformance of at least 1% for materials, technology, and energy -- three of the six sectors in our backtest. Companies with low voting power for public shareholders, a key issue when evaluating shareholder rights, offer little recourse for poor management decisions, leading to potential underperformance.

Meta significantly underperformed the market and peers for more than a year after 2018's Cambridge Analytica scandal, highlighting investor concern for management oversight and the threat of increased regulation.

**Semiconductors lead on shareholder rights returns, metals & mining lag**

**Figure 15: Shareholder Rights: Returns Best vs. Worst Scores**




Source: Bloomberg Intelligence

Returns for companies with a low carbon impact in some of the highest-emitting global sectors have surpassed higher-carbon peers by an average of 12% over one year, 9% over three years and 8% over five years, according to a BI study of five sectors representing 213 global firms. Using data from BI's Upstream Oil and Gas Tracker and BI's Global Emissions Intensity Tracker, we find companies focused on delivering the lowest-carbon intensity outputs added alpha in steel (Steel Dynamics), aluminum (Yunnan Aluminium), cement (Heidelberg Materials), airlines (Qantas Airways) and upstream oil and gas (EQT).

For industries like steel, tariff concerns could keep aiding companies using recycled steel (a lower carbon source) as sources of iron ore and met coal became constrained.

**Figure 16: Carbon Intensity: Returns Best vs Worst Scores**

| Excess Returns | 1yr | 3yr | 5yr |
|---|---|---|---|
| Upstream O&G | 18% | 11% | 8% |
| Steel | 5% | 3% | 10% |
| Airlines | 11% | 17% | 8% |
| Aluminum | 12% | 7% | 6% |
| Cement | 13% | 6% | 7% |
| Average | 12% | 9% | 8% |

Source: Bloomberg Intelligence

**Returns for low-carbon companies outpace high-carbon peers**

Oil and gas producers with the lowest methane emissions per barrel (top 25%), like EQT and Antero Resources, have significantly outperformed their higher-emission peers (bottom 25%), with excess returns of 29% over the past year and 13% annually over five years on an equal-weight beta-neutral basis, according to a study of 59 companies with operations in the US.

Methane from upstream and midstream oil and gas operations is larger than all transportation fuels' emissions combined (6 gigatons vs. 5.8) over a 20-year horizon, making methane efficiency one of the most impactful areas for environmental improvement, based on our Upstream Oil and Gas Tracker and the IEA's Methane Tracker.

## 8.2 Methodology: Backtesting ESG Scores and Metrics

This analysis backtests Bloomberg's ESG scores and key issue-level metrics across materials, utilities, energy, technology and health-care companies over more than 6 1/2 years. Each sector was tested sequentially, with time frames differing accordingly. Stocks were grouped into varying buckets depending on the number of companies in each sector, with top and bottom cohorts on scores evaluated. The analysis is region-, beta- and size-neutral. For carbon intensity, companies in each industry are divided into two buckets based on best and worst carbon per unit of production, and returns for both cohorts are tested over one, three and five years.

# Section 9. News & Signals

## What Moves the Market: ESG Events That Matter

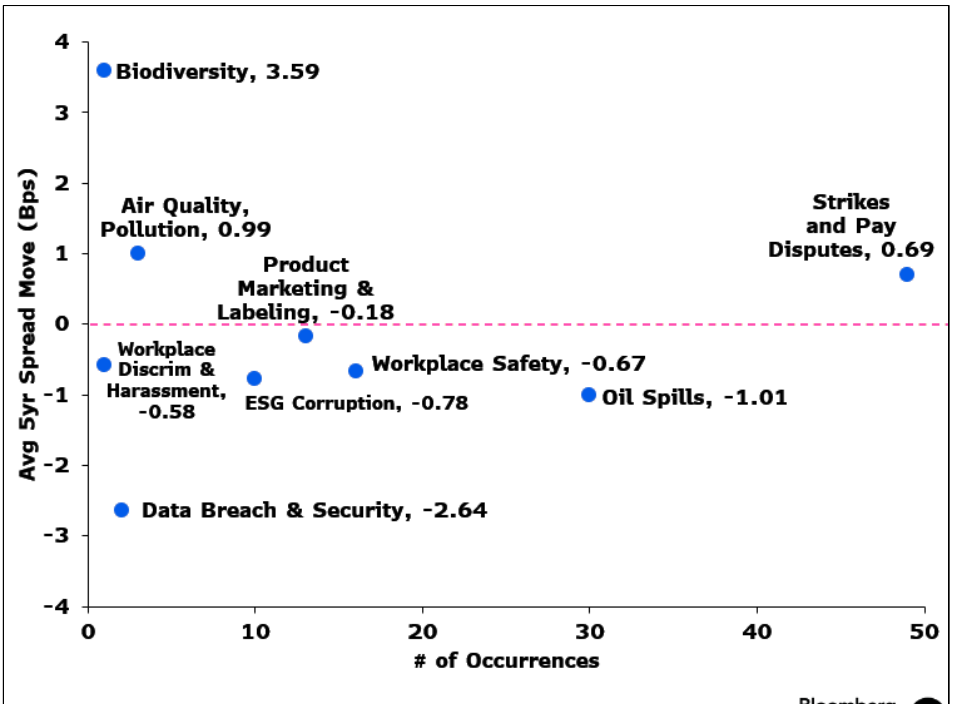
Critics often claim ESG risks are only reputational or non-financial, but our Market Moving News model shows they can have immediate pricing impact. In oil and gas, spill events drove an average 1.1% underperformance across benchmarks, while in packaged food, mandatory recalls widened credit spreads by 2.4 bps. Though ESG analysis often centers on annual and backward-looking performance data, specific events also shape performance.

## 9.1 Some Hit Harder Than Others, Moves Are Varied

Oil and gas bond markets have shown limited sensitivity to ESG headlines, with average event-day spreads moving modestly - and often tighter - across 125 instances since 2016 involving companies with active five-year dollar bonds (see Fig. 17). Labor strikes and pay disputes comprised 39% of cases and widened spreads by just 0.69 basis points on average, suggesting they're seen as operational noise or routine events within the sector. Oil spills, the next most-common issue, drove average spread-tightening of 1.01 basis points. TotalEnergies, which faced 20 strike events, averaged a 0.36-basis-point tightening, while YPF saw wider moves, with spreads up 13.04 basis points across three strikes.

**BI Short-term events can affect spreads**

**Figure 17: Oil & Gas Average Spread Move by Topic**




Source: Bloomberg Intelligence

Benchmark dispersion helps investors assess whether ESG risk is firm-specific or macro-driven. Oil spills led to consistent share underperformance across all benchmarks over seven days, with minus 1.1% compared to global peers, 0.95% lower within regions and a shortfall of 0.20% against industry marks. Labor disputes also contributed to weakness across the board, while data breaches and harassment cases were linked to deeper global losses, suggesting reputational drag. Global, regional and industry benchmarks help clarify whether ESG headlines signal company-specific risk.

Some ESG events deliver more impact than other, depending on who is involved and where they operate. Nestle, based in Europe, underperformed sharply across several ESG events, including minus 2.03% on child-labor allegations and negative 4.67% following a voluntary recall, reflecting stricter investor scrutiny. In Asia, Universal Robina fell 4.26% after a government-mandated recall. US companies showed greater resilience, with General Mills gaining 7.67% following a voluntary recall and Tyson Foods posting a 3.22% return after workplace-safety headlines.

**Not all ESG-related events carry the same weight**

**Figure 18: Relative Return by ESG Topic, Company and Region**

| | | Avg 7-Day Industry-Relative Return | | | | |
|---|---|---|---|---|---|---|
| | | Child & Forced Labor | Mandated Recall | Voluntary Recall | Strikes & Pay Disputes | Workplace Safety |
| Asia | Universal Robina Corp | | -4.26% | | | |
| Europe | Nestle | -2.03% | -1.39% | -4.67% | 1.86% | |
| US | J.M. Smucker | | -1.30% | 0.08% | | |
| | Tyson Foods | | | 0.21% | | 3.22% |
| | Conagra Brands Inc | | | 0.41% | | |
| | Kraft Heinz | | | 0.77% | | |
| | The Campbell's Company | | | 1.51% | | |
| | Kellanova | | | 1.66% | -0.77% | |
| | Mondelez International | | 3.50% | 3.19% | -1.95% | |
| | General Mills | | 7.67% | 0.76% | | |

Source: Bloomberg Intelligence

# Section 10. Supply Chains

## Pushback Won't Deter Climate, Social Supply-Chain Risks

Resistance to ESG can't stop the tangible and reputational risks associated with climate and social lapses across supply chains, and as companies restructure supply chains to address geopolitical concerns, they might be assuming new and unexpected threats. For example, food companies pledging to remove artificial dyes could find themselves more exposed to climate risks that affect natural alternatives.

## 10.1 Shifting Supply Chains Can Upend Systems in Place

BI **Restructured supply chains can add an element of risk**

Though sourcing from a country less exposed to tariffs - in any industry - may provide a clear benefit, making these changes without careful evaluation of new partners can add unexpected environmental and social risks. Based on imports, Vietnam is the US' fourth-largest trade partner year to date, up from No. 7 in 2024, Taiwan has risen to fifth from eighth and China is No. 3, but activity is off 19%. Companies making sourcing changes need to evaluate potential physical risks like water access and deforestation, as well as social concerns such as the use of forced labor, then establish systems to monitor and control for these problems.

Supply-chain lapses can lead to higher costs, production outages, blocked sales, fines and reputational damage.

Tariffs, geopolitical pressures and technological advances have the potential to disrupt raw-material supply chains, which can bring risk but also opportunity. The Trump administration's policy is supporting deep-sea mining, even as the rest of the world debates how to approach this possible source of materials and companies like BMW have supported a moratorium on it.

Waste can be valuable, while high tariffs and strong demand could prove supportive of circularity, rendering reclaiming materials from waste incrementally more useful. Existing desalination plants around the world take in about 86,000 million cubic meters (23 trillion gallons) of seawater annually and discharge a staggering amount of super-salty waste (brine) back into the ocean. This waste brine contains materials that Oregon State University calculates have an aggregate value of $2.2 trillion -- including 15.8 million kilograms of lithium, a crucial component of the rechargeable batteries that power electric vehicles. The Brine Miners technology platform seeks to tap into the untouched market value of waste brines while simultaneously producing clean water and green hydrogen, which could pave the way for expanding seawater desalination and turn a harmful waste stream into a sustainable supply of lithium and other critical materials. Miners like Freeport-McMoRan are extracting copper from their waste piles, and Apple invested $500 million in rare-earth recycling.

Food companies are under pressure to shift to natural food dyes, with tangible business consequences, as seen by Ferrero trimming its bid for Kellogg's as its Froot Loops breakfast cereal came under scrutiny, Texas approving warning labels and its attorney general launching investigations. But replacing chemicals with natural alternatives raises new challenges and finding a supply of agricultural products can complicate supply chains. Using natural ingredients is also costly, with some estimates showing natural dyes cost 10x more, and raise a range of operational risks, including supply chain (agriculture climate exposure, supply, natural product variations), off flavors, light sensitivity and overall consumer acceptance. PepsiCo's Simply brand offers natural options, but its large legacy portfolio carries risk.

Several companies have set targets to use natural dyes, including Pepsi and Tyson by the end of this year, Mars, Nestle and PIM Brands by the end of 2026, and Conagra, General Mills, Hershey’s, Kraft Heinz and Kellogg’s by the end of 2027

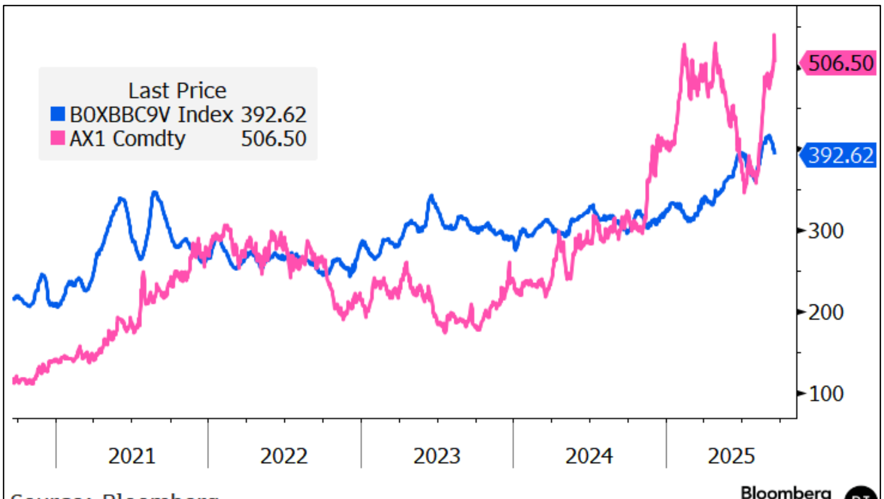
## 10.2 Climate Risk Is Influencing Sourcing Decisions

Droughts, floods, heat and storms have affected supply, costs and outlooks for a range of agricultural ingredients, including cattle, coffee, cocoa and tomatoes, forcing companies to adapt and to plan for the possibility that these challenges are likely to intensify with climate change. These conditions have driven prices of many commodities, including cocoa, coffee and beef, to multi-year - if not record - highs, raising costs and forcing companies to respond by sourcing from new geographies, researching resilient crops and even changing menus. Wendy's has started to source lettuce and tomatoes grown indoors, at a cost, to shelter from extreme weather. Mondelez invested in lab-grown chocolate producer Celleste Bio, McDonald's is investing $200 million in regenerative agriculture in support of its beef supply chain, and many restaurants are promoting cheaper chicken on their menus.

