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# 10 for 2025: Investing in Sustainable Value Chains

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# Executive Summary

Sustainability-related risks and opportunities are playing an increasingly important role in how investors assess companies globally. In this report, we highlight 10 environmental, social and governance (ESG) themes that we think will affect corporate value chains in 2025. The topics we cover focus on foundational aspects of value chains, such as the sourcing of energy and raw materials through to the use and end-of-life phases of products. For each theme, we highlight one company that is leading in mitigating relevant ESG risks and developing solutions.

Drawing on Morningstar Sustainalytics' latest ESG research, the insights we share in this report can supplement fundamental stock analysis and support sustainable investment decision-making, portfolio construction, corporate financing and engagement strategies.

## Key insights

### *Power-Hungry Data Centers: A Dilemma for Big Tech*

- Energy demand is on the rise for data centers; tech companies are addressing their emissions in different ways.

### *Green Energy Demand: A Boon for Utilities Companies*

- Companies expanding their renewable energy capacity are well positioned to meet the increasing demand for green power.

### *AI Innovation and Product Governance in Healthcare*

- Biopharma firms deploying AI to optimize drug trials and product development face concerns about patient safety, privacy and AI talent acquisition.

### *AI in Oil & Gas Has Potential, but the Benefits Are Limited*

- The extent to which AI can reduce emissions and mitigate other ESG risks depends heavily on a company's broader sustainability commitments.

### *Transition Finance: The Critical Role of Banks*

- Transition finance is an opportunity for banks to diversify loan books and make their business more resilient.

### *Resilient Infrastructure: A Climate-Smart Investment*

- Climate-resilient buildings have become a necessity in regions prone to extreme weather events.

### *The Lithium Boom Brings New Challenges*

- Lithium is a critical mineral for decarbonizing the global economy, but producing it is becoming more water and carbon intensive.

### *Building Responsible Food Supply Chains*

- Nearly one in 10 children worldwide is engaged in child labor. Regulators are responding with stringent human rights due diligence requirements

### *Unpacking a Plastic-Less Future in Consumer Goods*

- Companies are navigating levies and bans on single-use plastics and demand for packaging alternatives.

### *Tapping into the Growth of the Alcohol-Free Market*

- The non-alcoholic market remains small, but its growth brings opportunities to the alcohol industry, which is facing challenges.

# Introduction

The objective of Morningstar Sustainalytics's "10 for" series is to highlight sustainability trends and identify companies for investors to watch in the coming year. In this edition of the series, we explore key aspects of corporate value chains that comprise material ESG risks and opportunities for investors to incorporate into their 2025 agenda. For each of the 10 themes, we assess how companies in different industries are addressing ESG issues and identify firms that are leading their peers in implementing best practices.

Exhibit 1 summarizes the themes related to sustainable value chain issues covered in this report as well as the 10 companies that serve as insightful case studies. Each of the 10 articles within this report includes a one-page primer on the theme, a one-page analysis of companies exposed to the key issues and a tear sheet featuring one company that we view as well positioned compared to its peers.

## Exhibit 1: Themes and Companies Highlighted in This Report

Theme	Company	Domicile	Example
Power-Hungry Data Centers: A Dilemma for Big Tech	IBM	US	While data centers are energy intensive, IBM's carbon intensity decreased 30% from 2020 to 2023. Most of its data centers draw on renewables.
Green Energy Demand: A Boon for Utilities Companies	EDP Renováveis	Spain	EDP Renováveis's 16.8 GW of net installed capacity from renewables positions it well to supply clean energy for the digital transformation.
AI Innovation and Product Governance in Healthcare	Pfizer	US	AI is transforming drug development, marketing, sales and regulatory compliance. Pfizer now uses AI for more than 50% of its clinical trials.
AI in Oil & Gas Has Potential, but the Benefits Are Limited	Baker Hughes	US	Oil and gas firms are using AI to improve efficiencies. Baker Hughes reports related reductions in fuel costs, emissions, water use and waste.
Transition Finance: The Critical Role of Banks	Barclays	UK	Only 114 of 311 financial firms have strong sustainable finance initiatives. Barclays' sustainable and transition financing target is USD 1 trillion by 2030.
Resilient Infrastructure: A Climate-Smart Investment	AECOM	US	Climate resilient buildings could yield long-term benefits. AECOM derived 60% of its 2023 revenue from sustainability consulting services.
The Lithium Boom Brings New Challenges	Vulcan Energy Resources	Australia	Lithium is a critical mineral for decarbonizing the economy. Vulcan's energy cost for producing lithium is estimated to be among the lowest in this industry.
Building Responsible Food Supply Chains	Lindt & Sprüngli	Switzerland	Food companies account for 34% of human rights supply chain incidents tracked since 2014. Lindt has implemented best practices in its industry.
Unpacking a Plastic-Less Future in Consumer Goods	L'Oréal	France	Consumer goods companies are under pressure to reduce plastic waste. L'Oréal aims to use 100% recycled or bio-based plastics in its packaging by 2030.
Tapping into the Growth of the Alcohol-Free Market	Asahi	Japan	Global sales of non-alcoholic beer, wine and spirits are on the rise. Asahi reported 24% revenue growth in its non-alcohol beer in Japan for Q3 2024.

Source: Morningstar Sustainalytics

Technology giants are expanding data centers at an unprecedented pace, fueling the digital transformation, building cloud storage capacity and supporting the surge of AI applications. While the growing demand for data centers has created upside for tech companies and firms in the Utilities sector that supply them with electricity, it is also associated with risks related to energy use and climate change.

At the same time, artificial intelligence (AI) is improving efficiencies in many industries where it has the potential to expedite research and development projects and provide cost savings. Whether AI will help companies address material ESG risks is an open question that we explore in the context of the Healthcare and Oil and Gas sectors.

Climate change will remain at the top of investors' minds for years to come. We focus here on the need to make industrial buildings more resilient to extreme weather events and how Financial Services companies are financing the transition towards a low-carbon economy.

Supply chain analysis is more important than ever, particularly in resource-intensive sectors such as Basic Materials and Consumer Goods, which tend to be fraught with incidents of human rights abuses, biodiversity loss and other controversial activities. Our analysis of lithium miners may help investors looking to address supply chain risks linked to business segments that depend on energy storage, such as the electric vehicles (EV) market. Lithium miners with strong management processes for addressing water and carbon risks are well positioned to support the low-carbon transition. Shifting gears, our assessment of human rights concerns among food companies highlights related supply chain controversies and the measures that companies are implementing to manage potential child labor risks.

The environmental and social impacts of products – from their use phase to their end of life – is another theme to watch in 2025. We surveyed the market for alternatives to alcohol in the Beer, Wine and Spirits subindustry and looked for companies offering products to help mitigate social risks related to alcohol consumption. We also searched for Consumer Goods companies developing alternatives to single use packaging, which is an area of focus due to strengthening regulation and market demand.

A common thread running among these broad areas of research is our focus on sustainability along various points of the corporate value chain. From sourcing clean energy to power data centers, to mitigating risks related to the disposal stage of single use plastics, ESG considerations play an essential role in investment decision-making and outcomes.

**Exhibit 2: Companies Featured in this Report**



Source: Morningstar Sustainalytics

# Power-Hungry Data Centers: A Dilemma for Big Tech

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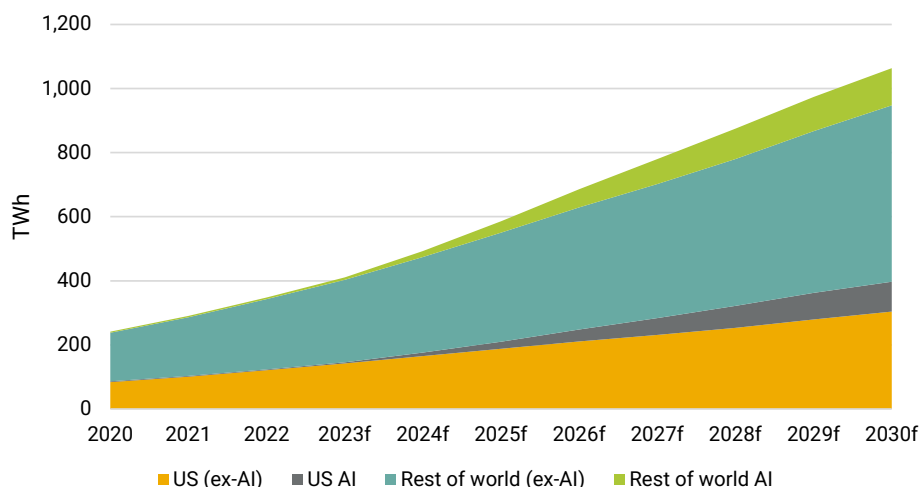
A global surge in data use, led by AI, 5G networks and cloud services, is driving data center demand. Market research firm Fortune Business Insights estimates the global data center market will reach USD 580 billion by 2032.<sup>1</sup> According to Wood Mackenzie, Alphabet, Amazon, Meta and Microsoft will spend up to USD 178 billion on data center construction in 2025, an 11% year over year increase.<sup>2</sup>

A much greater power supply will be required to manage the global data center surge (Exhibit 3). The primary drivers of data center power demand are servers (40%) and cooling systems (40%). AI integrations consume more power; a typical ChatGPT query requires 2.9 Wh of electricity, compared to 0.3 Wh for a Google search.<sup>3</sup> With increased AI activity leading to expanded computing outputs, we have already observed a rise in power consumption and carbon emissions coming from leading Software & Services companies.<sup>4</sup> Goldman Sachs estimates US data center power demand, including AI demand, will reach 397 TWh by 2030.<sup>5</sup> Innovation and adoption of highly efficient cooling systems can help reduce power consumption.<sup>6</sup> AI could also be the key to developing data center energy efficiencies. For example, machine learning could be used to optimize the electricity demand of servers, through adaptation of varying operating scenarios.<sup>7</sup>

Globally, there are over 11,000 data centers.<sup>8</sup> Regions in which there are high concentrations of these centers may see particularly high energy demand. A mix of initiatives, such as sourcing and on-site generation of carbon-free energy (wind, geothermal, solar and nuclear power) can mitigate carbon emissions. Recently, big tech companies have announced nuclear power plans to help produce consistent energy and reduce emissions.<sup>9</sup>

Emerging regulations in key markets are likely to shift data center operators toward renewable energy.<sup>10</sup> For example, the EU’s Energy Efficiency Directive (EED) requires data center owners and operators to disclose their energy and water usage.<sup>11</sup>

**Exhibit 3: Data Center Power Demand**



Source: Goldman Sachs

## Assessing Carbon Intensity of Software & Services

In Exhibit 4, we compare the carbon intensity of some of the largest Software & Services players. This comparison may help investors identify AI players in the subindustry that are leading in terms of mitigating carbon risks.<sup>12</sup>