BI

**Changing climate pressures agricultural goods**

**Figure 19: Arabica Coffee & Beef Prices**




Source: Bloomberg

Hurricane Helene sidelined a Baxter International plant in North Carolina that makes intravenous bags and pared revenue by more than $200 million, and there could be longer-term consequences. The site supplied about 60% of US hospital IV-bag supplies, and many were forced to scramble to conserve, including one that reduced consumption by 55%. The storm also temporarily idled two quartz quarries that account for virtually all the high-purity mineral for electronics. Though those outages were short, they likely caused some buyers to reevaluate their dependence on a limited supply chain. Floods in Latin America and Europe idled some auto-parts plants, and hence auto production, while droughts have disrupted river freight, interrupting operations.

## 10.3 Supply-Chain Lapses Reputational, Operational Risks

**Companies can bear the costs if supply-chain partners lapse**

Though not directly responsible, companies can bear the costs if partners in the supply chain have ethical lapses, making monitoring and assessing performance essential to limit potential reputational and legal damages. LVMH's Loro Piana was put under judicial oversight, cited for failing to prevent subcontractors from exploiting migrant workers. The EU Forced Labor Regulation will ban products found to be made using the practice by December 2027. Volkswagen is appealing a finding of essentially forced-labor conditions on Brazilian cattle ranches in its leather supply chain. The company was fined $30 million. It also exited a Chinese operation over concerns about possible Uyghur forced labor.

Product recalls can be costly to implement and damaging to reputations. WanaBana filed for bankruptcy in the aftermath of a 2023 recall after its apple puree pouches for children were found to have elevated lead and chromium levels -- believed to be associated with doctored cinnamon from a supplier. The FDA recalled shrimp sold by Walmart that was found to have elevated radioactivity. The beverage industry is challenged by the pervasive presence of forever chemicals: A study found 18% of US breweries are in areas with PFAS-contaminated drinking water, and similar analysis found PFAS in European mineral water and wine, a notable challenge for some high-end brands like Perrier, given restrictions on treating waters branded as mineral.

The US EPA is weighing PFAS limits for the $60 billion bottled-water industry.

# Section 11. Compensation Links

## ESG-Linked Executive Pay Effective When Done Right

Aligning executive compensation to ESG goals can often encourage better management of such targets when tied to specific, measurable and financially material metrics. Yet too often, payouts are linked to overly broad or non-material issues. Meaningful alignment with tangible impacts is most easily identified in "old economy" sectors, such as materials (workplace safety) and energy (greenhouse gas emissions).

## 11.1 Linking to Pay Correctly Can Boost ESG Performance

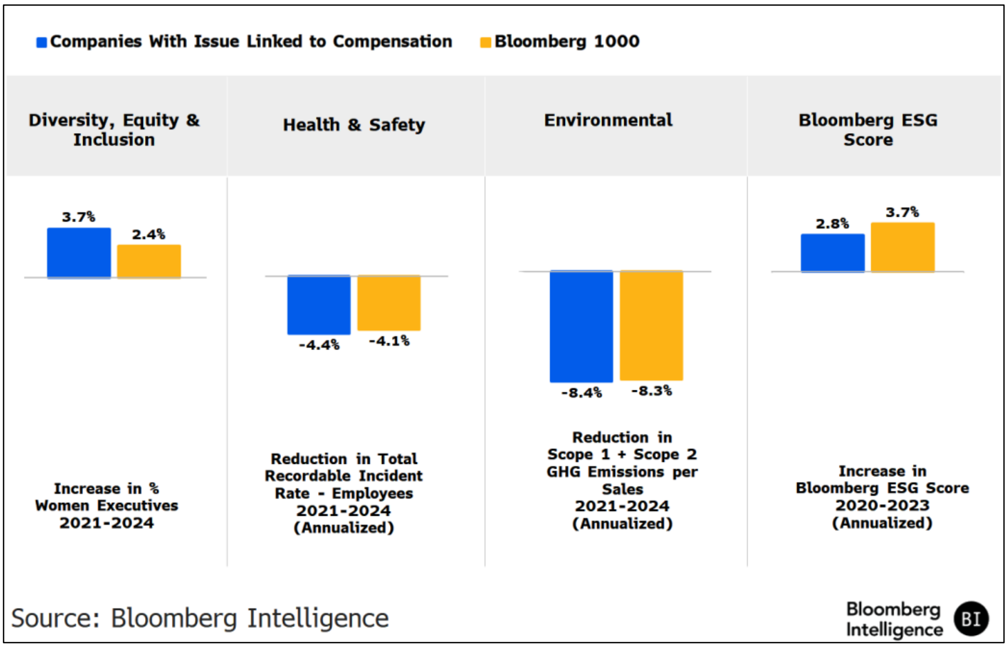
Companies in the Bloomberg 1000 that link pay to specific ESG objectives typically improved on those issues to a greater degree than the rest of the index from 2021-24, while connection to broader ESG indicators showed no evidence of better results (see Fig. 20). Firms that align pay to diversity, such as Invesco, saw an average 3.7 percentage-point increase in women executives (to 27.6% in 2024) compared with a 2.4-point gain for the index. Companies that tie pay to health and safety, including EOG, reduced work-related injuries by 4.4%, compared with 4.1% for the index overall. PSEG and other companies that rewarded executives for reaching certain environmental goals on average saw slightly better cuts to median Scope 1 and 2 GHG emissions.

Companies with more generalized ESG targets saw their Bloomberg ESG scores improve just 2.8% in 2021-24 against a 3.7% gain for the B1000.

BI

**Linking pay to ESG can improve overall scores**

**Figure 20: ESG Key Performance Indicators**




Source: Bloomberg Intelligence

Companies with ESG-linked executive compensation generally do better than peers on Bloomberg's ESG Scores, which are based on industry-specific and financially significant ESG issues. Bloomberg 1000 companies with such pay policies rank in the 74th percentile for headline, industry-adjusted ESG scores, almost 6 percentage points higher than the entire index. Performance was also above average for the Environmental and Social pillars (8 and 11 percentage points, respectively).

Though 'E' and 'S' outperformance was present across most sectors, it was particularly notable for energy, consumer, materials and industrials, where ESG metrics linked to pay are typically more easily measured and can have a financial impact (e.g. health and safety, product quality, resource intensity and environmental footprint).

Nearly half of ESG-linked executive compensation in the US isn't tied to the most material ESG issues for the company, our analysis of Bloomberg 1000 Index members shows. We reviewed ESG-linked targets against the top two Environmental and Social issues in Bloomberg ESG scores, selected based on the financial materiality for a given industry. About 45% of companies with ESG-linked pay didn't include significantly material issues, 17% targeted a top environmental issue, 14% a leading social issue and only 24% both high-priority 'E' and 'S' indicators.

Many firms tied pay to GHG emissions or diversity targets, even in industries where Bloomberg views these as less financially material, such as pharma or insurance. Others link incentives to broader ESG ratings, which may lack focus on specific metrics.

## 11.2 ESG-Linked Pay More Common in Old Economy Sectors

BI

**Greenhouse gases, diversity often linked to executive pay**

ESG-linked compensation is used by the majority of Bloomberg 1000 constituents in the utilities (86% of companies), energy (83%) and materials (58%) sectors – constituents of the so-called old economy. Many of the most financially material issues have relatively robust, well-defined metrics including occupational health and safety (TRIR -- Total Recordable Incident Rates; DART -- Days Away, Restricted or Transferred), environmental (GHG emissions reductions, hazardous spills) and reliability (SAIDI -- System Average Interruption Duration Index). ESG-linked pay is much less prevalent in sectors such as financial (33%), communications (25%) and technology (27%), where meaningful social and ethical issues like data privacy, access and affordability, and deceptive marketing can be harder to quantify.

Drilling into ESG-linked compensation can identify trends in the most commonly used metric by sectors. For example, utilities within the Bloomberg 1000 Index are far more likely to concentrate on issues like employee health and safety (56% of utilities in the index), environmental goals such as carbon emissions and pollution (56%), and customer service/reliability (37%) - all key to the social license to operate for these businesses. Conversely, communications, which relies on highly skilled labor, puts greater emphasis on diversity, equity and inclusion (29%) and employee engagement (19%).

Among financials, only 13% of the B1000 ties executive pay to environmental metrics, one of the lowest rates among all sectors, reflecting the industry's recent backtracking on climate initiatives like the Net Zero Banking Alliance.

**Figure 21: ESG-Linked Issues by Sector (B1000)**

| | Customers | Health & Safety | Environmental Goals | DE&I | Employee Engagement | Community Investment | Ethics | Broad ESG |
|---|---|---|---|---|---|---|---|---|
| Utilities | 35% | 56% | 56% | 19% | 14% | 2% | 5% | 56% |
| Energy | 7% | 54% | 63% | 4% | 7% | 2% | 2% | 72% |
| Materials | 6% | 38% | 40% | 12% | 10% | 2% | 6% | 37% |
| Cons Stpls | 3% | 7% | 23% | 18% | 5% | 8% | 3% | 35% |
| Industrials | 7% | 20% | 25% | 10% | 8% | 3% | 3% | 32% |
| Real Estate | 5% | 5% | 21% | 9% | 5% | 2% | 2% | 32% |
| Health Care | 9% | 12% | 18% | 12% | 15% | 4% | 4% | 33% |
| Financials | 10% | 6% | 13% | 10% | 14% | 2% | 3% | 24% |
| Comms | 6% | 17% | 46% | 29% | 19% | 6% | 4% | 63% |
| Cons Discr | 1% | 2% | 8% | 4% | 2% | 2% | 2% | 7% |
| Technology | 3% | 4% | 13% | 4% | 6% | 1% | 1% | 16% |

Source: Bloomberg Intelligence

Bloomberg Intelligence BI

Companies in the Bloomberg 1000 that link pay to specific ESG objectives typically improved on those issues to a greater degree than the rest of the index from 2021-24, while links to broader ESG indicators showed no evidence of better results. Firms like Invesco that align pay to diversity saw an average 3.7 percentage-point increase in women executives (to 27.6% in 2024) vs. a 2.4-point gain for the index. Companies such as EOG that tie pay to health and safety reduced work-related injuries by 4.4% vs. 4.1% for the index overall. PSEG and other companies that rewarded executives for reaching certain environmental goals on average saw slightly better cuts to median Scope 1 and 2 GHG emissions.

Companies with more generalized ESG targets saw their Bloomberg ESG scores improve just 2.8% in 2021-24 vs. 3.7% for the B1000.

# Section 12. Fund Inclusion

## ESG Misfits: SocGen, Saint-Gobain Belie Fund Presence

Disconnects between ESG fund inclusion and governance or climate profiles present both risk and opportunity. For example, Saint-Gobain and Societe Generale, widely held in these funds despite weak governance scores, may face exclusion pressure, while Alaska Air and Xcel Energy are less popular despite ambitious CO2 goals. Rollbacks of climate targets could trigger divestment, with EDP, Symrise and Givaudan most exposed, each at over 5% of market cap in ESG funds.

## 12.1 High ESG Fund Exposure Despite Poor Governance Scores

BI **Finding disconnects between ESG scores and fund inclusion**

Societe Generale, Agilent Technologies and Dassault Systemes appear at risk given their relatively high rate of ESG fund inclusion -- over 15% of holding vehicles -- despite governance scores ranking below the 50th percentile on Bloomberg's metrics. Such holdings could face exclusion should governance shortcomings materialize into tangible risks.  (Note: Fund inclusion or exclusion may also reflect other ESG or fundamental reasons not captured in this analysis.)

Some of the companies most widely held in ESG funds carry governance flags tied to leadership structure and shareholder rights. Saint-Gobain, Ball and Publicis Groupe all have a dual CEO-chair role and unequal voting rights, yet each still has ESG fund inclusion rates close to or above 15%.

Our analysis suggests that such lack of leadership independence is linked to weaker financial results, including a 50-bp annual drag on return on assets and 32 bps in underperformance in total return over the past three years.

**Figure 22: Dual CEO, Unequal Voting Yet High ESG Inclusion**

| Company Name | CEO Duality | Unequal Voting Rights | ESG Fund Inclusion (%) |
|---|---|---|---|
| Saint-Gobain | Y | Y | 15 |
| Publicis | Y | Y | 16 |
| Ball Corp | Y | Y | 18 |

ESG Fund Inclusion = ESG Funds holding the stock/total funds holding the stock.

Source: Bloomberg Intelligence

Governance factors linked to stronger performance often appear underweighted in ESG funds, leading to risks that could hamper returns. For technology and materials, strong shareholder-rights scores appear to drive higher returns, yet such factors seem to play only a limited role in stock inclusion. Correlations between Bloomberg's shareholder-rights percentile scores and ESG fund holdings were just 5% for the materials sector and 15% for technology, suggesting governance quality doesn't influence fund construction much.

Our backtest over more than six years shows companies with stronger shareholder-rights scores outperformed weaker peers by at least 1% in both of the above sectors.

## 12.2 AES, Alaska Air Left Out Despite Lofty CO2 Targets

Though climate targets remain key for resource-intensive industries like airlines, steel and utilities, many companies are still overlooked in ESG and climate funds. Cases in point: AES, Alaska Air and Xcel Energy stand out as having ambitious carbon-reduction goals -- as measured by BI Carbon Forecast Scores -- yet have ESG and climate fund inclusion rates of less than 6%, as shown in Fig. 23. They could draw more attention in the future if their ambitious goals translate into lower risks.

BI

**High carbon scores, but little fund exposure**

**Figure 23: Stocks With Ambitious CO2 Goals But Low Inclusion**

| | BI Carbon Forecast Score | ESG & Climate Fund Inclusion (%) |
|---|---|---|
| Xcel Energy | 9.93 | 3.51 |
| WEC | 7.84 | 2.16 |
| AES | 7.56 | 2.88 |
| thyssenkrupp | 9.51 | 5.47 |
| American Airlines | 8.22 | 5.94 |
| Alaska Air | 9.14 | 5.34 |

BI Carbon Forcast Scores range from 0 - 10, with 10 indicating greater carbon ambition

Source: Bloomberg Intelligence

Wells Fargo's abandonment of net-zero financed-emissions goals puts around 0.7% of its market cap held by ESG and climate funds at risk should investors choose to divest, while EDP, Symrise and Givaudan, each with over 5% of their market cap held by ESG funds, face heightened downside if climate pledges get scaled back. These companies have among the most ambitious goals, based on our Carbon Forecast scores, but any retreat may result in a selloff from their ESG investor base.

**ESG fund exposure varies widely**

**Figure 24: Market Cap at Risk of Divestment**

| | ESG Market Cap (%) | BI Carbon Forecast Scores |
|---|---|---|
| Wells Fargo | 0.69 | 5.97 |
| Symrise | 6.82 | 10.00 |
| EDP | 5.81 | 9.99 |
| Givaudan | 5.41 | 10.00 |
| Boliden | 4.89 | 9.96 |
| Iberdrola | 3.62 | 10.00 |
| Societe Generale | 2.76 | 8.73 |
| Enel | 2.64 | 8.82 |
| ING | 2.61 | 8.93 |
| NatWest | 2.59 | 10.00 |
| BNP Paribas | 2.58 | 9.11 |
| Steel Dynamics | 2.54 | 10.00 |

Source: Bloomberg Intelligence

# Section 13. ESG as Predictor

## PSE Rates Signal Oil-Spill Risk

Spills can lead to significant costs for oil and gas companies, including fines, with our research illustrating that safety incidents often portend a greater amount spilled the following year. We examined the relationship between Tier 1 process safety events (PSEs) and next-year results to find that the metric can signal heightened risk for investors.

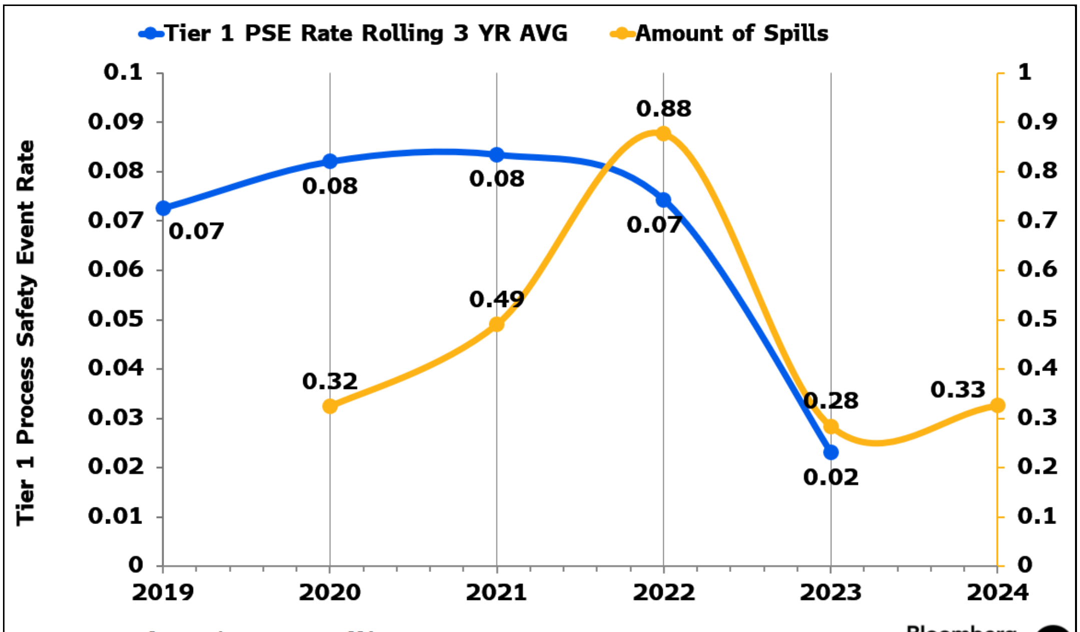
## 13.1 Should Investors Look at PSEs for Spill Amounts?

Companies with lower three-year average Tier 1 PSE rates were more likely to report a smaller amount of spills the following fiscal year (Fig. 25). Among those with higher 2022 three-year average Tier 1 PSE rates, Eni reported a spill amount in 2023 that was 49 times greater than the peer median and a 156% increase from the prior year. In 2023, the company paid $837 million in environmental remediation, including groundwater cleanup, refining sites and petrochemical facilities.

Limited disclosure made the analysis challenging, with just 22% of the 217 oil and gas companies in our peer set disclosing both metrics in 2023.

**Using Tier 1 PSE rates to predict future spills**

**Figure 25: 3-Year Average Tier 1 PSE Rates vs. No. of Spills**



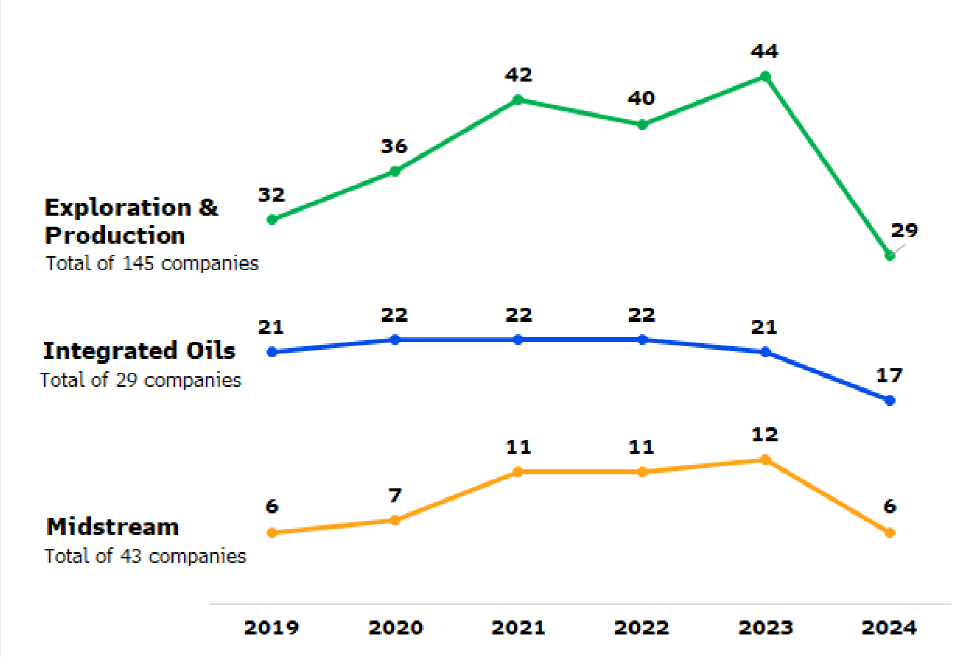
Source: Bloomberg Intelligence

Process safety events (PSEs) in the oil and gas industry can have serious consequences, like structural failure or major incidents, and proper disclosure can help identify potential vulnerabilities in a system. Some companies, like Exxon Mobil, consider geographic location, criminal activity and the political climate when assessing process safety.

Though only 13% of companies reported both Tier 1 PSE rates and spill volume over the full time period, we anticipate more disclosure to come, given 2024 reports for nearly 30 companies have yet to be released.

**PSE events can be harbinger of more serious incidents or failures**

**Figure 26: Number of Company-Reported Tier 1 PSE Rates**




Source: Bloomberg Intelligence

## 13.2 Safety Citations, Injuries Spark Sharpest Credit Moves

Workplace-safety events moved bond spreads in different ways depending on the type of incident. Citations and regulatory findings led to the largest and most persistent spread-tightening, averaging 0.84 basis points on the event day and 4.47 basis points after seven days. Injuries produced a similar pattern, with spreads tightening by 0.70 basis points initially and 4.44 basis points by day seven. In contrast, fatalities led to initial spread-tightening of 0.92 basis points, but were followed by a 2.31 basis-point widening over seven days -- the only category to reverse direction, suggesting markets may price immediate operational disruption into fatal events, but assign greater credit risk once broader implications are understood.

# Section 14. Five Key Themes

## Politics, AI, Carbon Can Whipsaw Markets

Many of the Trump administration's policies are intended to stymie climate solutions, yet some might have unintended consequences that actually support the transition. For example, facilitating growth of AI infrastructure can drive renewables demand, financial laws could support carbon markets, federal deregulation might lead to more state laws, and suspending the de minimis exemption may disrupt consumption patterns. Here are the five themes we identify as having clear effects on ESG in the year ahead.

# Political Boomerang

## 14.1 Regulations May Lift Renewables, Carbon Markets

BI

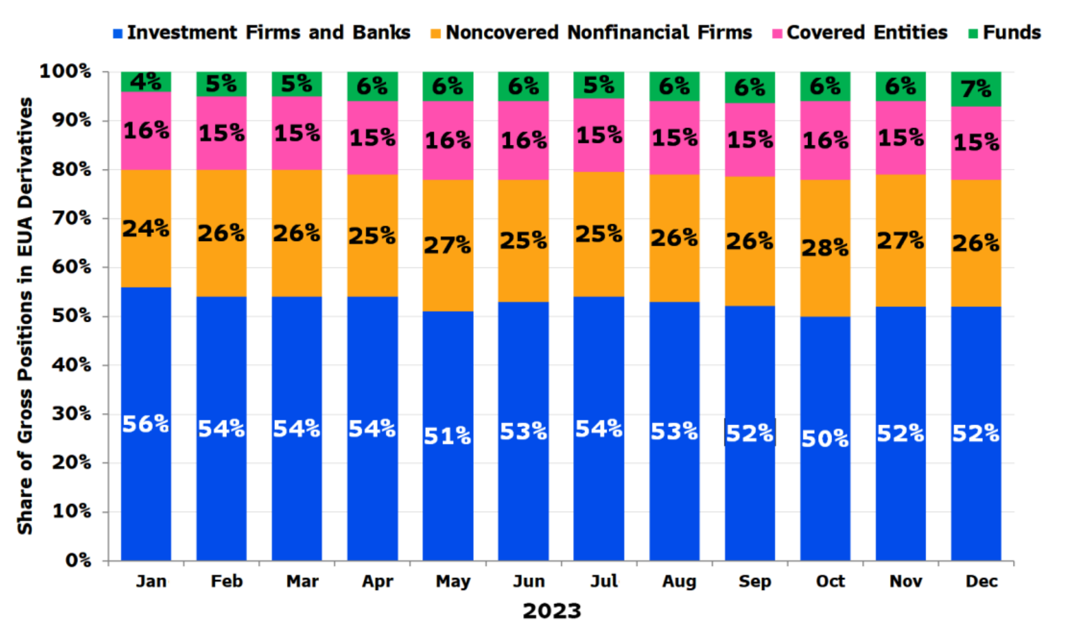
**Move to promote financial innovation can boost carbon markets**

Power demand is expected to rise by 1,227 terawatt-hours (Twh) to 5,164 Twh over the next five years, according to energy consultants ICF, driven partly by a significant increase in AI-related data centers. US efforts to promote financial-market innovation could ultimately benefit carbon markets, particularly compliance allowances more likely to trade on regulated exchanges. An SEC rule change from Sept. 17 will streamline listing of products holding spot commodities that trade on an Intermarket Surveillance Group member, including crypto assets and EU carbon on the European Energy Exchange. Increased trading can improve market liquidity, benefiting exchanges like ICE and banks growing carbon trading such as JPMorgan and Standard Chartered. It can also help lower global emissions by reducing available allowances for industry.

The administration in late August ended the de minimis exemption for all goods under $800 shipped to the US (and for goods from China in early May). Ultimate market adjustments are unknown, with some postal carriers rejecting small packages due to uncertainty. UPS' daily volume from China to the US fell 34.8% in May and June, while FedEx expects trade volatility to cost $1 billion. These developments could lower emissions if businesses shift to larger packages sent by sea from small ones via air.

One casualty of deregulation is the voluntary carbon markets, with the Commodity Futures Trading Commission recently withdrawing Biden-era guidance designed to support that market.

**Figure 27: Secondary Market Buyers - EU Allowance Derivatives**




Source: Bloomberg Intelligence, ESMA

The rise in power demand is higher when including the lost output due to cuts in solar and wind subsidies. Princeton's REPEAT model suggests these cuts will result in 367 Twh lower output by 2030, raising net demand growth to 1,584 Twh.