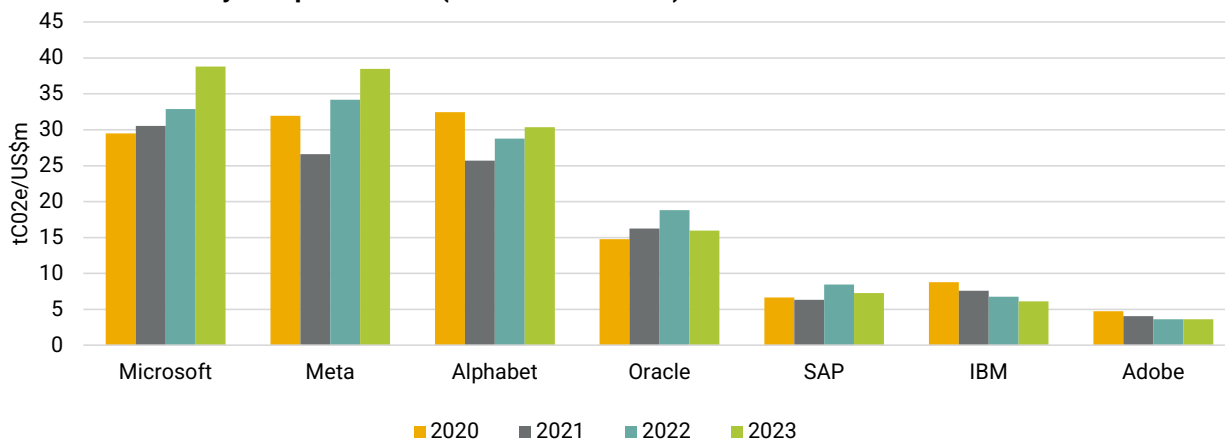
It is perhaps not surprising that carbon intensity has increased the greatest for the largest industry players, due to their expansive operational footprint. As of FY2023, Google owns and operates 28 data center campuses.<sup>13</sup> Meta, meanwhile, reports having 21 data centers either operational or under construction<sup>14</sup> and Microsoft operates over 300 data centers.<sup>15</sup>

To address surging emissions, Alphabet recently announced its partnership with California-based Kairos Power, in which it plans to purchase nuclear power produced from Kairos’ small modular reactors. The first reactor is scheduled to be running by 2030.<sup>16</sup> Similarly, Microsoft announced an agreement with the owner of the shuttered Three Mile Island nuclear plant in Pennsylvania, in which the facility would be brought back online to produce energy for Microsoft.<sup>17</sup>

Carbon intensity for Oracle and SAP has stayed relatively consistent over the past four years, while IBM and Adobe have reported a decrease in carbon intensity. In 2023, Microsoft recorded carbon intensity of 38.80 tCO<sub>2</sub>e/USD million, growth of over 30% since 2020. Comparatively, IBM’s carbon intensity was only 6.09 tCO<sub>2</sub>e/USD million, a notable decrease of 30% from 2020, attributed in part to the company’s carbon reduction initiatives.

As data center expansion continues to drive power demand, companies are exploring AI-driven energy efficiencies to help reduce their carbon footprint. For example, Google has improved its data center efficiency through an AI-controlled cooling system, which continuously adjusts settings.<sup>18</sup>

**Exhibit 4: Carbon Intensity: Scopes 1 and 2 (tCO<sub>2</sub>e/USD million)<sup>19</sup>**



Source: Morningstar Sustainalytics



# International Business Machines Corp. (IBM)

## Committed to Decreasing Carbon

Domicile: United States of America  
 Industry: Software & Services  
 Subindustry: IT Consulting  
 Ticker: NYS: IBM

### Key insights

- IBM's carbon intensity decreased by 11% in FY2023 compared to the previous fiscal year.
- The company aims to improve its average data center cooling efficiency by 20% by 2025 against a 2019 baseline.
- IBM is also exploring AI enablement to help reduce the carbon footprint of data centers.

IBM is a global Software & Services company, headquartered in the US. It primarily sells software and hardware, and offers IT and consulting services. The company operates in 175 countries and employs around 350,000 people.

IBM's carbon intensity and energy use decreased by 11% and 6.6%, respectively, in FY2023 compared to the previous fiscal year (see Exhibit 5). IBM linked 58% of that year's energy savings to IT upgrades in its data centers,<sup>20</sup> which it states incorporate hot/cold aisle containment.<sup>21</sup>

IBM is also exploring AI enablement, such as a project developed with NTT that could reduce the carbon footprint of its data centers by monitoring server temperature.<sup>22</sup> The company has also unveiled optics technology research that could improve the way in which data centers run generative AI models and lead to significant energy reductions.<sup>23</sup>

Due to its reliance on data centers to store and manage data, run applications, and deliver its services, Carbon – Own Operations is a material ESG issue for IBM. While exposure to this issue is low (with a score of 2) compared to other industries, IBM has strong management practices in place to manage its risks. The company has set a net zero operational GHG emissions target by 2030 and multiple interim targets, and it has implemented initiatives to support its path toward lower emissions.<sup>24</sup> Finally, IBM has set a target to improve average data center cooling efficiency by 20% by 2025 against a 2019 baseline.<sup>25</sup>

### Exhibit 5: International Business Machines Corp.\*

Name	Exchange	Market Cap (mil) (Daily) USD	ESG Risk Rating Assessment	Morningstar Rating Overall	Price/Fair Value	Economic Moat	Total Ret 1 Yr (Mo-End) USD
International Business Machines Corp	New York Stock Exchange, Inc.	213,426.59	Low	★	1.66	Narrow	47.63

\*As of 12/13/2024

Source: Morningstar Sustainalytics

# Green Energy Demand: A Boon for Utilities Companies

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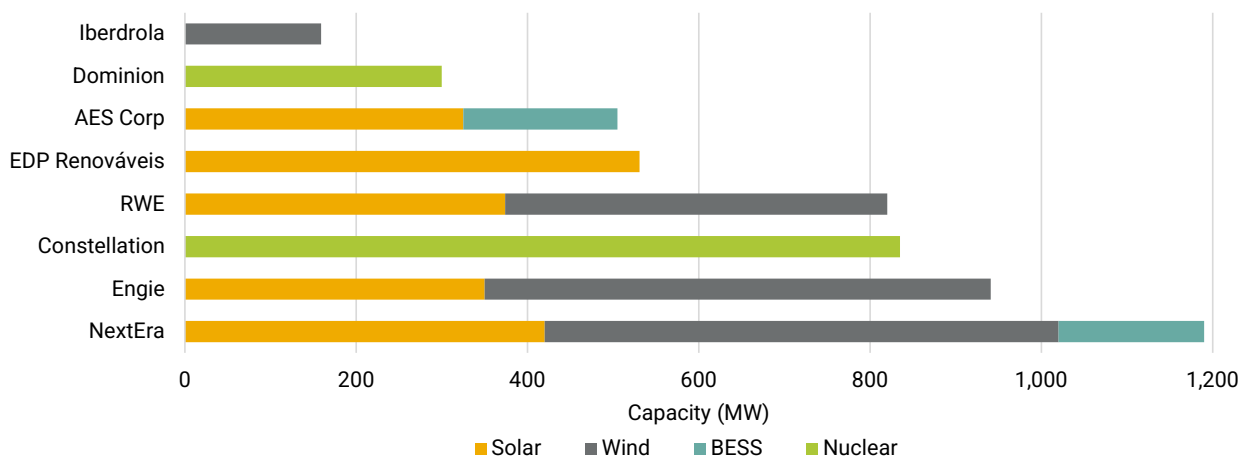
The adoption of generative AI across various sectors introduces a new set of concerns regarding its energy footprint and the rapid growth of power demand for data centers. Microsoft’s energy consumption increased by 113%<sup>26</sup> in 2023 compared to 2020, while Google reported a 67%<sup>27</sup> increase over the same period. Looking at this trend, it appears likely that electricity demand to power data centers will continue growing in 2025 and subsequent years.

According to a recent Reuters analysis of company earnings reports, nine of the top 10 US electric utilities considered data centers as the main source of customer growth.<sup>28</sup> A report by BloombergNEF revealed 12% growth in corporate procurement of clean energy in 2023, with big tech corporations such as Amazon, Meta and Google serving as the top offtakers.<sup>29</sup>

The availability of power supply is often a limiting factor in building new data centers. Tech companies are pursuing strategic partnerships with utilities companies to meet the data centers’ growing power demand from low-emissions sources. Google, for example, has set a goal to run on 24/7 carbon-free energy.<sup>30</sup> Tech companies are looking into standardizing corporate power purchase agreements (PPAs) for renewables in various regions. They are also increasingly exploring power from nuclear energy, especially in the US.<sup>31</sup>

In 2024, Brookfield and Microsoft signed a 10.5 GW corporate renewable energy procurement deal, the largest such deal to date.<sup>32</sup> Several partnerships to explore the use of nuclear energy have also been announced. Exhibit 6 shows a selection of corporate renewable and nuclear procurement deals announced in 2024. Engie, for example, signed a total of 941 MW renewable PPAs with Amazon,<sup>33</sup> Google<sup>34</sup> and Meta<sup>35</sup> in 2024, comprising solar and wind projects in the US and Europe.

**Exhibit 6: Utilities’ Carbon-Free Energy Deals with Tech Companies\***



\* Publicly announced deals screened and sampled by Sustainalytics as of 29 Nov. 2024. The companies selected are utilities in Sustainalytics’ Comprehensive universe. BESS: Battery Energy Storage Systems.

Source: Morningstar Sustainalytics

## Carbon Intensity from Generation

The majority of renewable deals in recent years have been in the US and Europe. This trend is now expanding to the Asia-Pacific and Latin American regions, with EDP Renováveis (EDPR) signing a 200 MW solar agreement in Singapore<sup>36</sup> in 2024 and AES signing a 154 MW wind PPA in Brazil<sup>37</sup> in December 2023, both with Microsoft. Renewable and nuclear procurement by tech companies is likely to continue in North America and Europe and see growth in Asia-Pacific. Google, for instance, reported that its data centers in that region average the lowest carbon-free energy use.

Generation activities are usually the main source of utilities’ carbon emissions. Low carbon intensity from generation generally indicates a greater portion of generation from carbon-free sources. Utilities with low carbon intensity are likely to be more experienced in delivering large-scale clean energy projects and are better positioned to take advantage of the growth in clean power demand for data centers. As shown in Exhibit 7, EDPR and Constellation have very low carbon intensity, attributed to EDPR’s all-renewable generation and Constellation’s mainly nuclear generation. The carbon intensity of Iberdrola, NextEra, Engie and Dominion are low to moderate, but these companies reported a gradual decrease in their carbon intensity from 2020 to 2023, signaling consistent efforts to move away from carbon-intensive generation.

AES and RWE are among the companies with high carbon intensity, mainly attributed to the significant share of generation from coal. The renewable deals announced in 2024 serve as an indication that both AES and RWE are looking to tap into the opportunities to decarbonize their generation portfolio, brought about by rapid growth in data centers and demand for carbon-free energy.

In 2025, we anticipate the continuation of such corporate renewable deals, possibly expanding to regions such as Asia-Pacific. Tech companies are likely to continue to explore partnerships with power producers to develop low-carbon technologies such as nuclear, especially with the application of small modular reactors, hydrogen and storage solutions. Streamlining procurement processes, standardizing PPAs, and creative project financing are also expected to play a role in expediting these carbon-free energy procurement deals.

**Exhibit 7: Utilities’ Carbon Intensity from Generation\***



\* The firms selected are utilities under Sustainalytics’ comprehensive universe. **Source:** Morningstar Sustainalytics

# EDP Renováveis SA

## Low on Carbon Intensity

Domicile: Spain  
 Industry: Utilities  
 Subindustry: Renewable Power  
 Ticker: LIS:EDPR

### Key insights

- EDP Renováveis secured more than 500 MW of solar deals with tech companies in 2024, with projects located in the US, Europe and Asia-Pacific.
- Its 16.8 GW generation fleet consists of 74% onshore wind, 19% utility scale solar, 5% distributed solar and 2% offshore wind and storage capacity.<sup>38</sup>
- Its 2023-2026 business plan includes a EUR 4 billion global investment, which will go towards emerging technologies, including storage and hydrogen.<sup>39</sup>

EDP Renováveis (EDP Renewables, EDPR), a 71%-owned subsidiary of integrated Portuguese utility EDP, was created in 2007. It builds, develops, and operates renewables plants, mostly wind and solar. With 16.8 GW of net installed capacity as of September 2024, EDP Renováveis is the fourth-largest renewables player in the world and the third largest in the US and Europe. EDPR and its parent company, EDP, have been the subject of a high-level bribery and corruption probe by Portuguese prosecutors for cases dated between 2004 and 2011. Unlike EDP, though, EDPR has not been named as a party subject to asset forfeiture, according to the resolution announced in October 2024.

As a renewable power producer, EDPR has maintained its very low carbon intensity from generation activities over the years. Its overall carbon intensity is also in line with that of its subindustry peers. The company's unmanaged ESG risk score is 14.6, placing it in the low risk category.

In recent years, EDPR has secured several solar PPAs with tech companies for projects in the US, Europe and Asia-Pacific. In addition to the 200 MWp solar PPA in Singapore mentioned above, other deals include PPAs with Google for a 650 MWp distributed generation solar project in Ohio, announced in 2023,<sup>40</sup> and several projects across Europe (with a total capacity of 176 MWp) with an undisclosed tech company, announced in 2024.<sup>41</sup> Leveraging on multi-geography PPAs, the company was able to provide its large corporate customers with clean energy while boosting local generation in its countries of operation. EDPR's presence in international markets as well as its planned investment to develop emerging technologies, such as hydrogen and storage solutions, positions the company well to take advantage of the growing demand for clean power for data centers.

### Exhibit 8: EDP Renováveis SA\*

Name	Exchange	Market Cap (mil) (Daily) USD	ESG Risk Rating Assessment	Morningstar Rating Overall	Price/Fair Value	Economic Moat	Total Ret 1 Yr (Mo-End) USD
EDP Renovaveis SA	Euronext - Euronext Lisbon	10,694.36	Low	★★★★★	0.58	None	-33.77

\*As of 12/13/2024

Source: Morningstar Sustainalytics, Morningstar

# AI Innovation and Product Governance in Healthcare

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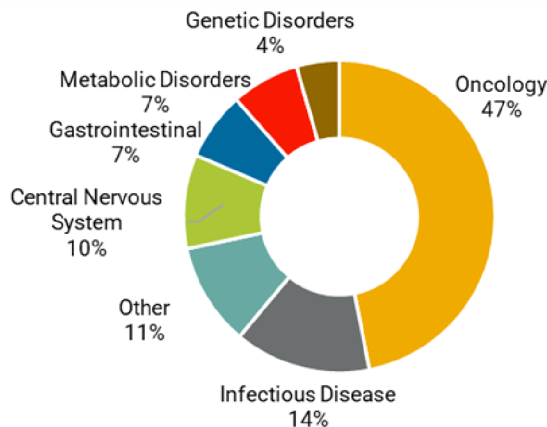
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AI adoption across the healthcare and biopharmaceutical industries has been proliferating in recent years, targeting both cost cuts and innovation gains that are meant to expand and accelerate patient access to quality care, as well as to new therapies and treatment options. The rising cost of care and inflationary pressures have affected these industries. A report by the National Bureau of Economic Research estimates that AI integration can bring cost savings of 5% to 10% to US healthcare spending.<sup>42,43</sup> For the biopharma industry, the impact of AI on drug discovery and R&D productivity is likely to be a game changer. In an industry where the cost of failed trials represents 60% of all development costs,<sup>44</sup> AI promises shorter, more efficient clinical trials with a greater go-to-market success rate.

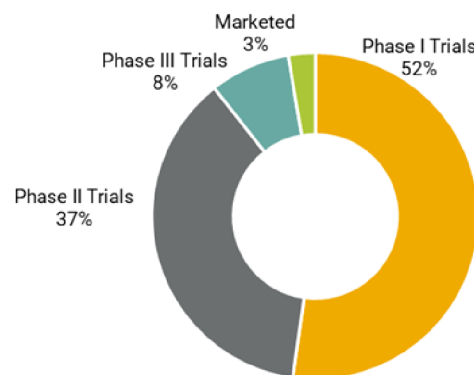
The ability of the healthcare and biopharma industries to capitalize on AI’s potential can also reverse systemic challenges related to the high cost of care, record staff shortages and decline in R&D performance and return. In healthcare, AI applications are helping providers increase productivity by spending less time on administrative tasks and enabling better resource allocation.<sup>45</sup> Biopharmaceutical companies are deploying AI across various phases of product discovery and development, aiming to optimize trials and portfolios. While offering lucrative growth opportunities for companies, increased reliance on AI technologies may, in turn, exacerbate existing sector vulnerabilities towards product quality and safety, data privacy and cybersecurity, as well as human capital risks.

Following the Covid-19 pandemic, AI had a transformative role in all phases of drug development, from compound screening and biological sequencing to marketing, regulatory compliance and sales.<sup>46</sup> AI-mediated drug discovery is rapidly growing, leading to about a 10% increase in the possibility of a trial’s success, reducing approval times by one to two years<sup>47</sup> and reducing R&D costs by 35%-45%.<sup>48</sup> Oncology is the main therapeutic area targeted by biopharmaceutical companies using AI methods for drug discovery, accounting for nearly half of AI-mediated drugs in clinical development. According to Accenture Research data, most of these assets are in phase 1 and 2 of development, as of 2024 (Exhibit 9).<sup>49</sup>

**Exhibit 9: (a) Therapeutic Areas of AI Drug Discovery**



**(b) Clinical Development Stages of AI-Mediated Drugs**



Source: Accenture Research 2024 leveraging GlobalData and companies’ websites

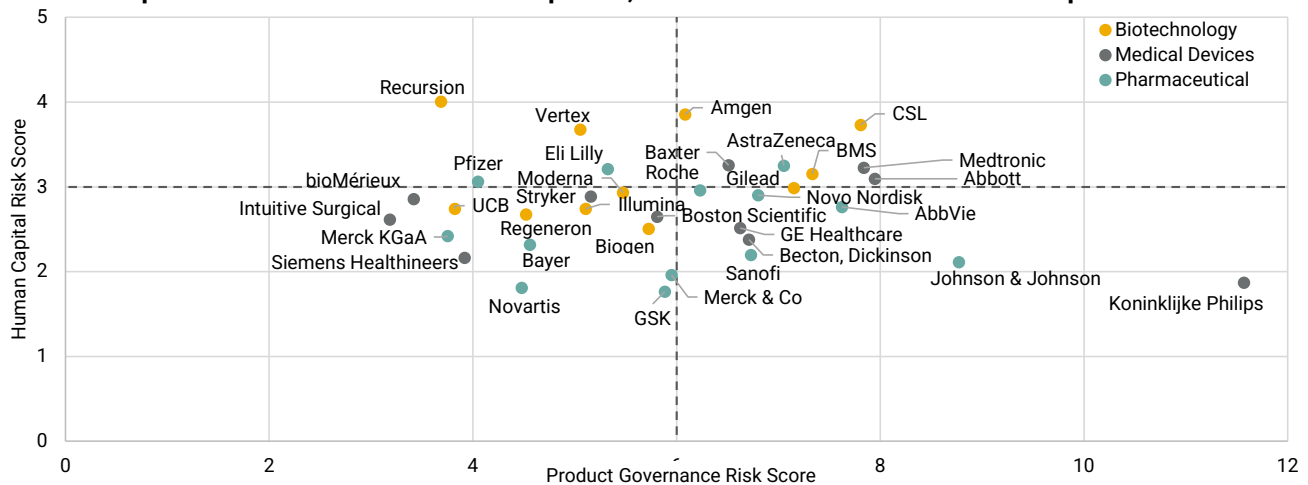
### ESG Risk Rating Variables as Proxies for Innovation

Medical devices and biopharma companies are pioneering AI in an evolving regulatory and digital landscape, having to balance innovation with concerns and scrutiny over AI interference with patient safety and privacy, and to compete for highly specialized talent with big tech companies. Within Sustainalytics' ESG Risk Ratings framework, we assess exposure to and management of these issues using two Material ESG Issue (MEI) unmanaged risk scores: Product Governance, which gauges how well companies ensure the quality and safety of their products; and Human Capital, which assesses staff development, diversity and equal opportunity initiatives that can serve as incentives to attract and retain qualified personnel.<sup>50</sup>

As shown in Exhibit 10, the majority of key healthcare players (31/35) demonstrate low unmanaged Human Capital risk scores (between 0-3), indicating that most companies are effectively managing workforce-related challenges. However, more than half (20/35) exhibit high to severe unmanaged risks (less than 6) for the Product Governance MEI. While partly influenced by the industry's high exposure to quality issues, these elevated levels of unmanaged risks highlight potential deficiencies in quality management systems (QMS). Robust QMS are critical for managing the challenges of product development, regulatory compliance, and safety assurance. AI technologies introduce new layers of complexity that many existing QMS may not be fully equipped to address.<sup>51,52</sup>

Many of the largest medical devices and biopharma companies are already leveraging AI for a range of use cases; however, 57% of companies in the selected sample do not disclose formal policies guiding AI's application. Best practice policies address concerns regarding patient safety and data privacy, transparency on AI-enabled processes or features, human supervision and decision making, and using data sets that avoid bias and discrimination. Pharmaceutical players are leading the way in terms of setting such policies, while medical devices companies are sector laggards. Among the pharmaceutical companies, Pfizer stands out utilizing AI not only for drug discovery and development, but also to monitor medicine and vaccine safety, and to improve its supply chain.