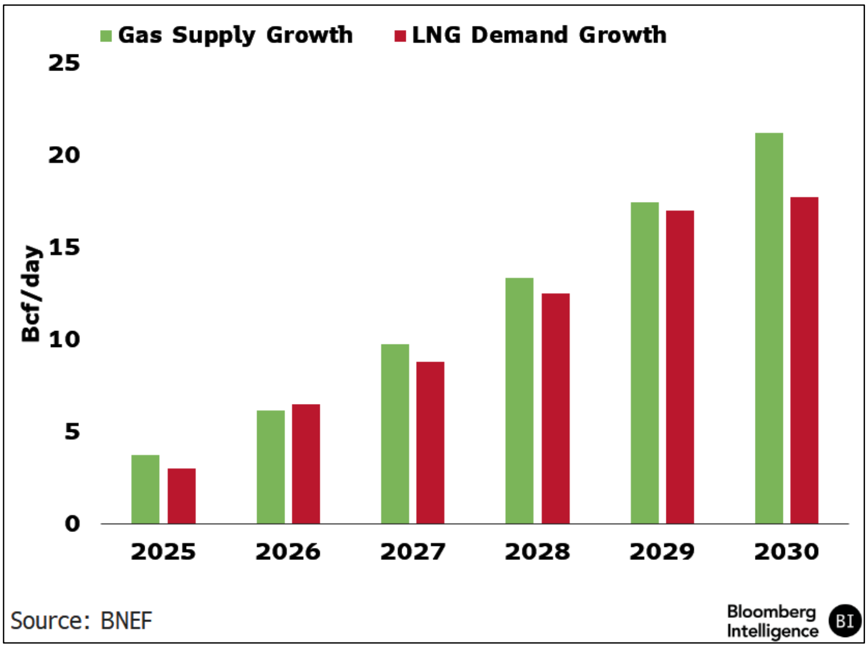
Assuming natural gas-fired power makes up 70% of that deficit, we calculate that gas demand would rise by 18 Bcf/day in 2030 (Fig. 28). This may prove conservative, given the need to run less-efficient peak plants at higher capacity factors.

Demand for gas tied to LNG production is expected to grow by 70% to 29.7 billion cubic feet (Bcf) a day in 2030 from 11.9 Bcf/day in 2024, according to BNEF, due in part to Trump's trade deals and streamlining of project-review procedures. Plans by the EU to ban Russian LNG imports as early as 2027 and Trump's $750 billion energy trade deal with the bloc are likely to account for a large share of this capacity growth.

The rise in LNG demand alone represents 83% of BNEF's natural gas supply growth forecast through 2030 (17.74 Bcf/day compared with 21.25 Bcf/day), creating a significant headwind for other gas-related needs over the next five years.

**LNG supply growth seen outpacing demand from 2027-2030**

**Figure 28: LNG Demand Growth for Natural Gas**



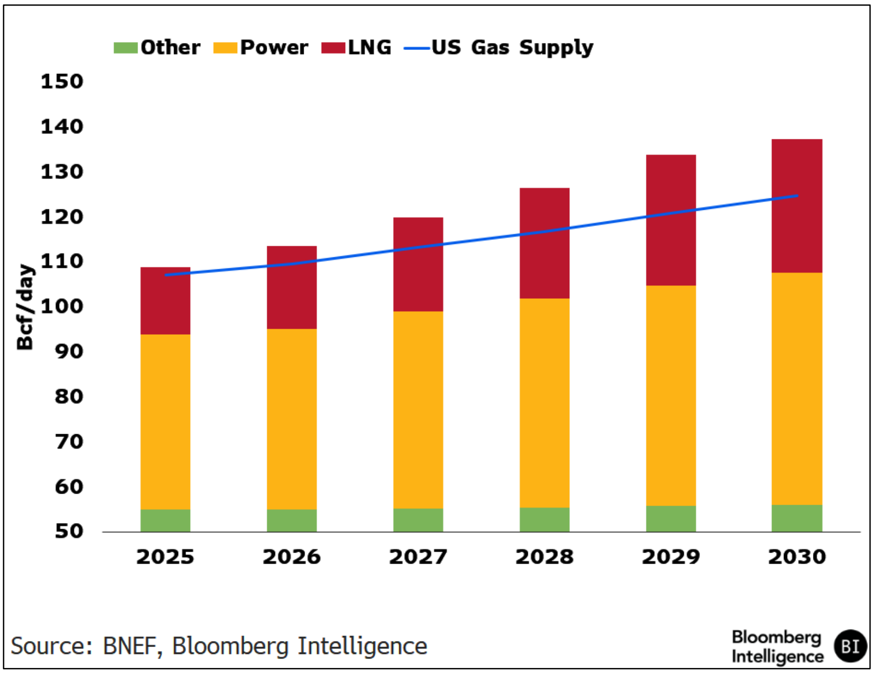

Rising demand for LNG and power could lift gas demand by up to 35.7 Bcf/day in 2030, far higher than the 21.25 Bcf/day increase in supply forecast by BNEF. A potential 14.4 Bcf/day supply gap could push gas prices higher and steepen the curve as volume competes with longer-term contracts for AI power and LNG exports.

High commodity prices and constrained turbine availability might allow renewable projects to reset at levels that would be attractive without subsidies. This would enable the sector to accelerate revenue growth, particularly companies with high local content like Fluence (storage) and EnerSys (industrial batteries).

**BI**

**Rising power, LNG needs drive demand gains**

**Figure 29: Natural Gas Supply and Demand Forecasts**




Air freight generates nearly 70x more emissions per metric ton of goods than marine shipping and is about 20x more expensive, Climate Action Accelerator estimates. In 2024, $23 billion in goods were shipped using the de minimis exemption, with the almost 1.4 billion packages representing about 10x growth over 11 years.

More robust but fragmented state regulation could emerge if federal climate rules are overturned. The Trump administration is attempting to repeal the 2009 endangerment finding that greenhouse gases pose a public health threat. Success isn't certain, yet it could let states establish their own rules. This could result in an "irrational system of regulation" for companies, the DOJ said in a recent legal filing. Federal regulation has been used to shield oil companies from state and local litigation. Charleston abandoned a case after an adverse ruling citing preemption, among other factors.

Republican attorneys general also cited preemption in challenging New York state's Superfund law that seeks $75 billion from fossil fuel companies. Other states are considering similar regulation.

# Artificial Intelligence

## 14.2 When Exposed, Hidden AI Risks Carry Costs

Data centers built to serve AI demand are competing with the public for scarce water and energy resources and increasingly face denied permits and higher costs. AI's use of copyrighted material is under legal challenge, while its deployment raises significant data-security risks -- even as some companies seize opportunities to use AI as a solution.

**BI**

**Power-hungry data centers fueling civic pushback**

Data centers are facing mounting, organized community pushbacks against planned expansions, and as AI-fueled power demand is expected to raise utility prices, and governments, utilities and grid operators are wary of potential impacts on energy reliability and consumer outlays. Ohio is letting AEP charge data centers to ensure they - not consumers - cover the cost of required infrastructure, while a new Texas law authorizes grid operators to disconnect data centers at times of stress. Permits for proposed facilities in North Carolina and Virginia were recently denied. Several cities in Europe have implemented at least temporary moratoriums on data-center expansions.

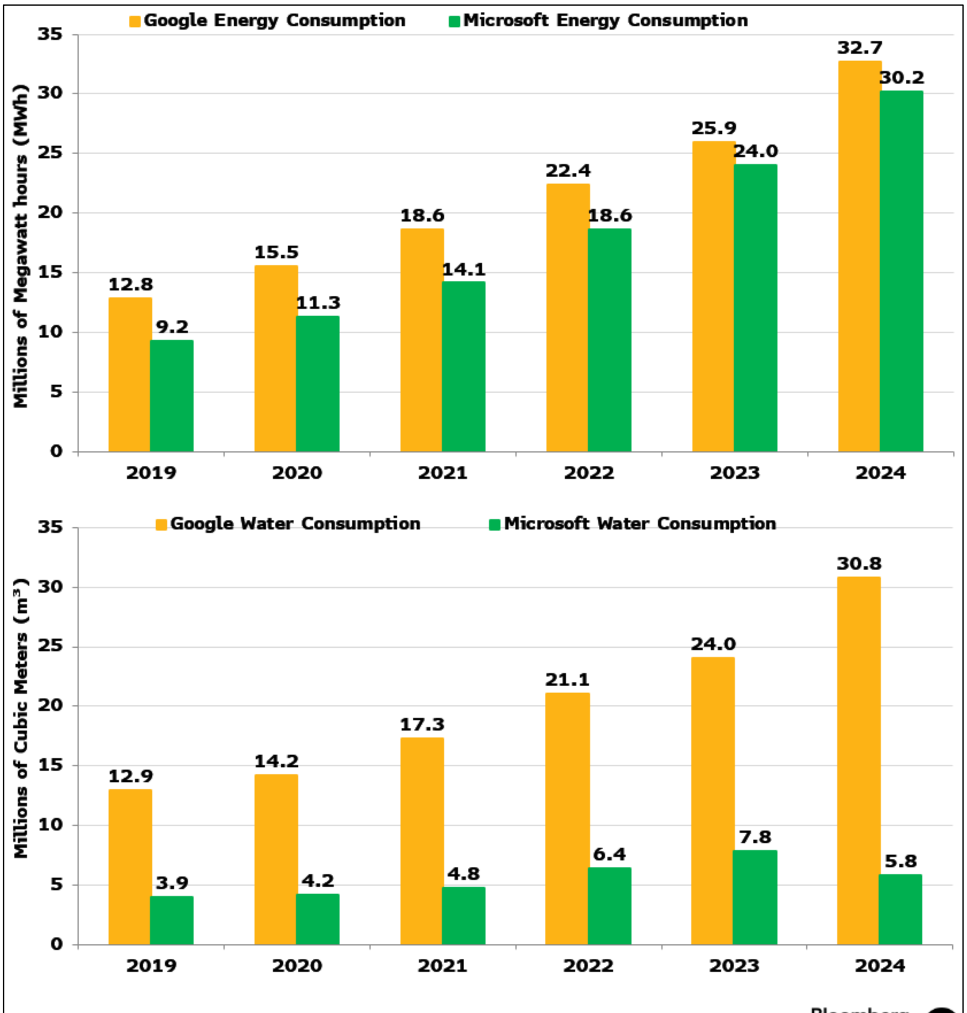
Some governments are rethinking financial support to attract data centers. Illinois offered $650 million in tax incentives to a project that created fewer than 500 jobs.

The World Economic Forum estimates annual data-center water use could reach 1.1-1.7 trillion gallons by 2027, a multiple of the demand of countries like Denmark. Data-center share of US public water use is expected to rise to 8% from 2-3%, and in some locations the facilities use 25% local supply. Some of this expansion is in water-stressed regions, where Microsoft has 41% exposure for all of its operations. This is weighing on growth -- Chile reversed approval for a Google data center on water concerns -- and creates incentive for efficiencies. Growth in water and energy use for each company can be seen in Fig. 30.

Microsoft recently unveiled a zero-water cooling design for new facilities, eliminating 125 million liters of water annually for each data center. Technologies like closed-loop cooling systems, which recycle wastewater or collect rainwater, can cut freshwater use by up to 70%.

**Data-center water use could reach 1.1 to 1.7 trillion gallons a year by 2027**

**Figure 30: Energy Use vs. Water Use**




Source: Company Filings, Bloomberg Intelligence

New EU disclosure rules pressure data center operators to improve energy and water efficiency even as they expand to meet demand from artificial intelligence, ongoing digitization and industry outsourcing of computing resources. Regulations published by the European Commission in 2024 require data center operators to track resource use at various levels of detail such as total and renewable energy use, energy consumed by IT equipment, waste heat reuse, and total and potable water use. These are reported to a central database, with aggregated data set to be published. The first compliance deadline was Sept. 15, 2024, and data centers must report by May 15 on a yearly basis.

The requirements are the first stage of a plan to introduce an EU-wide sustainability labeling scheme and minimum performance standards for data centers.

According to the IEA, AI-driven demand is poised to boost data-center power consumption 230% from 2024-30 (411 terawatt hours vs. 945), likely lifting power prices to rise and putting a premium on energy efficiency. BI's AI Enablers group -- 36 equal-weighted companies including Schneider Electric, Nvidia and Delta Electronics -- seeks to identify firms that can help hyperscalers and others do more with less across the value chain from servers to cooling to installation.

The AI Enablers group has performed solidly against IT peers year to date, besting the S&P 1200 Information Technology Index by 13% on an equal-weight, beta-neutral basis. The group has done well over the past three years, with excess annual returns of 21%, and 15.7% over five years.

In the past year 13 shareholder proposals sought reporting on risks related to artificial intelligence, indicating continued interest from investors on how companies will manage challenges including copyright protections, privacy concerns, human rights implications and energy consumption. Proposals on ethical AI data acquisition and use received solid support at Microsoft (36%), Apple (12%), Amazon (11%) and Meta (10%) despite coming from the National Legal and Policy Center, a regular filer of anti-ESG proposals that typically receive only low-single-digit support.

Proposals increased from 10 in the previous year, which included several filed by the AFL-CIO calling for oversight of AI use at filmed content providers Netflix (43%), Apple (38%) and Warner Bros. Discovery (24%).

**AI's multiple tools can risk data loss, extortion and fraud**

Artificial intelligence tools that easily generate text, voices, images and videos in many languages help attackers mimic government officials, top executives and others to personalize social-engineering attacks, exposing organizations to data loss, extortion and fraud. In May, the FBI warned that attackers were impersonating senior US officials to target people, many themselves current or former senior US officials and their contacts. In 2024, UK engineering firm Arup was defrauded of $26 million after attackers used AI-generated video of senior company managers in a conference call to persuade an employee to transfer the funds.

AI also enhances attackers' ability to scan networked systems for vulnerabilities and target weak links in a company's supply chain to steal sensitive data or disrupt operations and demand ransoms.