**Exhibit 10: Biopharma and Medical Devices Companies, Product Governance and Human Capital Risk Scores\***



\* N = 35 top firm by market cap from most innovative healthcare industries, plus few other notable players who extensively adopted AI.

# Pfizer Inc.

## Transforming Healthcare Through AI

Domicile: US  
 Industry: Pharmaceuticals  
 Subindustry: Pharmaceuticals  
 Ticker: NYS:PFE

### Key insights

- Hinging on the success of leveraging AI for its Covid-19 drug, Paxlovid, Pfizer now uses AI for more than 50% of its clinical trials.
- Pfizer’s USD 43 billion acquisition of Seagen doubled its oncology pipeline, bringing further opportunities to integrate AI into oncology drug development.
- Its responsible AI framework and strong product quality and human capital development programs make Pfizer well positioned to scale the use of AI.

Pfizer specializes in the research, development, manufacture and sale of innovative medicines and vaccines.<sup>53</sup> In recent years, Pfizer has undergone transformative developments reflecting its strategic focus on innovation. Key milestones include divesting its generic medicines division, Upjohn, in 2020, spearheading the global Covid-19 response and its USD 43 billion acquisition of oncology specialist, Seagen, in 2023, which doubled its oncology pipeline.<sup>54</sup> A key factor in its recent success may be the broad application of AI, which it has leveraged for drug discovery, clinical trials, pharmacovigilance and manufacturing.

Pfizer’s AI adoption has been pivotal in driving innovation and operational efficiency, as evidenced during the development and production of its Covid-19 treatment, Paxlovid. Pfizer leveraged AI throughout its clinical trials to perform quality checks and analyze patient data up to 50% faster than before. It also used AI to optimize manufacturing processes and streamline production to increase the output of its Covid-19 treatment. Building on that success, Pfizer now deploys AI for more than 50% of its clinical trials, reporting that it can manufacture medicines faster, improving access through increased supply.<sup>55 56</sup>

Pfizer’s acquisition of oncology specialist Seagen presents further opportunities to integrate AI into oncology drug development. While noteworthy, it is imperative that robust and transparent measures govern Pfizer’s AI utilization and that its human capital development strategy continuously upskills its employees as the capabilities of AI evolve. Pfizer’s framework for the responsible use of AI is rooted in the core principles of transparent use, respect for privacy and accountability towards ethical, legal and regulatory standards.<sup>57</sup> Alongside its strong product safety and human capital development programs, Pfizer appears well-positioned to further embrace advanced technologies and leverage the innovation gains promised by AI’s integration in healthcare, while mitigating related risks.

### Exhibit 11: Pfizer\*

Name	Exchange	Market Cap (mil) (Daily) USD	ESG Risk Rating Assessment	Morningstar Rating Overall	Price/Fair Value	Economic Moat	Total Ret 1 Yr (Mo-End) USD
Pfizer Inc	New York Stock Exchange, Inc.	144,961.61	Low	★★★★★	0.61	Wide	-8.47

\*As of 12/13/2024

Source: Morningstar Sustainalytics, Morningstar

# AI in Oil & Gas Has Potential, but the Benefits Are Limited

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AI has been an important tool for the Oil and Gas industry for years, but recent advancements are transforming decision-making and have the potential to meaningfully reduce environmental impacts and improve safety. With the push for net zero emissions adding urgency and complexity, companies leveraging AI can gain a competitive edge through efficiency and innovation.

Failure to align with climate goals, though, could put companies at risk of losing public trust and of increased regulatory scrutiny. For investors, the focus on supporting firms that can maximize operational efficiency while implementing credible sustainability efforts, can create both financial value and resilience.

AI's growing role in the Oil and Gas industry presents both opportunities and challenges for investors. The International Energy Agency (IEA) underscores the need for the industry to align with net zero goals through measures such as reducing emissions and improving efficiency.<sup>58</sup> Leveraging AI could contribute to these efforts;<sup>59</sup> however, AI-driven fossil fuel extraction may also result in increased production.<sup>60</sup> Reports from Bloomberg<sup>61</sup> and JPT<sup>62</sup> highlight AI's financial potential through faster extraction and cost savings, which would boost profitability. Yet, high costs and stranded asset risks require companies to balance returns with climate goals, as they face increasing pressure to ensure long-term viability while adhering to sustainability commitments.

To help investors assess how companies in the industry are implementing AI in their operations, we investigated 211 companies in the Oil and Gas industry and identified 27 that have AI-driven initiatives. We organized these initiatives into three categories: increasing efficiency, reducing emissions and improving safety (Exhibit 12). These efforts use leading-edge tools, such as predictive maintenance, emissions monitoring and optimization to tackle challenges, boost financials and improve ESG profiles. The key challenge is aligning AI-driven efficiency with net zero commitments and credible sustainability progress. While these initiatives suggest AI's potential for broader benefits, the main focus among these firms remains on efficiency.

## Exhibit 12: Leveraging AI for Operational Efficiency, Emissions Reduction and Safety

Application	Definition	Example
Increase Efficiency	Optimize operations and resources to boost productivity.	AI optimizes resource location, drilling, refining, and transport.
Reduce Emissions	Cut emissions with better processes and monitoring.	AI detects leaks, optimizes energy, enhances carbon capture, and monitors gases.
Improve Safety	Minimize risks with monitoring, automation, and prediction.	AI enhances safety with failure predictions, robots, leak alerts, and simulations.

Source: Sustainalytics



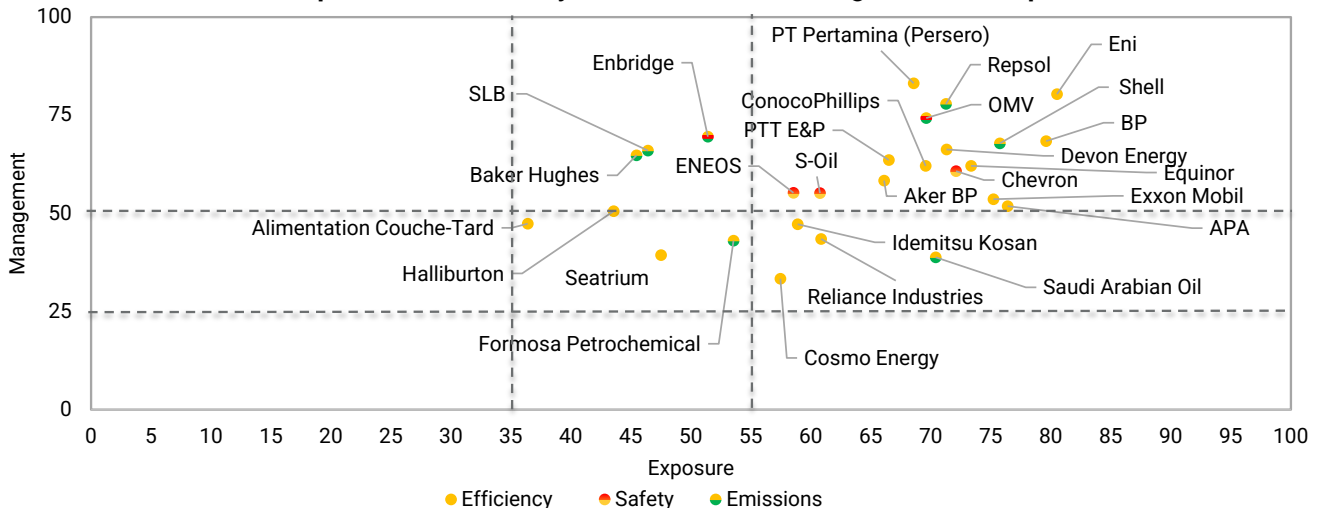
## Examining Efficiency and Overall ESG Risks

Oil and Gas is one of the highest risk industries within the ESG Risk Rating framework. While AI has the potential to optimize some existing processes, the extent to which it could mitigate ESG risks depends heavily on a company’s broader ESG commitments. Conducting an underlying ESG risk analysis remains critical to determine whether AI initiatives are genuinely driving sustainability or simply masking inaction. This distinction can help investors differentiate between companies addressing specific ESG risks from those using technology primarily to boost output.

Exhibit 13 plots the relative positions of 27 companies that made AI-related announcements, partnerships or updates against their overall exposure and management of ESG risks. All 27 focused on efficiency, emphasizing AI’s role in optimization and output improvement. However, eight companies explicitly linked AI to emissions reduction, and five companies linked it to safety. This analysis can help investors identify companies in the industry that made announcements in 2024 about AI initiatives to address ESG issues related to emissions and safety – key drivers of ESG risk for oil and gas companies. Comparing their ESG Risk Ratings is an initial step towards understanding each firm’s overall exposure to and management of ESG issues, such as health and safety and GHG emissions.

For example, Saudi Arabian Oil is using AI-powered supercomputing to make drilling more efficient and aims to cut carbon intensity.<sup>63</sup> This initiative could help tackle the emissions intensity tied to its operations, a key ESG issue. Similarly, Enbridge uses AI to optimize operations and manage energy in real time.<sup>64</sup> This approach may contribute to lowering its emissions and improving workplace safety through better monitoring and maintenance. Baker Hughes is expanding its Leucipa AI-driven software to streamline production and reduce emissions.<sup>65</sup> With overall strong management of ESG issues, it may scale these innovations and integrate them into its broader sustainability plans, mitigating ESG risks across its operations and value chain.

**Exhibit 13: Oil and Gas Companies Distributed by Overall ESG Risk Management and Exposure Scores.**



\* N = 37 top firm by market cap from most innovative healthcare industries and other notable players that have adopted AI. Dashed lines indicate thresholds of exposure (0-35=low, 35-55=medium, 55-100=high) and management (0-25=weak, 25-50=average, 50-100=strong). **Source:** Morningstar Sustainalytics

# Baker Hughes

## Serving the Global Energy and Industrial Sectors with Technology

Domicile: US  
 Industry: Energy Services  
 Subindustry: Oil & Gas Equipment  
 Ticker: NAS: BKR

### Key insights

- The firm states that its AI-driven initiatives have achieved 10-20% lower fuel costs, 20-40% emissions reductions and 15-30% less water and waste.<sup>66</sup>
- Baker Hughes' Leucipa software boosted production by 14% and added USD 6 million annually for a North American customer.<sup>67</sup>
- Its BHC3 Reliability tool delivered 20-50% less downtime 1-5% higher asset availability, and 15-25% lower maintenance costs.<sup>68</sup>

Baker Hughes operates through two segments: Oilfield Services & Equipment (OFSE) and Industrial & Energy Technology (IET). OFSE supports onshore and offshore oilfield operations across the well lifecycle, offering products like well construction tools, artificial lift systems, and subsea pressure systems. It is expanding into new energy areas, such as geothermal and carbon capture, to address net zero goals. IET provides technologies and services for energy and industrial customers, focusing on gas equipment, industrial products, and solutions for asset performance. It also leads in climate technology, with carbon capture, hydrogen and emissions management. Both segments leverage digital and hardware solutions to reduce environmental impact while enhancing efficiency, safety and reliability in energy and industrial operations.

Baker Hughes, through its 2019 joint venture with C3 AI, has advanced digital solutions for the energy sector.<sup>69</sup> The company claims that the BHC3 suite uses AI to optimize reliability, efficiency and sustainability.<sup>70</sup> It reports that tools like BHC3 Reliability reduce downtime via predictive maintenance, while BHC3 Sustainability aids emissions monitoring and energy efficiency. Baker Hughes launched the Leucipa software in 2023, deploying it in more than 20 countries. It reports that this initiative boosted its production by up to 3%, improved engineering efficiency by 75% and achieved a 14% production uplift for a customer. The company states that Leucipa can deliver on safety and emissions targets through field intelligence and complements the Cordant platform, which integrates AI and hardware to enhance yield, safety and cost efficiency.<sup>71, 72</sup>

### Exhibit 14: Baker Hughes\*

Name	Exchange	Market Cap (mil) (Daily) USD	ESG Risk Rating Assessment	Morningstar Rating Overall	Price/Fair Value	Economic Moat	Total Ret 1 Yr (Mo-End) USD
Baker Hughes Co Class A	Nasdaq - All Markets	41,708.51	Low	★★★	1.00	None	32.71

\*As of 12/13/2024

Source: Morningstar Sustainalytics

# Transition Finance: The Critical Role of Banks

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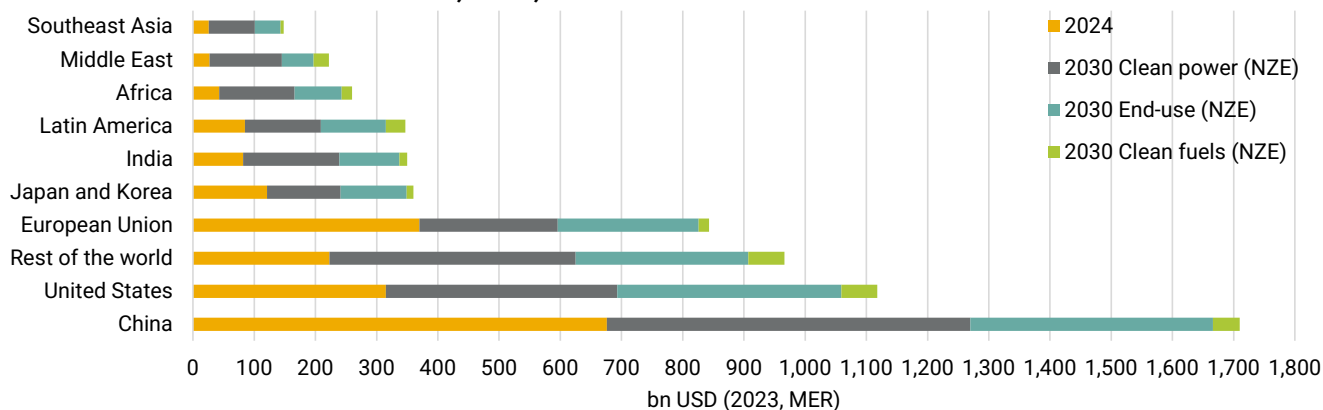
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Transition finance is the funding of activities that aim to decarbonize the economy, innovations and infrastructure projects aligned with net zero targets, and the phasing-out of activities that are inherently unsustainable.<sup>73</sup> A World Economy Forum study found that about USD 13.5 trillion in investments will be needed in hard-to-abate industries.<sup>74</sup> However, a lack of sophistication in banks’ transition finance metrics remains a concern for investors that require more transparency on transition plans to make informed decisions.<sup>75</sup> Corporate Sustainability Reporting Directive (CSRD) reporting in Europe in 2025, the development of guidance for corporate transition in several markets,<sup>76</sup> and the availability of transition finance metrics are set to improve the transparency of disclosures.<sup>77</sup> The growth of transition finance is an opportunity for banks to diversify loan book risks and safeguard their business models’ sustainability.

However, the lack of transition taxonomies and mandatory disclosure of transition plans in certain regions can lead to greenwashing risks for banks.<sup>78</sup> In 2024, the European Central Bank (ECB) found that 70% of the 95 significant banks analyzed face litigation risks, as they have committed to the Paris Agreement but their credit portfolios are not aligned, while 90% of them are misaligned and might face credit risks.<sup>79</sup> Banks’ incomplete transition finance reporting<sup>80</sup> and lack of meaningful metrics can hinder investors from making informed decisions.

In 2024, global investments in clean energy were valued at nearly twice that of oil, gas and coal, according to the International Energy Agency (IEA). Still, the IEA estimates that clean energy investments need to double by 2030 to reach net zero by 2050. In China, for example, investments in renewable power generation, grids and storage – accounting for one-third of global clean energy investments in 2024 – would need to increase from USD 676 billion in 2024 to USD 1.7 trillion in 2030 (Exhibit 15).<sup>81</sup> While more financial firms are disclosing transition finance targets and investments in clean technology, disclosures tend to be incomplete unless there is reporting on the targets as a percentage of total assets, which provide a clearer overview of banks’ ambitions and contribution to the transition. Firms that navigate the challenges of decarbonization and transition finance by enabling solutions may have a competitive advantage over their peers.

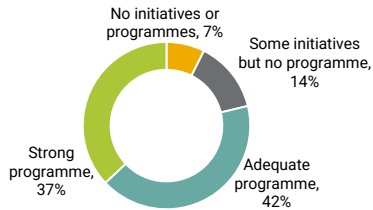
**Exhibit 15: Investments in Renewables, Grids, Batteries and End Use in Net Zero Emissions\***



\*Comparing 2024 to 2030 Scenarios. 2023 Market Exchange Rate (MER).

Source: IEA

**Exhibit 16: Distribution of Sustainable Financial Initiatives Scores Among Financial Firms in Transition Finance Sample\***



\* N = 311 companies in Regional Banks, Diversified Banks, Investment Banking & Brokerage, Asset Management & Custody Services and Financial Exchanges & Data Services

Source: Morningstar Sustainalytics

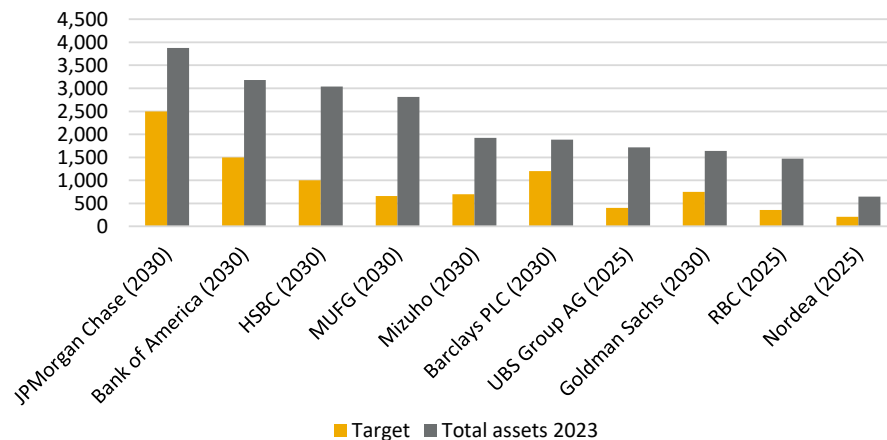
As shown in Exhibit 16, our assessment of 311 financial firms finds that only 114 (37%) disclose strong sustainable finance initiatives. These firms have set quantitative targets to finance clean energy and have a management system, such as an in-house team to manage sustainable financing. Goldman Sachs, JP Morgan Chase, HSBC, Barclays and Bank of America all have strong programs, which include a commitment to invest, on average, USD 1.4 billion by 2030 in projects related to renewables, sustainable agriculture, and carbon removal technologies, among other sustainable finance and transition activities.

Nearly 70% of Diversified Banks have a strong sustainable financial initiatives program, given their role in the global economy and ability to mobilize capital for the energy transition. Leaders are concentrated in Europe, driven mainly by the CSRD and SFDR, which have strengthened sustainability reporting. Among the 10 large banks,<sup>82</sup> Barclays and Nordea appear to have relatively ambitious targets, given their total assets compared to other banks. Although large Diversified Banks, including HSBC<sup>83</sup> and BNP Paribas,<sup>84</sup> might face NGO-led lawsuits related to greenwashing, these cases would only be material if banks face lawsuits with high legal claims or if regulators open investigations that lead to costly fines and impact their franchise.

Among our sample of companies, only RBC has been investigated by the Competition Bureau for alleged misleading environmental representation. The investigation could lead to fines, more lawsuits and reputational damage compared to its large peers that compete for a share of the sustainable finance market. Laggards, such as regional banks in Asia-Pacific (e.g., China Merchants Bank), might have green products and initiatives but do not disclose quantitative targets.

Best-in-class firms set ambitious sustainable and transition finance targets, depending on their size, and increase the credibility of their targets by reporting on their progress, breaking them down by type of sustainable financing and clearly defining the activities in scope for transition finance. Lastly, enabling early stage technology and infrastructure (e.g. electricity grids and storage) is essential for decarbonization. Leveraging public-private capital through partnerships to accelerate the development of clean technologies, such as HSBC<sup>85</sup> and Bank of America’s work with Breakthrough Energy Catalyst, leaves banks well positioned to benefit from the expected growth in clean energy by 2050.

**Exhibit 17: Sustainable and Transition Finance Targets for Select Firms, USD bn**



\*Targets based on latest disclosures; target years range from 2025 and 2030.

Source: Morningstar Sustainalytics

# Barclays

## Transition Finance Pioneer

Domicile: UK  
 Industry: Banks  
 Subindustry: Diversified Banks  
 Ticker: LON: BARC

### Key insights

- Barclays is the only bank out of the 10 large banks we analyzed that has set a credible sustainable and transition financing target of USD 1 trillion by 2030.
- The bank is targeting an additional USD 634 million in investments of its equity capital in clean tech startups by 2027 and 27% of the target is complete.
- Our outlook on the firm is that it is well-positioned to mitigate greenwashing risks compared to large industry peers.