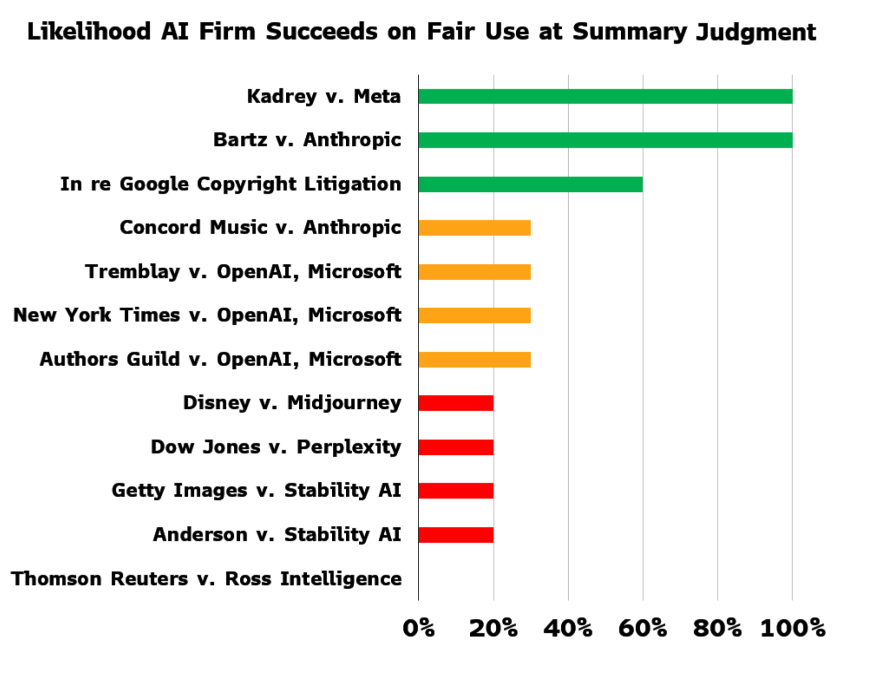
Anthropic's proposed $1.5 billion settlement with book authors, though it's being questioned by the judge in the case, underscores the potential exposure for model owners. Reddit has also sued Anthropic, while Meta, Alphabet, Microsoft and OpenAI face similar cases that could drag well into 2026. Adding to the pressure, Cloudflare has launched default blocking of web scraping for model training, which may force companies to negotiate content-access deals.

The industry lobbied for light-touch federal legislation that would preempt state efforts. After pushback on the effort, language blocking state regulations for 10 years was removed from the Build Back Better bill. All 50 states are considering AI legislation, with 38 passing laws in 2025.

BI

**Definition of Fair Use tested as AI lawsuits play out**

**Figure 31: Fair Use Not Guaranteed on Summary Judgment**




Source: Bloomberg Intelligence

Failure to regulate and moderate AI has cost government contracts, exposed systemic vulnerabilities and fueled safety concerns after a teen's death. Companies face a tradeoff between speed and safety in model development, with the emphasis on the first turning AI into a general-purpose technology with limited guardrails and risks that extend beyond traditional oversight. Companies lacking responsible AI governance risk litigation, fines and exclusion from institutional workflows.

Platforms like Meta, TikTok and X are investing in AI-driven moderation systems, but Bloomberg reports that human moderators find these tools don't meaningfully reduce their workloads. The gap between corporate claims and AI's operational realities highlights the need for investors to scrutinize disclosure on governance and moderation.

# Carbon Capture

## 14.3 Carbon Capture, Removal Markets Find Policy Support

Rising CO2 emissions and favorable policy appear poised to propel growth in CO2 capture and removal markets, drawing in companies from BlackRock to Occidental. Both technologies maintained federal tax credits under the recent US tax law, while Japan is actively promoting carbon capture (CCUS). Regional and industry-specific emissions trading systems could fuel demand over time.

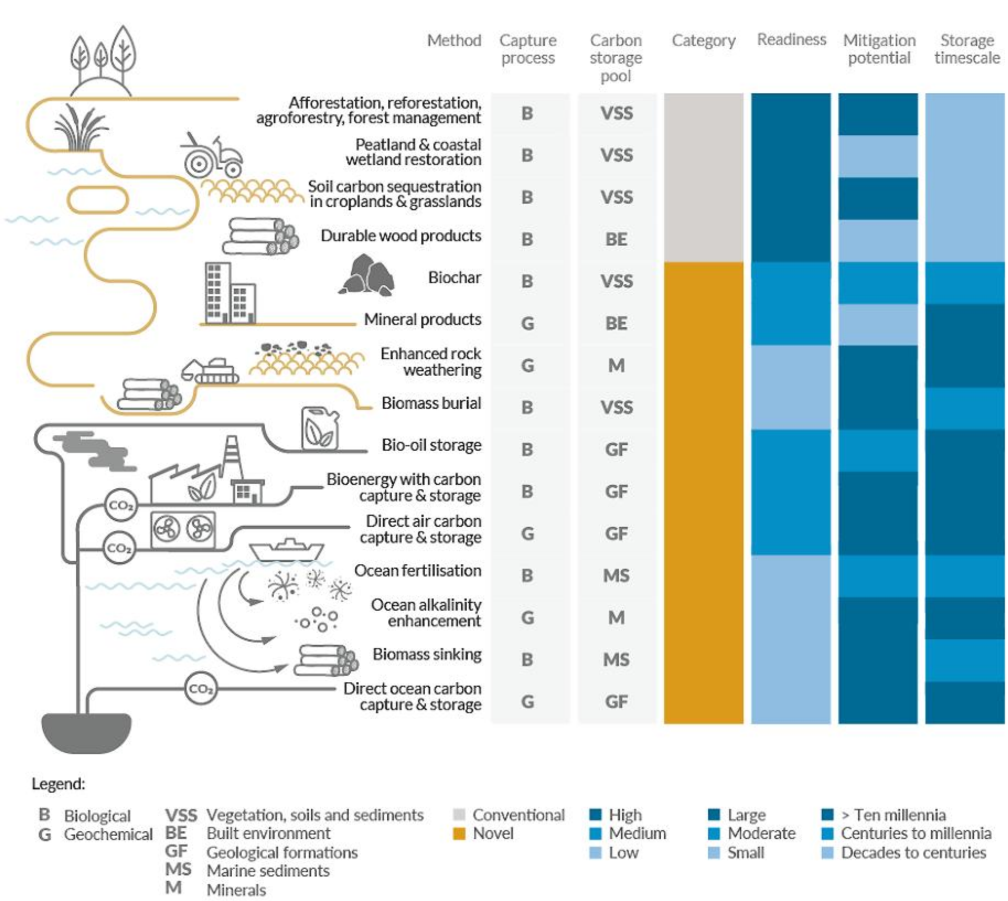
Global emissions tied to fossil fuels climbed to a record in 2024, and the UN puts the trajectory of warming at 3.1 degrees Celsius by 2100. Though decarbonization remains central to tackling climate change, there's a greater recognition that carbon removal needs to play a role. The carbon dioxide-removal (CDR) market is expected to expand at a 14.8% compound annual growth rate, reaching $2.1 billion in 2032 from $610 million in 2023, based on Custom Market Insights data. According to McKinsey, it could hit $1.2 trillion by 2050.

BI

**2024 a record year for global emissions from fossil fuels**

The Intergovernmental Panel on Climate Change and International Energy Agency call for an increase in CDR -- as much as 13 gigatons a year from about 2 Gt today -- in their 1.5- and 2-degree-Celsius climate scenarios.

**Figure 32: Carbon-Removal Methods**




Source: The State of Carbon Dioxide Removal Data Portal

**Carbon dioxide removal potentially lucrative**

Companies including Occidental, Capsol Technologies, Calix Ltd. and Chart Industries could benefit as policy coupled with increased need suggest support for CO2 removal. Occidental's subsidiary, 1PointFive, is set to begin trapping CO2 at its Stratos Project this year. The direct-air-capture facility in Texas is designed to remove 500,000 metric tons of CO2 a year, and has purchase agreements with companies including JPMorgan, as well a $550 million investment from BlackRock. BlackRock's Global Infrastructure Partners announced another deal in August to take a 49.99% stake in Eni's carbon-capture and storage business, expanding its presence in the market.

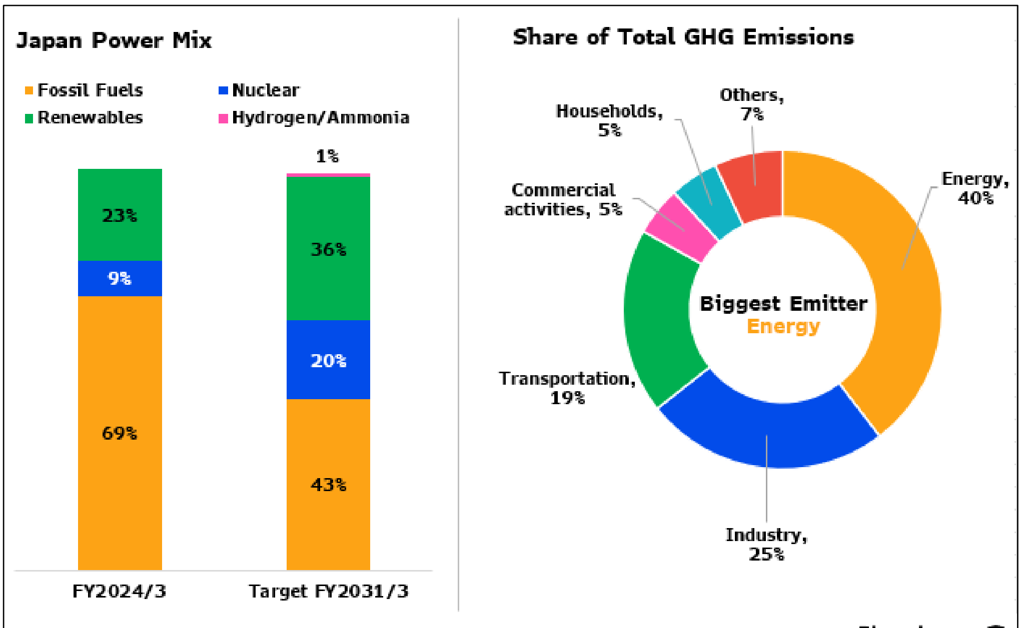
Potential inclusion in the EU ETS and 45Q tax credits in the US point to continued growth for CO2 removal. Cumulative sales of removal credits reached $10 billion July, from just below $4 billion in January.

Japan is doubling down on carbon capture, utilization and storage technology even as it continues to depend on fossil fuels, which make up about 70% of its electricity mix and could contribute nearly 50% in fiscal 2031. This is despite efforts to expand nuclear and renewable power.

The energy sector remains Japan's largest greenhouse gas producer (Fig. 33), contributing 40% of emissions, followed by industry and transportation. Achieving net zero by 2050 will require significant reductions from fossil-fuel power plants.

**Japan's net-zero ambitions need major cuts from fossil-fuel plants**

**Figure 33: Electricity and GHG Emissions by Sector**



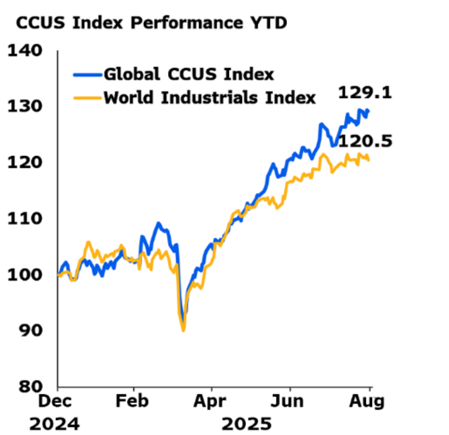

Source: Bloomberg Intelligence

The Bloomberg CCUS Aggregate Equal Weight Total Return Index (BCCAET) surged 31.7% year to date through September, outpacing the Bloomberg World Industrials Index (WLSTI) by 8 percentage points. Doosan Enerbility, the South Korean power-equipment maker that pledged to expand into CCUS in 2024 and delivered a 276% return, drove 4.5 points of the rally. German companies Thyssenkrupp and Heidelberg Materials, advancing carbon-capture strategies in steel and cement, added 4.3 and 1.7 points. In the US, Green Plains, active in renewable crops, has contributed 1.1 points to the index's return so far.

Constituents of the Bloomberg CCUS Index are companies positioned to benefit from CCUS, leaving the index increasingly sensitive to policy, technology and investment shifts as 2050 nears.

**Carbon-capture providers outperforming world industrials**

**Figure 34: Performance and Contribution by Company**




Contribution to Return Company

| Company | Country | CTR (%-points) |
|---|---|---|
| Doosan Enerbility | South Korea | 4.3 |
| Thyssenkrupp | Germany | 3.6 |
| Heidelberg Material | Germany | 1.7 |
| Green Plains | United States | 1.7 |
| Technip Energies | France | 1.4 |
| IHI | Japan | 1.4 |
| Toyo Engineering | Japan | 1.3 |
| Aker Carbon Capture | Norway | 1.2 |
| GE Vernova | United States | 1.2 |
| Mitsubishi Heavy | Japan | 1 |

Source: Bloomberg Intelligence

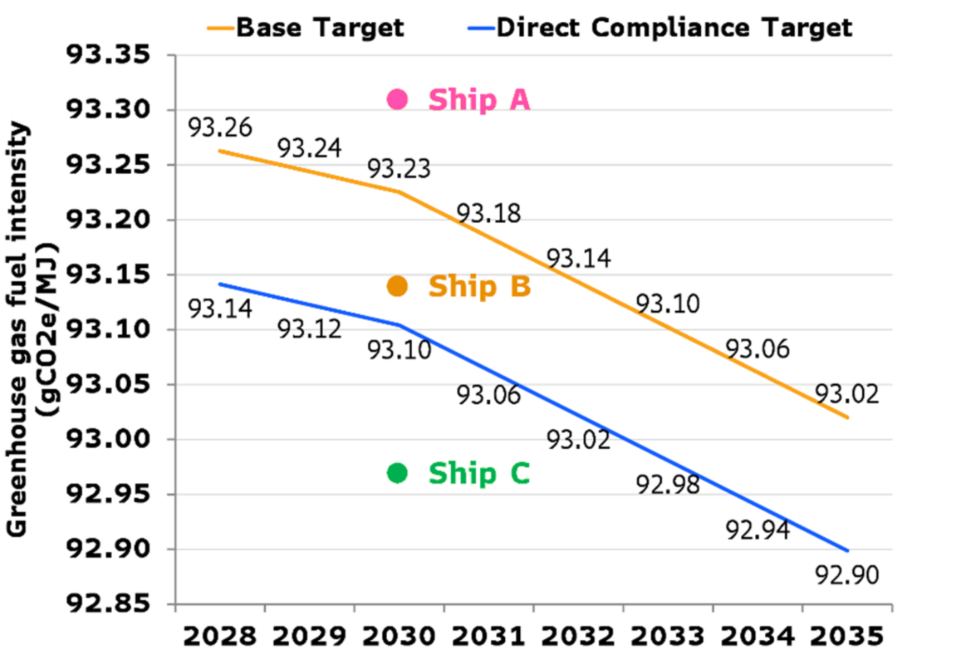
Global airlines such as American Airlines, United and IAG facing emissions charges under the UN's CORSIA could spur growth of carbon capture and storage (CCS) solutions used to produce sustainable aviation fuel by lowering life-cycle emissions. Such fuel can be used to reduce airlines' CORSIA offsetting requirements but is in short supply globally.

CCS projects can also be used to generate carbon credits but none are approved for CORSIA offsetting, and the International Civil Aviation Organization's technical advisory body says it needs more time to assess their eligibility. Credits from CCS projects are specifically excluded even for the 11 carbon-crediting programs such as Verra's Verified Carbon Standard approved for CORSIA's 2024-2026 compliance period.

The International Maritime Organization (IMO) is developing a regulatory framework for onboard carbon capture and storage (OCCS) use on ships, targeted for completion by 2028. But an IMO decision on Oct. 17 to delay by one year a key vote on new rules to curb ships' greenhouse gas emissions, under pressure from the US and Saudi Arabia, adds uncertainty that could slow investment in OCCS technology.

The draft rules agreed to in April but now in limbo would charge ships up to $380 per ton of carbon dioxide equivalent (tCO2e) for excess emissions from 2028 and could spur interest in OCCS from companies such as Evergreen Marine, Maersk and HMM as they explore cost-effective ways to limit penalties alongside cleaner fuels and more efficient fleets. Any softening of fuel-intensity targets or penalties for ships' excess emissions would directly impact the attraction of OCCS solutions. Marine technology group Wartsila says a test of its OCCS technology since February on an ethylene carrier owned by Norway's Solvang ASA has achieved carbon capture rates of up to 70%, or 50 metric tons of CO2 a day. It estimates a carbon capture cost of €50-70/tCO2e including capital and operating costs.

**Figure 35: IMO Targets for Shipping Decarbonization (2028-35)**




Note: Chart shows IMO targets for ships' annual greenhouse gas fuel intensity (GFI) in gCO2e/MJ (well-to-wake) representing continuous improvements from the 93.3 gCO2e/MJ average GFI of international shipping in 2008.
Source: Bloomberg Intelligence

As illustrated in Fig. 35 above, Ship A must offset excess emissions above the base target with surplus units from other ships or banked from earlier years; or pay \$380/tCO2e to meet the base target. It pays \$100/tCO2e for remaining emissions above the direct compliance target.

Ship B pays \$100/tCO2e for excess emissions above the direct compliance target.

Ship C receives surplus units for reducing emissions below the direct compliance target. These can be transferred, banked for up to two years, or voluntarily canceled.

# Climate Adaptation

## 14.4 Climate-Risk Adaptation Becoming Market Theme

Physical climate risks are reshaping economies, markets and investment strategies, with extreme-weather losses, wildfire-driven health costs, water scarcity and the growth of catastrophe bonds making adaptation a central financial theme. Companies positioned in repair, resilience and solutions like desalination are outperforming peers, while biodiversity funds are emerging alongside climate as the next frontier of ESG finance.

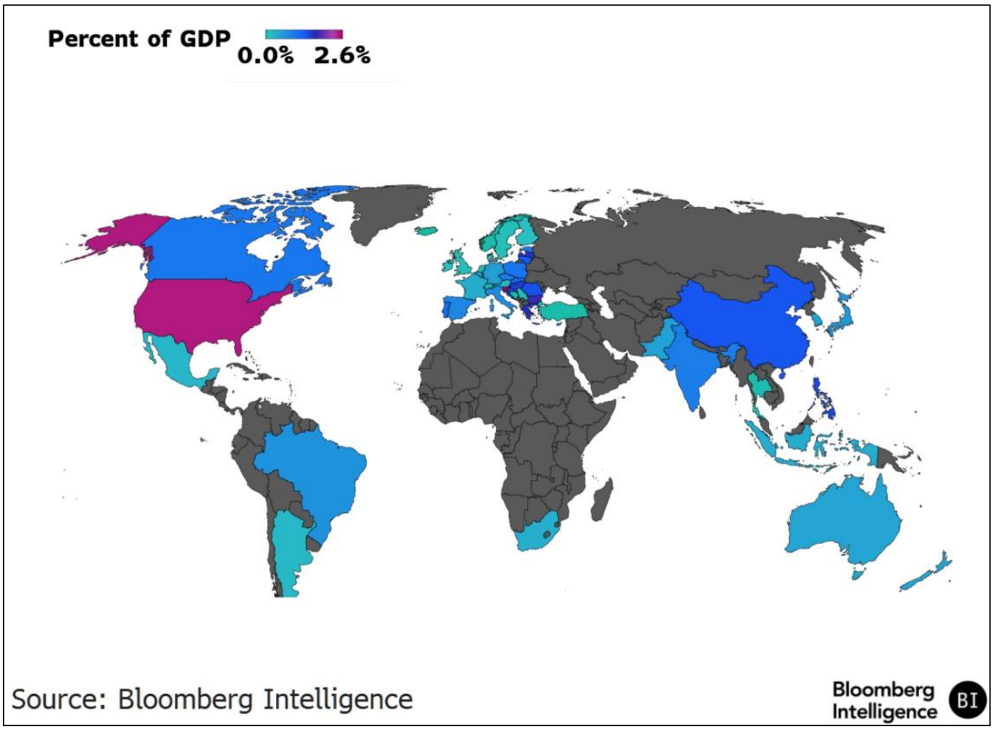
According to the BI Global Damages Tracker, the US had $6.3 trillion in impacts from extreme weather events over the past 10 years, with $1 trillion in costs during the past year alone. Rising insurance expenses, more frequent storms, fires and floods and over $900 trillion in government recovery outlays have diverted spending from other sectors of the economy. Countries like China ($2 trillion), the EU ($600 billion) and India ($440 billion) are also seeing substantial effects.

As a percent of the economy, the US is also among the most burdened, with an average of 2.47% of US GDP generated by climate-related spending over the past 10 years, far higher than China (1.4%) or the EU (0.7%), based on a BI study of 50 countries.

The surge in wildfires originating from Canada has dramatically shifted the wildfire-related economic risk eastward in recent years, with states in the Midwest and cities like New York becoming far more exposed than before (see Fig. 36). This shift is most pronounced along the East Coast, where we calculate that $188 billion of the total $278 billion in US health-care debt is exposed to an increase in smoke incidents that Stanford Echo Labs data show rose more than fivefold in 2023 from the 2010-19 average.

Wildfire-affected areas are also seen at risk of wealth migration, where fully insured people relocate following the fires, creating the potential for a pronounced negative margin impact on hospitals.

**Figure 36: Climate Costs as a Percent of GDP (10yr Average)**




The Bloomberg Prepare & Repair Equal Weight Total Return Index of 98 companies focused on picking up after the last storm and preparing for the next continues to perform well in 2025, topping the S&P 500 by 500 bps and the equal weight S&P 500 by 730 bps thru Sept. 1.

The thematic index, which includes WSP Global, Primoris Services and Generac Holdings, beat the S&P 500 by 7.2% over the past five years on an annual basis, underscoring the impact that climate costs are having on spending in the US economy.

BI

**Catastrophe bonds providing higher returns than traditional issuance**

The catastrophe (CAT) bond market had $17.7 billion in issuance in 2024 and an additional $18.2 billion through August, with the total size reaching $57.3 billion. Investors have earned higher returns than traditional bonds, with insurance-linked securities offering diversification thanks to narrowly defined triggering events. CAT bonds were created in the mid-1990s after major natural disasters like Hurricane Andrew and the Northridge earthquake caused unprecedented insurance losses and pushed some insurers into insolvency.

Climate change has increased the frequency and intensity of natural disasters and insurers are able to transfer the risks associated with large-scale events to investors through the CAT bond market in exchange for higher coupons for investors.

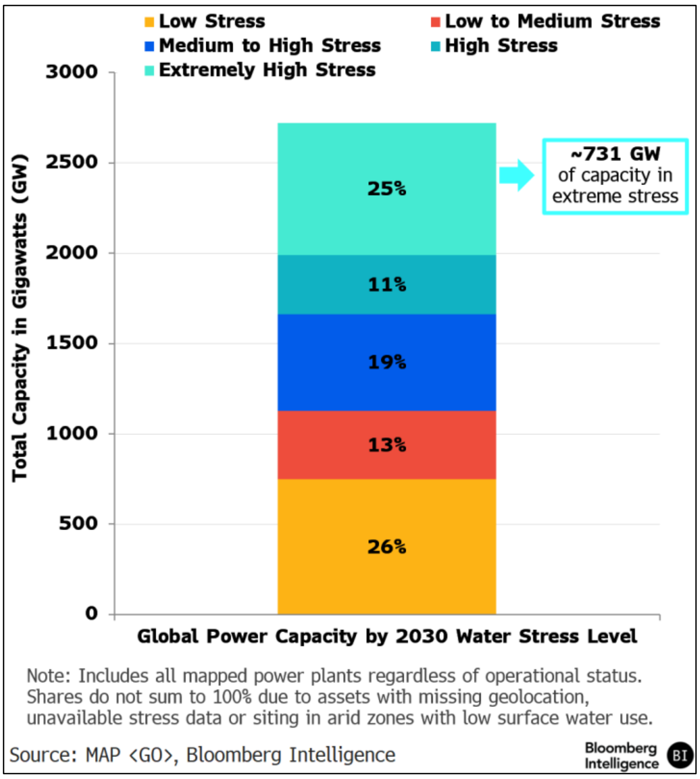
About 36% of global power generation capacity -- nearly 1.1 terawatts -- is projected to be located in high or extremely high water-stress areas by 2030. This includes roughly 503 GW of thermal and 75 GW of hydro capacity, concentrated in regions like China (127 GW), India (106 GW), South Africa (46 GW) and Italy (34 GW). Though less water-intensive generating sources, like wind and solar, represent a growing share of new development, they still make up just one third of installed capacity globally, with only 437 GW of these assets located in high-stress zones.

That leaves water availability a defining constraint for grid stability, operational cost and future expansion. As capital markets increasingly price physical risk, exposure to water scarcity may become as significant as emissions intensity or fuel mix.

BI

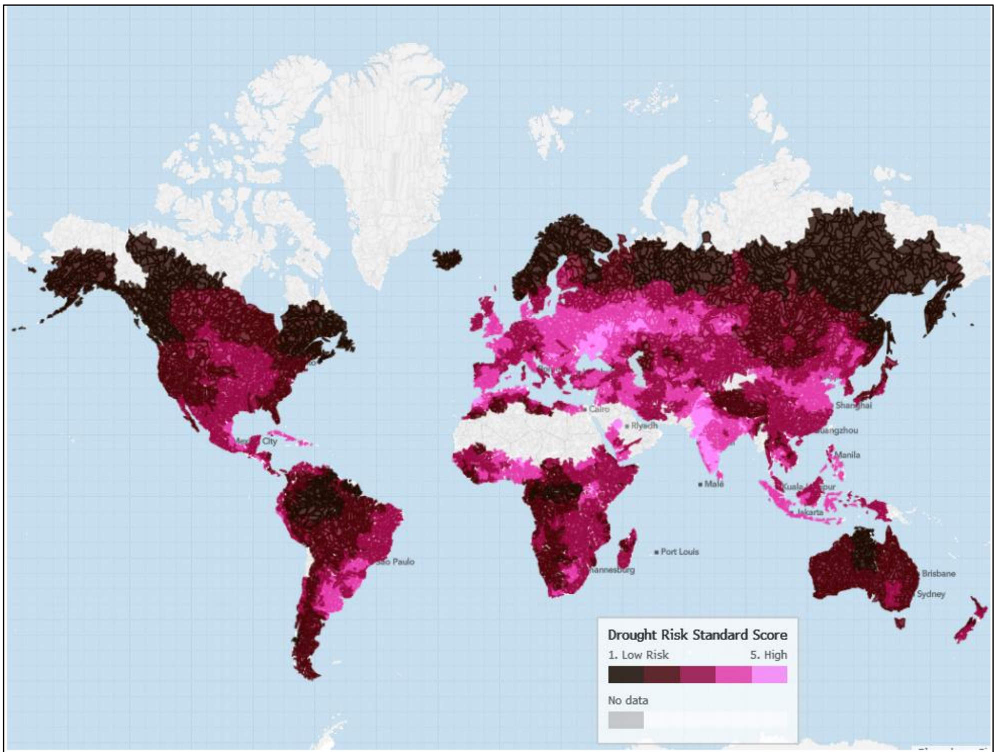
**More than 35% of power capacity expose to high water-stress regions by 2030**

**Figure 37: Capacity Exposure to Water Stress Risk**




Global freshwater demand is projected to outpace supply by 40% by 2030, according to the Global Commission on the Economics of Water, fueling growth in desalination efforts, with estimates from Fortune Business Insights pointing to an annual rate above 8% and potential to reach $50 billion by 2032 from $26 billion in 2024. Providers like Acciona and Veolia are already capturing this momentum, with the first reporting water revenue up 18% year-over-year in the first half of 2025, driven by desalination projects in Australia, Morocco, Chile and Qatar. Veolia, with 18% of global installed capacity, aims to double its operated desalination capacity by 2030, supported by new contracts in the UAE, UK and Morocco. Both firms are positioning desalination not just as a growth market, but as a critical solution to long-term water scarcity and resilience.