Barclays is a UK-based commercial banking and financial services multinational. The bank operates the ring-fenced Barclays UK (30% of FY2023 revenue) and the non-ring-fenced Barclays International (70%). Barclays UK consists of the personal and business banking and Barclaycard consumer businesses, while Barclays International consists of the corporate and investment bank and consumer, cards and payments businesses. The UK and the US are its main markets, accounting for 52% and 39%, respectively, of FY2023 revenue, followed by Europe (10%). Barclays faces transition risks due to its exposure to high-emitting sectors, including energy, transportation, materials and buildings and agriculture through its lending and investments. It is also a pioneer in terms of transition financing, including financing of innovative climate solutions.

Barclays is among the banks with the highest sustainable and transition finance target<sup>86</sup> as a percentage of assets (Exhibit 17). Its transition finance framework clearly defines the scope of transition activities. It also reports on its progress against its targets, and its data has received independent limited assurance under ISAE (UK) 3000 and ISAE 3410, which adds credibility to its disclosures. While other large peers are involved in partnerships to scale climate technology, including hydrogen, carbon capture and batteries, Barclays has committed to investing USD 634 million (GBP 500 million) of its own equity capital by 2027 and has invested USD 138 million into 21 innovative companies since 2020.

Barclays’ strengthening of its sector policies regarding the expansion of fossil fuels and strong management in terms of transition finance could partly mitigate greenwashing risks and litigation better than its peers. Carbon-related controversies are decreasing, and that trend is expected to continue. Considering its track record of surpassing its targets for sustainable and transition finance, we expect the bank to achieve them by 2030.

### Exhibit 18: Barclays\*

Name	Exchange	Market Cap (mil) (Daily) USD	ESG Risk Rating Assessment	Morningstar Rating Overall	Price/Fair Value	Economic Moat	Total Ret 1 Yr (Mo-End) USD
Barclays PLC ADR	New York Stock Exchange, Inc.	49,165.23	Medium	★★★	1.17	None	91.71

\*As of 12/13/2024

Source: Morningstar Sustainability, Morningstar

# Resilient Infrastructure: A Climate-Smart Investment

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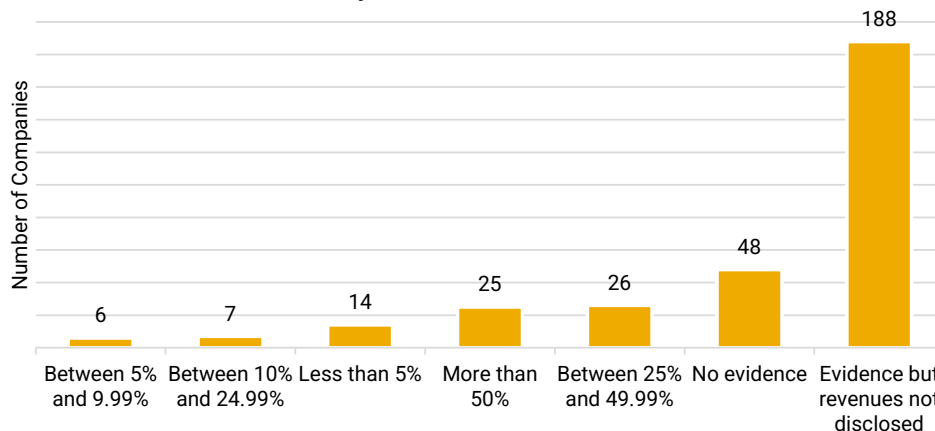
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Climate catastrophes, such as Hurricane Ian in Florida and flooding in Valencia, highlight the intensifying risks that extreme weather events have on the construction industry. Developing climate resilient buildings – especially in regions prone to extreme weather – has become a necessity for affected communities and a strategic investment that plays a vital role in saving lives.<sup>87</sup> In its 2024 Global Risks Report, the World Economic Forum anticipates that extreme weather events represent the most severe risk over the next 10 years.<sup>88</sup> According to the Intergovernmental Panel on Climate Change (IPCC), by 2030, the number of droughts could double, the frequency of heatwaves could quadruple and extreme rainstorms could increase by 50% compared to the 1980s.<sup>89</sup>

Investing in climate-resilient infrastructure is a responsible choice with regard to mitigating the social impacts of climate change and it is a financially strategic decision in terms of long-term cost savings. According to a report by the Global Commission on Adaptation, investing about 3% of upfront costs in making infrastructure more climate-resilient can yield a cost-benefit ratio of about 4:1, meaning that every dollar invested in resilience could yield four dollars in long-term benefits.<sup>90</sup> Beyond direct financial returns, climate-resilient investments also offer valuable societal benefits, such as job creation.<sup>91</sup> Nevertheless, upfront capital costs for resilient construction are higher than traditional methods, with specialized materials and advanced technologies increasing costs, which may deter some developers and create short-term financial strain.<sup>92</sup> Moreover, uncertainties about climate change leave open the possibility that even resilient buildings may still be vulnerable to unpredictable climate events, which could result in unexpected damage and rising insurance premiums.

Our research on a sample of 308 companies in the construction value chain reveals that only 25 (8%) generate more than 50% of their revenue from sustainable solutions, including those addressing buildings’ climate resilience (Exhibit 19). These companies may be well-positioned to supply the demand for climate-resistant buildings and other sustainable products and services.

**Exhibit 19: Construction Firms by Revenue from Sustainable Products & Services**



\*N = 308 companies from Morningstar Sustainalytics’ construction industries; namely, building products, construction materials, homebuilding and non-residential construction. **Source:** Morningstar Sustainalytics

## Climate Resilient Construction Market

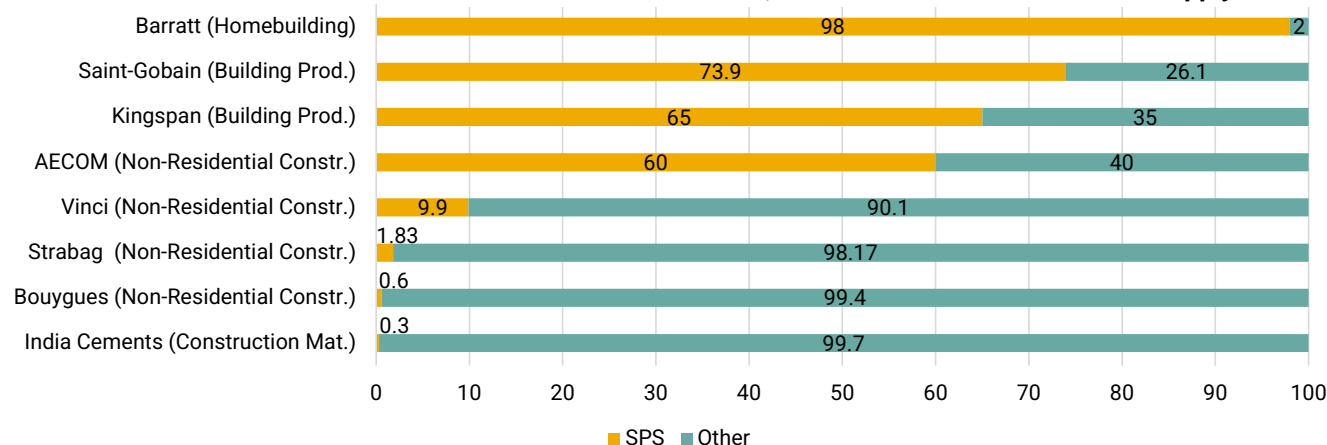
Exhibit 20 shows the percentage of revenue from sustainable products and services (SPS) among a sample of construction companies and suppliers that we selected to illustrate the spread in SPS revenue contributions across the four construction industries.<sup>93</sup> For example, India Cements, Bouygues, Strabag and Vinci generate less than 10% of their revenue from sustainable products and services. Despite being placed at different stages of the construction value chain, both cement manufacturers and firms specialized in large infrastructure projects face significant environmental risks.

Kingspan, Barratt Redrow and Saint-Gobain are industry leaders, deriving over 65% of their revenue from sustainable solutions. The two latter co-developed the so-called Energy House 2.0 (eHome2), a laboratory to test the extent to which their solutions are designed for sustainability, efficiency and comfort in different climates.<sup>94</sup> This laboratory is the largest of its kind and provides simulated wind, rain, snow and solar radiation. Barratt Redrow, which completed over 17,000 homes in 2023, integrates three low-carbon features as standard in its homes, including weather compensation, low-energy lighting, and wastewater heat recovery to reduce water demand. Moreover, the land on which the homes are developed is evaluated through strategic flood risk assessments.<sup>95</sup>

Kingspan markets insulation solutions that help to both optimize energy efficiency and increase a building’s ability to withstand extreme heat and cold. Kingspan’s QuadCore Technology, which is fire resilient, is externally audited through ongoing compliance mechanisms, which enables product traceability.<sup>96</sup>

Although AECOM is in the middle of the pack and generates 60% of its revenue from SPS, it is an interesting case because it developed many of its initial green infrastructure projects globally, such as the first LEED certified airport terminal in the US.<sup>97</sup> These projects are backed by a broad offering of climate adaptation services, including natural disaster preparedness reviews.

**Exhibit 20: Revenue % from SPS vs Other Products and Services, Construction and Construction Supply Firms**



Source: Morningstar Sustainability

# AECOM

## Climate Adaptation Services and Infrastructure

Domicile: US  
 Industry: Construction & Engineering  
 Subindustry: Non-Residential Construction  
 Ticker: NYSE:ACM

### Key insights

- In FY2023, AECOM generated USD 14.4 billion in sales, 60% of which was derived from sustainability consulting services.
- AECOM pioneered several US sustainability milestones, including the first green skyscraper and the first carbon-positive arena.<sup>98</sup>
- Its solutions include hazard mitigation planning, resilient infrastructure design and building, and vulnerability assessments.<sup>99</sup>

AECOM is one of the largest providers of design, engineering, construction and management services. It serves a broad spectrum of end markets including infrastructure, water, transportation and energy. The company is promisingly positioned for growth considering its wide scope of services to tackle climate resilience, especially as demand for climate resilient infrastructure solutions rises. It reported 60% of net revenue from sustainable solutions in FY2023, demonstrating strong market demand for its services, a trend that is likely to continue as cities and organizations around the world prioritize climate adaptation strategies.

AECOM has introduced a climate resilience framework to help organizations develop and increase their resilience to climate-related hazards; through this it has led large-scale projects.<sup>100</sup> For instance, it was contracted by the city of New York in September 2024 for the Lower Manhattan Coastal Resiliency program, which aims to reduce the borough’s risk from coastal storms and rising sea levels.<sup>101</sup>

In addition, global governments are enabling the shift toward climate-resilient infrastructure through regulatory incentives and financial support for resilience projects. For companies like AECOM, working with governments is advantageous because these initiatives guarantee a steady flow of funding for such projects. Nevertheless, with the change in administration in the US this year, AECOM could face some challenges, particularly around regulatory and policy shifts. During his first term, President Trump prioritized deregulation, including the rolling back of several environmental and climate-related policies.<sup>102, 103</sup> If this trend continues, there may be less federal support for large-scale climate resilience projects and green infrastructure initiatives, which could potentially reduce demand for services like AECOM’s.

### Exhibit 21: AECOM\*

Name	Exchange	Market Cap (mil) (Daily) USD	ESG Risk Rating Assessment	Morningstar Rating Overall	Price/Fair Value	Economic Moat	Total Ret 1 Yr (Mo-End) USD
AECOM	New York Stock Exchange, Inc.	14,771.03	Medium	★★	1.14	None	32.62

\*As of 12/13/2024

Source: Morningstar Sustainalytics, Morningstar



# The Lithium Boom Brings New Challenges

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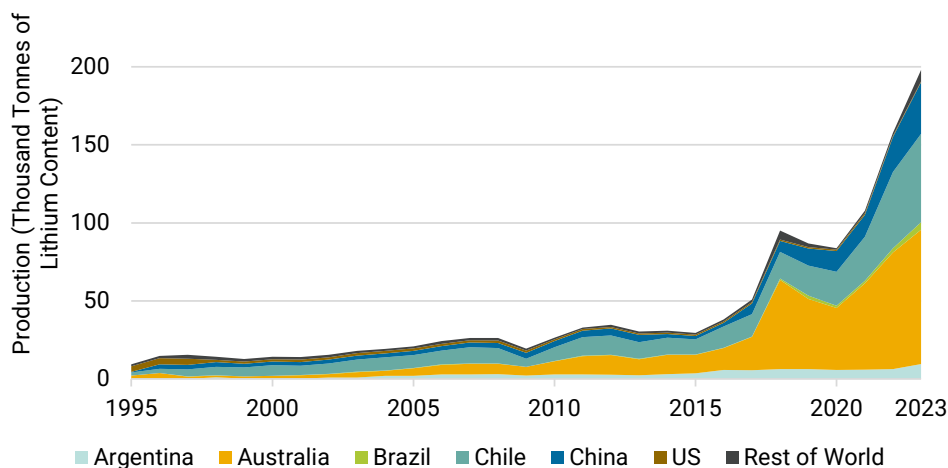
Lithium is a critical mineral in the global transition to a low-carbon economy. Clean technologies, such as solar panels and electric vehicles (EVs), are highly dependent on lithium-ion batteries for energy storage. The International Energy Agency (IEA) projects a threefold increase in demand by 2030,<sup>104</sup> outpacing production by some 500,000 tonnes by 2030.<sup>105</sup> Lithium is associated with several ESG risks, adding further challenges. Mineral deposits – both hard rock and brine – are concentrated in Chile, Australia, Argentina and China.<sup>106, 107</sup> The World Resources Institute projects that by 2050, these nations will experience high to extremely high water stress.<sup>108</sup> By 2050, 85% of refiners will be concentrated in China, Chile and Argentina, highlighting geopolitical risks.<sup>109</sup> European EV export markets are highly reliant on other countries, extractors and refiners in the supply chain to meet their high demand.

Investors can channel their capital into strategic, innovative companies – such as pure-play lithium recyclers – and producers with transparent and responsible mining practices. Supporting a diversity of players can increase resiliency in the supply chain. Investors with carbon- and water-related goals may consider opting for lithium with a lower environmental impact and lower ESG risks.

In July 2023, the EU Parliament adopted the Batteries Directive to minimize the environmental impact of batteries throughout their life cycle.<sup>110</sup> Tax supply chain due diligence or environmental programs may come to haunt companies in the future when regulations change, or severe controversies occur. Unexpected costs to conduct risk assessments, mitigate unethical practices, and remediate violations can be costly.

From 2017 to 2023, lithium production grew substantially, and global deposits now total 28 million tons.<sup>111</sup> Lithium is extracted in two main methods: hard rock and brine. In 2023, hard rock sourced lithium represented 60% of global mined lithium and is estimated to be three times as carbon intensive and twice as water intensive compared to brine sourced lithium.<sup>112, 113</sup>

**Exhibit 22: Lithium Production, 1995-2023**



Source: 2024 Energy Institute Statistical Review of World Energy.

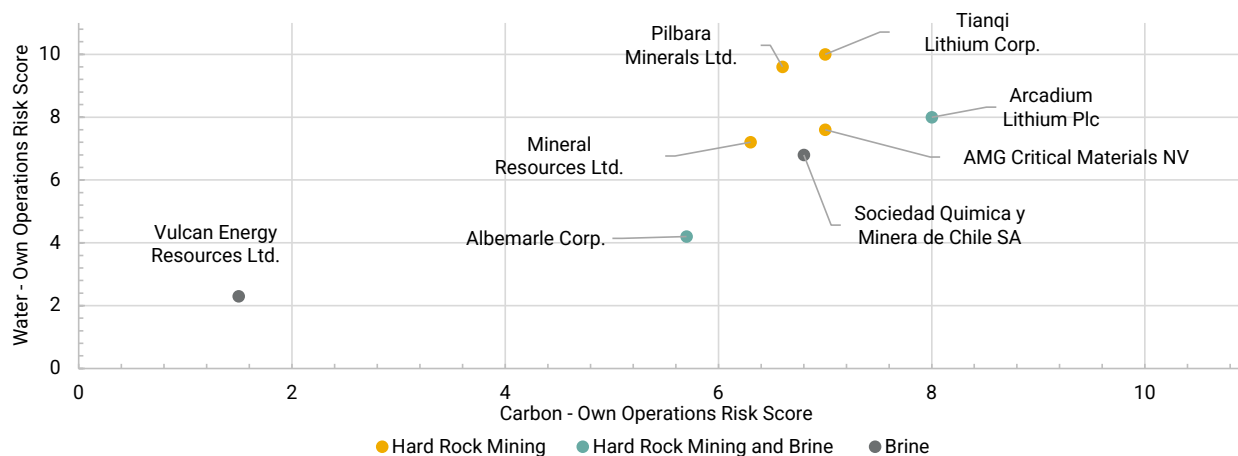
## Hard Rock Mining vs Brine Extraction: ESG Risk Drivers

Sustainalytics covers lithium producers under two industries: Diversified Metals and Chemicals. Currently, lithium is produced by hard rock mining and brine extraction. Hard rock mining (HRM) exposes companies to higher ESG risks compared to brine extraction. Additionally, mining generates tailings waste, which traditionally has had a negative impact on communities. Consequently, Community Relations, and Emissions, Effluents and Waste are material ESG issues (MEIs) for Diversified Metals companies. One example of Community Relations activated as an MEI is Sociedad Quimica y Minera de Chile SA (SQM), which has operations located near Indigenous communities, unlike other Chemicals companies.

As shown in Exhibit 23, we selected eight lithium-producing companies – using HRM, brine or both HRM and brine – to compare exposure scores for the MEIs Water Use – Own Operations and Carbon Use – Own Operations. Overall, Diversified Metals companies have a higher ESG Risk Rating Score (35.0) compared to Chemicals companies (22.1). Hard rock lithium producers, under Diversified Metals, have higher overall risk exposure (69.0) to ESG issues compared to companies in the Chemicals industry (mainly producing via brine extraction), which have lower overall risk exposure (an average of 50.6).

Only one lithium producer in our selection has a severe ESG Risk Rating score – Tianqi Lithium Corp., a China-based, vertically integrated lithium mining and processing company (Diversified Metals). Its score (47.0) is the result of high exposure (moderately above the subindustry average) and average management. Tianqi Lithium’s disclosure of human rights and community involvement is weak. Despite exhibiting a strong environmental management system, programs to manage tailings, air pollution and effluents are lacking. The company’s use of renewable energy, though, and its carbon intensity (t/million USD) and water intensity (cu m/million USD) are favorable.

**Exhibit 23: Lithium Producers’ Water Use – Own Operations and Carbon – Own Operations Risk Score**



\* Source: Morningstar Sustainalytics as of December 12, 2024. Four (4) companies’ data for Water Use – Own Operations was derived from the previous MEI “Resource Use.” Vulcan Energy Resources Ltd, Albemarle and Sociedad Quimica y Minera de Chile SA are in the Chemicals subindustry. Tianqi Lithium Corp, Arcadium Lithium Plc, AMG Critical Materials Nv, Mineral Resources Ltd and Pilbara Minerals Ltd. Are in the Diversified Metals subindustry.

# Vulcan Energy Resources

## Innovative Player with a Small Environmental Footprint

Domicile: Australia  
 Industry: Chemicals  
 Subindustry: Specialty Chemicals  
 Ticker: ASX:VUL

### Key insights

- Vulcan Energy's cost of producing per ton of lithium carbonate equivalent is expected to be one of the lowest cost lithium producers globally.
- Its proprietary VULSORB sorbent, with a 95% lithium extraction efficiency, is significantly less water and carbon intensive.
- Vulcan Energy's operations supply lithium while simultaneously generating geothermal energy, addressing both energy supply and storage needs.

Vulcan Energy Resources (Vulcan) is an Australia-based company, engaged in projects to extract and process battery-grade lithium hydroxide, in addition to producing renewable geothermal energy. Vulcan's Lionheart Project, located in the Upper Rhine Valley Brine Field bordering Germany and France, is the largest lithium and geothermal resource in Europe and a tier-one lithium project globally. Through the development of its Zero Carbon Lithium Project, the company is producing lithium, which will be extracted from geothermal brine and have a net zero carbon footprint. As of January 2023, the project is under development, with commercial production expected to start in 2025.

Of the eight companies showcased in our coverage, only two – Vulcan and SQM – are involved in exclusive brine production. Vulcan is unique in that its operations in Germany consist of a geothermal energy plant that uses a closed-loop system and a small-scale lithium extraction plant, which uses significantly less water and land than its peers.<sup>114</sup> Its process uses 1.6 tonnes of water net of products and 6 m<sup>2</sup> of land per tonne of lithium hydroxide produced.<sup>115</sup>

As production has not commenced, a life cycle assessment (LCA) estimating the company's footprint was done in 2021. Results from the LCA indicate that Vulcan will emit net zero tonnes of CO<sub>2</sub> compared to conventional lithium extraction methods that emit 10-30 tonnes of CO<sub>2</sub> per tonne of lithium hydroxide.