**Figure 38: Bloomberg Maps: Current Drought Risk**




Source: Bloomberg Intelligence

**Global freshwater demand may exceed supplies by 40% by 2030**

Biodiversity-focused funds remain smaller in number and assets relative to other ESG themes, but growth is accelerating. Assets reached $1.8 billion in 2025 -- more than double the $847 million recorded in 2022 -- while the number of funds rose to 27 from 17, based on our analysis. In February, Goldman Sachs Asset Management launched its first biodiversity bond fund, targeting $300 million to $500 million to invest in 40 to 70 corporate bonds, with 20% allocated to biodiversity-labeled notes like forest-restoration projects. It's classified as Article 9 under the EU's Sustainable Finance Disclosure Regulation.

As investor interest in biodiversity finance grows, fund offerings are diversifying across asset classes beyond equity and private credit.

# New Frontiers

## 14.5 Emerging Areas of Sustainable Finance to Deliver Growth

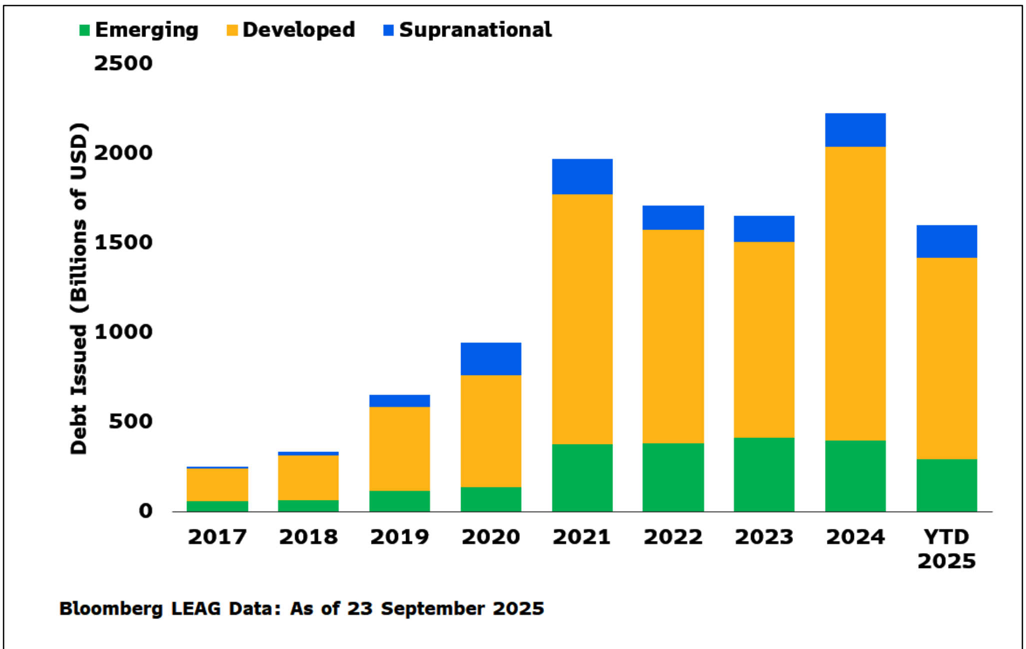
New channels, markets and products are emerging as engines of growth for sustainable finance. Maturing frameworks are seeing labeled-debt pipelines deepening across emerging markets to fund low-carbon infrastructure and adaptation, while product innovation is mobilizing capital into new channels from forests to oceans. In private markets, climate-tech equity looks set to reverse a four-year contraction by late 2025.

Promotion of sustainable finance taxonomies in emerging markets (EM) is driving volume, which have reached nearly $300 billion so far this year and account for 18% of global issuance. Chile, India, UAE and Paraguay have recently released taxonomies, and Brazil is expected to follow shortly. Ivory Coast recently released its sustainability-linked financing framework, which will likely see volume rise. Upcoming sustainable bond maturities for issuers in emerging markets may also drive a wave of refinancing, with over 30% of total outstanding value of sustainable bonds reaching maturity by the end of 2026.

Managers are increasingly adding targeted EM products, especially in fixed income tied to labeled bonds. For example, Goldman Sachs launched the Emerging Markets Green & Social Bond Active UCITS ETF in June.

**A shift toward sustainable finance**

**Figure 39: Global Sustainable Debt Issuance**




Source: Bloomberg Intelligence

Green bonds dominate EM sustainable issuance, at nearly $200 billion in 2024, and with 70% of global infrastructure spending set to be in EMs by 2030, activity will likely rise. In 2024, 87% of power-generation investment in EMs and China flowed into clean energy. However, transition and climate resilience remain underfunded in these countries despite high climate vulnerability. In January, GFANZ - the Glasgow Financial Alliance for Net Zero that formed during the COP26 climate conference - refocused on mobilizing transition capital in emerging market and developing countries, tapping into the $5 trillion a year opportunity from transitioning infrastructure to a low-carbon path in the next decade.

EM banks are stepping up issuance where sovereigns once led, setting targets and frameworks, such as FAB's $135 billion goal by 2030 and are launching products, especially nature-focused ones, given rich biodiversity.

Sustainable financing is evolving through blended structures such as debt for nature swaps, a form of catalytic capital that mobilizes investments for sustainable development while alleviating financial strain on developing countries. In these deals, sovereign debt is forgiven or reduced in exchange for conservation commitments. There were a record number of swaps in 2024, including in El Salvador, Ecuador, the Bahamas and Barbados, with Indonesia closing a deal in 2025. Growth could accelerate with increases in investor appetite, broader participation by creditors, and expansion into other sustainable development goals.

Blue financing is also expanding in the labeled debt markets as the fast-rising category of marine conservation was included in 269 new issues through Aug. 31, up from five in 2023 and 210 issues in 2024.

**Renewables deals seen as key to transition**

M&A activity is proving key to financing the transition, signaling investor confidence in renewables' long-term fundamentals, even amid elevated overall deal volume. So far this year, renewable deal count share is in line with 2024 and remains above the 2010-20 average of 1.6%, underscoring the sector's resilience. Average annual deal volume for renewables in the past five years was also higher than the prior decade, suggesting renewables are a core component of corporate growth strategies. Structural cost declines in solar and wind, coupled with regulatory tailwinds, subsidies, and decarbonization pressure, have supported this trajectory.

The consistency of renewables' overall deal share in 2025 highlights strength despite policy headwinds, reinforcing renewables as a growth opportunity within the M&A landscape.

Climate tech equity financing is poised to reverse a four-year contraction by year end, and if funding continues at current rates, BNEF projects $64 billion in 2025 -- a 26% jump from 2024's $51 billion. PE/VC investors drive this momentum, having accounted for 43% of renewable energy focused M&A deals since 2020, which is well above the 32% average of the prior decade. Their share for 2025 has reached 41%, matching last year's level.

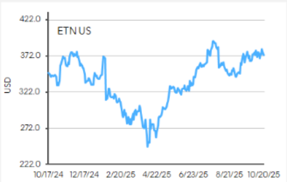
The pullback in climate-tech venture spending in 2020-24 coincided with a capital shift into AI. Energy consumption from AI infrastructure became a hot topic in 2025, and could lead investors back into climate-tech financing. BI sees a potential shift in corporate strategy as companies offloading renewable energy assets create fresh acquisition opportunities for PE/VC companies.

# Section 15. 10 Companies to Watch

## Material ESG Issues Point to Key Investment Themes

Identifying ESG events that have moved stock markets or credit spreads can help spot major investment risks and opportunities, as well as key ESG themes likely to shape company and industry fundamentals in 2026 and beyond. Carbon capture and storage, the implications of AI, climate adaptation and resilience, unintended policy boosts, and the rise of ESG in emerging and private markets are key themes that will drive investments beyond ESG in the years ahead.

## 15.1 Eaton Helping to Manage Power Growth Headaches




| | | |
|---|---|---|
| Market Cap (USD Bn) | | 142.53 |
| Share Price (USD) | | 377.69 |
| Earnings Per Share* (USD) | | P/E |
| 2024A | 10.80 | 34.97 |
| 2025E | 12.10 | 31.20 |
| 2026E | 13.75 | 27.46 |

* Bloomberg Consensus

**75%**

Target revenue growth for Eaton's Electrical segments through 2030

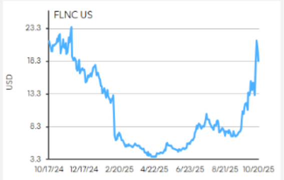
**30%**

Operating margin target for power management products

**Outlook:** Eaton's adjusted EPS is rising yet hasn't accelerated, despite faster data center sales, because of cost spikes and inefficiencies. The firm is pouring money into growth with six new facilities, acquisitions and internal software including AI -- bets that should pay off in 2026 as it delivers on an expanding backlog. Pricing clout during 2021-22 supply-chain shortages endures. Eaton cemented its position as a key vendor to US utilities, manufacturers and data-center builders after an M&A spree. Medium-term targets look reachable, and margins in Electrical Global and Aerospace are improving.

**ESG 2.0 Impact:** Eaton's power systems are expected to continue to help utilities better manage their distributed resources as well drive efficiency at data centers including thermal monitoring, safety, and reliability of critical equipment. Eaton expects AI data centers will help increase potential sales to up to 14% of total compute and infrastructure capex.

## 15.2 Fluence Battery Storage a Low-Cost Gas Alternative




| | | |
|---|---|---|
| Market Cap (USD Bn) | | 2.94 |
| Share Price (USD) | | 18.45 |
| Earnings Per Share* (USD) | | P/E |
| 2024A | 0.13 | 141.92 |
| 2025E | -0.26 | - |
| 2026E | -0.04 | - |

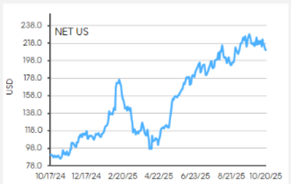
* Bloomberg Consensus

**$23 Billion**
Backlog for utility scale batteries

**85%**
Domestic content targeted by Fluence by 2030, limiting headwinds from US tariffs

**ESG 2.0 Impact:** Fluence Energy's $23 billion backlog for utility scale batteries may continue to power the firm's revenue over the medium term. Fluence's Battery Energy Storage Systems (BESS) solutions are seen as a low-cost alternative to gas turbines in smoothing out behind-the-meter power fluctuations.

## 15.3 Cloudflare Helping Content Owners Squash Web Crawler




| | | |
|---|---|---|
| Market Cap (USD Bn) | | 74.92 |
| Share Price (USD) | | 213.04 |
| Earnings Per Share* (USD) | | P/E |
| 2024A | 0.75 | 284.05 |
| 2025E | 0.86 | 247.20 |
| 2026E | 1.13 | 189.32 |

* Bloomberg Consensus

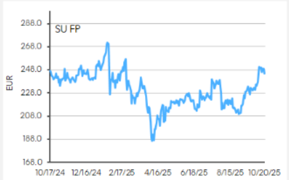
**20%**
Global web traffic managed and protected by Cloudflare's network.

**$1.5 Billion**
Settlement proposed by Anthropic in a class-action lawsuit over the use of copyrighted materials to train its AI models

**Outlook:** Cloudflare is gaining market share with an expanding portfolio of cloud-based security and compute offerings, while a sweeping sales-force reorganization should help it sustain growth through the addition of new large enterprise accounts. It continues to launch security products, while its Workers AI developers platform is gaining good traction and winning large deals, well positioned to tap rising demand for AI infrastructure. Despite recent macroeconomic uncertainty and disruption from fluctuating US trade policy, Cloudflare has managed its supply chain well, shielding it somewhat from a direct impact.

**ESG 2.0 Impact:** Training AI LLMs has generated voracious appetite for content, stoking efforts on the part of creators to retain control over their intellectual property. This has resulted in legal challenges and costly settlements over copywritten material. Cloudflare can play a role offering technology to block AI crawlers from copying content of websites, forcing negotiated payments, benefiting Cloudflare and its customers.

## 15.4 Schneider Electric Seeks Lift from Data Center Efficiency




| | | |
|---|---|---|
| Market Cap (EUR Bn) | | 143.85 |
| Share Price (EUR) | | 248.25 |
| Earnings Per Share* (EUR) | | P/E |
| 2024A | 8.32 | 29.84 |
| 2025E | 8.77 | 28.29 |
| 2026E | 9.92 | 25.02 |

* Bloomberg Consensus

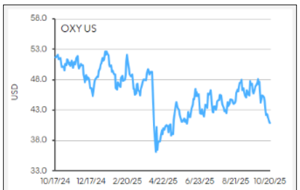
### 20%
Potential energy use reductions from joint reference designs in partnership with Nvidia.

### 230%
Top end of US Department of Energy electricity demand growth estimates (85% to 230%) for data centers for the period 2023-2028

**Outlook:** Schneider's backlog and sector exposure support 2025 performance, but high expectations and peak margins may limit profit upgrades. The healthy backlog reflects alignment with structurally expanding segments and demand for energy efficiency and data centers. Performance is on track to sustain peer-leading organic growth, margin gains and strong cash generation. Systems demand -- driven by data centers and grid infrastructure -- remains solid, offsetting weakness in discrete automation and residential construction, which may recover in 2H. Still, a record margin and easing supply-demand imbalances in medium voltage make upgrades harder this year, particularly as FX headwinds pressure profitability. Pricing and productivity tailwinds in 2H are likely already baked in.

**ESG 2.0 Impact:** As AI driven data center energy demand becomes an increasing constraint on growth - Schneider Electric is well positioned to benefit, offering expertise and solutions to manage and reduce energy consumption. It has partnered with Nvidia to develop designs supporting high density clusters incorporating liquid cooling technology capable of reducing energy use by 20%.

## 15.5 Occidental May Benefit Putting Gas Back in the Ground




| | | |
|---|---|---|
| Market Cap (USD Bn) | | 42.29 |
| Share Price (USD) | | 41.03 |
| Earnings Per Share* (USD) | | P/E |
| 2024A | 3.46 | 11.86 |
| 2025E | 2.24 | 18.32 |
| 2026E | 1.86 | 22.11 |

* Bloomberg Consensus

### 20 Million Metric Tons
Amount of CO2 Occidental stores on an annual basis

### 500,000 Metric Tons
Planned annual removal capacity for 1PointFive's STRATOS direct air-capture facility

**Outlook:** Due to its large size and complex structure, along with Berkshire Hathaway controlling a sizable piece of the company, Occidental Petroleum appears likely to remain independent over the long term. A diverse asset mix clouds the narrative, especially in the deep, fairly liquid arena of US equities. A recovery in oil and gas benchmarks is needed to support asset pruning, boost free cash flow and help reduce debt. Acquisitions spurred a critical program of asset sales, which is running well ahead of schedule, with additional divestitures likely to cull noncore interests and generate cash flow.

**ESG 2.0 Impact:** Occidental Petroleum's subsidiary, 1PointFive, gives the company a strong presence in both carbon removal and storage. The company's STRATOS direct air-capture facility in Texas is expected to begin operations in late 2025 with a planned capacity of 500,000 tonnes a year and the ability to expand to 1 million tonnes. Microsoft, JPMorgan and The NYK Group are among companies to sign long term removal credit purchase agreements. The company also signed an offtake agreement with CF Industries, Jera and Mitsui to store 2.3 million tonnes of $CO_2$ at its Pelican Sequestration Hub from their low-carbon ammonia facility.

## 15.6 Mitsubishi Heavy to Advance CO2 Zero Tech by 2030


| | | |
|---|---|---|
| Market Cap (JPY Bn) | | 15019.48 |
| Share Price (JPY) | | 4412.00 |
| Earnings Per Share* (JPY) | | P/E |
| 2025A | 73.04 | 60.41 |
| 2026E | 88.16 | 50.05 |
| 2027E | 108.38 | 40.71 |

* Bloomberg Consensus

**90%**

Emission reduction enabled by gas turbines paired with carbon capture, utilization, and storage (CCUS) offerings vs. traditional coal power

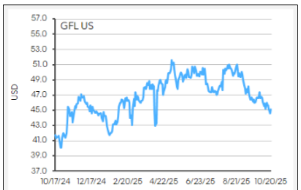
**¥10 Trillion**

Mitsubishi Heavy's order backlog

**Outlook:** Mitsubishi Heavy's profit can continue to expand in fiscal 2026 ending March and meet consensus on a further recovery in aerospace parts production for Boeing's 787, as well as high defense spending. Its high order backlog of ¥10 trillion and steady new demand for gas turbines in US amid rising tech-driven electricity demand could help its energy unit, assuming no additional one-time charges. The drive toward carbon neutrality could continue over the long term and shine a light on its hydrogen burning gas turbine development, as well as carbon capture technology, though near-term impact to profit could be minimal. Japan's push toward 20% nuclear power penetration can aid nuclear restarts and future new builds.

**ESG 2.0 Impact:** With growing pressure to cut carbon emissions ahead of 2030, Mitsubishi Heavy Industries is taking concrete steps to build out its carbon capture, utilization and storage (CCUS) offerings. The company estimates its CCUS technologies, combined with high-efficiency gas turbines, can reduce emissions by up to 90% compared with conventional coal-fired power generation, and it's poised to develop Net-Zero technologies by 2030. Mitsubishi Heavy is also participating in nationwide government-led CCS projects scheduled to begin that same year.

## 15.7 GFL Environmental to Clean Up from Extreme Weather




| | | |
|---|---|---|
| Market Cap (USD Bn) | | 16.68 |
| Share Price (USD) | | 45.54 |
| Earnings Per Share* (CAD) | | P/E |
| 2024A | 0.84 | 76.92 |
| 2025E | 0.64 | 100.56 |
| 2026E | 1.13 | 56.99 |

* Bloomberg Consensus

**$3.2 Trillion**

Fire, flood and storm waste damage generated over the last 10 years in markets served by GFL Environmental.

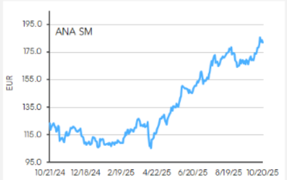
**17%**

Increase in waste output after hurricanes hit Tampa, FL last year.

**Outlook:** GFL Environmental has refined its business platform after an acquisition-driven growth spurt in which it evolved into the fourth-largest waste company in North America. Divestitures of its Infrastructure, Environmental Services and select solid-waste markets have shrunken its revenue base but helped expand its margins. The divestitures enabled GFL to lower its net leverage ratio to nearly 3x vs. over 7x at the time of its 2020 IPO, and provide more capacity to fund growth and capital returns.

**ESG 2.0 Impact:** GFL Environmental's footprint in areas that notched $3.2 trillion in disaster damages over 10 years positions it well for disposal of fire, flood and storm waste, our analysis found. Waste output rose 17% after hurricanes lashed its Tampa, Florida, territory last year. Rising removal costs put a premium on contract-based providers like GFL, WSP and Republic.

## 15.8 Acciona Benefits From Water Adaptation Push




| | | |
|---|---|---|
| Market Cap (EUR Bn) | | 10.45 |
| Share Price (EUR) | | 187.80 |
| Earnings Per Share* (EUR) | | P/E |
| 2024A | 7.74 | 24.26 |
| 2025E | 12.72 | 14.77 |
| 2026E | 8.06 | 23.30 |

* Bloomberg Consensus

### €645 Million

Acciona's water revenue in 1H 2025, an 18% year over year increase, driven by major desalination projects in Australia, Morocco, Chile and Qatar.

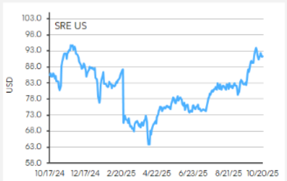
### 57%

Group Ebitda growth in 1H 2025, reflecting broad-based growth and strong contribution from water and energy infrastructure.

**Outlook:** Acciona's potential in the $500 billion water market often seems overlooked, based on our sum-of-the-parts analysis that shows scope for 12% annual revenue growth from related projects over 2025-27. The global infrastructure leader stands out from rivals for its unique capability to integrate renewable energy, water and wastewater businesses. Financial health has been restored since Acciona Energy's 2021 IPO, enabling robust energy- and water-segment investment and a steady dividend policy (4.5-5% dividend yield anticipated). The full consolidation of Nordex is also proving well-timed.

**ESG 2.0 Impact:** Acciona is positioned to benefit from a global water-adaptation push. As water scarcity becomes a defining physical risk, Acciona's leadership in wastewater treatment aligns it with the growing market for resilience and adaptation infrastructure. Its integrated energy-water model positions the company to capture rising investments tied to physical risk mitigation and the economics of water security.

## 15.9 PE Validates Sempra's Clean Infrastructure Portfolio




| | | |
|---|---|---|
| Market Cap (USD Bn) | | 59.81 |
| Share Price (USD) | | 92.72 |
| Earnings Per Share* (USD) | | P/E |
| 2024A | 4.65 | 19.94 |
| 2025E | 4.54 | 20.44 |
| 2026E | 5.08 | 18.24 |

* Bloomberg Consensus

### $10 Billion

Valuation for the recent sale of a 45% stake in Sempra's sustainable energy platform

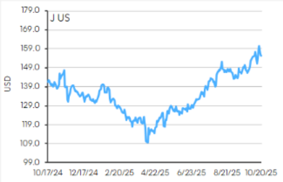
### 2045

Date by which Sempra's San Diego Gas & Electric utility aims to provide customers with 100% renewable or zero-carbon energy.

**Outlook:** Sempra's intended non-core divestiture and 15-30% stake sale in its non-utility Infrastructure unit could move it closer to being a mostly regulated utility, targeting 90% of consolidated earnings by 2029, and raise the visibility of its 7-9% EPS CAGR goal in the period, which is non-linear and biased toward the top. Texas and California utilities have industry-leading demand growth and capex-upside potential but also wildfire risks. Its California service area historically has faced fewer catastrophic blazes than PG&E's or Edison's. New legislation is expected to drive Texas's earned ROE 50-100 bps higher, beginning in 2026.

**ESG 2.0 Impact:** Sempra's sale of a 45% stake in its sustainable energy platform to KKR and the Canada Pension Plan Investment Board for $10 billion validates the value of its clean infrastructure portfolio. The deal brings deep capital due to the acquirer's long-term investment horizon as well as healthy risk appetite. Sempra's inherent risk is reduced by eliminating the $2-3 billion equity need for Texas capital spending, sourcing that money from this deal instead.

## 15.10 Jacobs Driving Global Shift to More Sustainable Future




| | | |
|---|---|---|
| Market Cap (USD Bn) | | 19.12 |
| Share Price (USD) | | 162.57 |
| Earnings Per Share* (USD) | | P/E |
| 2024A | 5.28 | 30.79 |
| 2025E | 6.04 | 26.93 |
| 2026E | 6.98 | 23.29 |

* Bloomberg Consensus

**73.7%**
Percentage of Jacobs Solutions' revenue aligned to ESG issues like sustainability or community enhancement objectives.

**$1.9 Billion**
Adjusted Ebitda target for 2029, spurred by growth in higher-margin segments.

**Outlook:** Jacobs Solutions' global strategy and shift to an agile business model based on faster organic growth and a higher-margin portfolio is poised to keep the company on track for incremental additions that could allow it to reach its adjusted-Ebitda target of $1.9 billion by 2029 (growing at 10-14% CAGR 2025-29) presented at the Feb. 18 Investor day. Completing the spinoff of the Critical Mission Solutions unit in 2024 created a leaner and more-focused business around secular megatrends, including critical infrastructure, water & environmental and life-sciences manufacturing. The transformation plan also paves the way for a different capital-allocation strategy based on higher shareholder returns, with rising dividends and share buybacks and less M&A.

**ESG 2.0 Impact:** Jacobs has a significant presence and does extensive business in emerging markets across the Middle East, Africa, Asia, and Latin America, identifying their increasing populations and rising middle class as a key driver of long-term growth opportunities. Example of large-scale projects include urban development such as advising India on a national program to create "smart cities," and working with Saudi Arabia on its NEOM city. More than 60% of Jacobs Solutions' revenue comes from Critical Infrastructure (38%) and Water & Environmental (28%), which should be supported by continued climate resiliency and adaptation spending.

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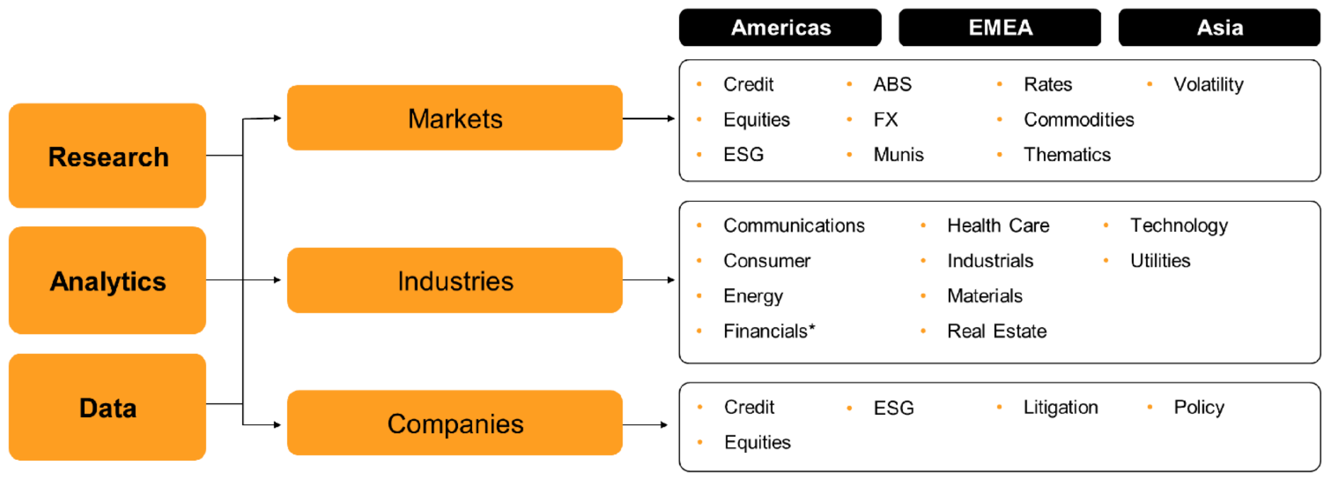

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