Vulcan is advancing the energy transition in two critical ways. By supplying lithium to major auto makers, such as LG, Renault and Stellantis, it supports the electrification of vehicles. Simultaneously, Vulcan is producing renewable energy, a critical resource that contributes significantly to global decarbonization efforts.

### Exhibit 24: Vulcan Resources Energy \*

Name	Exchange	Market Cap (mil) (Daily) USD	ESG Risk Rating Assessment	Morningstar Rating Overall	Price/Fair Value	Economic Moat	Total Ret 1 Yr (Mo-End) USD
Vulcan Energy Resources Ltd Ordinary Shares	ASX - All Markets	709.72	Low	N/A	N/A	N/A	176.82

\*As of 12/13/2024

Source: Morningstar Sustainalytics, Morningstar

# Building Responsible Food Supply Chains

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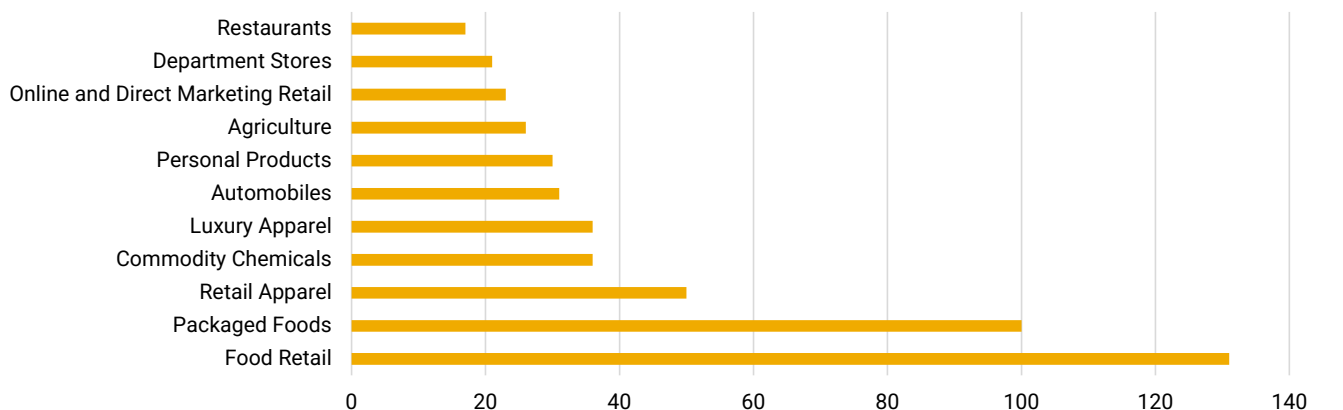
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In 2025, transparency and accountability in supply chain due diligence will remain a critical concern for Consumer Goods companies. The International Labour Organization (ILO) reported in 2022 that 27.6 million people globally were subjected to forced labor, 12% of whom were children.<sup>116</sup> Nearly one in 10 children worldwide is engaged in child labor, with 70% of cases tied to agricultural work.<sup>117</sup> Legislators across several markets are responding with stringent human rights due diligence requirements. Forward-thinking companies can address social issues within their supply chains by implementing robust due diligence initiatives to align with evolving standards.

Human rights violations expose firms to material risks, including fines, reputational harm, and operational disruptions that erode shareholder value.<sup>118</sup> Regulations such as the EU Corporate Sustainability Due Diligence Directive (CSDDD) mandate that companies identify and address human rights impacts, embedding the principle of double materiality by addressing both financial risks and societal impacts.<sup>119</sup> Non-compliance can result in fines of up to 5% of annual turnover.<sup>120</sup> Effective supply chain management helps companies meet regulatory expectations, safeguard brand integrity, strengthen resilience and secure a competitive edge in a market that increasingly values responsible sourcing.

Compared to other subindustries, Packaged Foods and Food Retail face a disproportionately high number of incidents related to the Material ESG Issue (MEI) Human Rights – Supply Chain (Exhibit 25), reflecting the elevated risks in agricultural supply chains. Together, these two industries account for 231 of 681 (34%) incidents captured under this MEI since 2014. Supply chains in these industries are often tied to systemic human rights issues, such as child labor, forced labor, and unsafe working conditions, particularly in commodities like seafood, palm oil, cacao and soya.<sup>121</sup> This issue underscores the complexity of managing supply chains in high-risk regions and highlights the growing regulatory and consumer scrutiny these risks attract, with significant potential impacts on companies’ financial performance and reputation.

**Exhibit 25: Number Human Rights – Supply Chain Incidents, Food Retailers and Packaged Foods Companies\***



\*Study period: 18 November 2014 to 18 November 2024, initial incidents only.

Source: Morningstar Sustainalytics

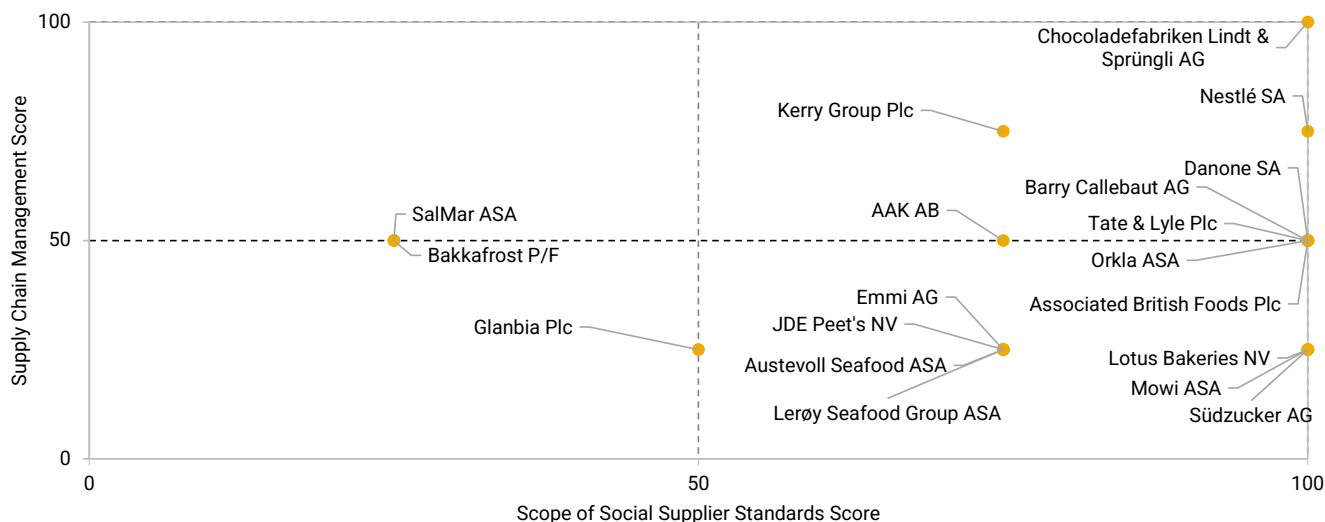
## Bridging the Gap Between Policy and Practice

Investors can assess regulatory readiness and social risk using Sustainalytics' ESG Risk Ratings framework. Exhibit 26 shows our assessments of the supply chain management approaches of all Packaged Foods companies domiciled in Europe, within Morningstar's Global Equities Large-Mid Cap Index.

Firms in the lower left quadrant lack both a solid social supplier policy and a coherent supply chain management program. Seafood companies, including SalMar ASA and Bakkafrost P/F, demonstrate poor performance in regard to both indicators. Seafood is frequently tied to incidents of unsafe labor practices, wage violations, and excessive working hours.<sup>122, 123</sup> Most companies in the sample fall within the lower right quadrant, marked by adequate policies paired with a lack of enforceable initiatives, resulting in unmanaged risk.

Companies in the top right quadrant leverage industry initiatives, such as the International Cocoa Initiative,<sup>124</sup> the Roundtable on Sustainable Palm Oil<sup>125</sup> and the Roundtable on Responsible Soy,<sup>126</sup> to better manage deep rooted systemic human rights risks by leveraging collective standards, improving transparency, and enforcing ethical practices. Chocoladefabriken Lindt & Sprüngli AG (Lindt) demonstrates the strongest management scores among its peers. The firm has a robust human rights policy for suppliers and actionable initiatives to support it. Despite an August 2022 controversy linked to child labor in its Ghana cocoa supply chain – a challenge faced by most cocoa companies due to the nature of the issue – Lindt remains transparent and proactively collaborates with local communities to create tailored mitigation and remediation programs.<sup>127, 128</sup>

**Exhibit 26: Comparing Supply Chain Management Approaches of Packaged Foods Companies in Europe**



Source: Morningstar Sustainalytics

# Chocoladefabriken Lindt & Sprüngli

## Protecting Children's Rights Through Ethical Cocoa Sourcing

Domicile: Switzerland  
 Industry: Food Products  
 Subindustry: Packaged Foods  
 Ticker: (SWX: LISN)

### Key insights

- Lindt's Human Rights – Supply Chain Management score of 90 (compared to a sample average of 55.9) reflects its strong policy enforcement.
- The company has an active Child Labor Monitoring and Remediation System in high-risk cocoa regions, including educational programs.
- Lindt posted 9.3% organic sales growth in Europe for H1 2024 and aims to source 100% sustainable cocoa by 2025.

Chocoladefabriken Lindt & Sprüngli (Lindt) is a Swiss-based manufacturer of premium chocolate, with brands such as Lindt, Lindor, Ghirardelli, Russell Stover, Whitman's and Caffarel. The company has made significant strides in its sustainability practices and is continuously improving its program.<sup>129</sup>

Lindt's robust due diligence program is built on its comprehensive and legally binding supplier code of conduct.<sup>130</sup> As part of the German Initiative on Sustainable Cocoa,<sup>131</sup> Lindt has designed a roadmap that includes targets to achieve first mile traceability for 100% of its cocoa products from farming households covered by a Child Labour Monitoring and Remediation System (CLMRS). This system comprises field visits, supplier engagement and education for farmers and their families.<sup>132</sup> In 2023, the company extended its due diligence efforts to include mandatory human rights training for employees and suppliers to ensure adherence to international standards.<sup>133</sup> Additionally, it performs assessments on its tier two suppliers.<sup>134</sup> From 2019 to 2023, the percentage of Lindt's cocoa beans sourced sustainably increased from 56% to 72.3%.<sup>135</sup> In addition to cocoa, Lindt's audit and remediation programs are focused on 11 other priority commodities with individual targets.

Lindt maintains a strong financial outlook, reporting growth across all its key regions in the first half of 2024, with an organic sales increase of 9.3% in Europe and 10% in the rest of the world. Along with its target to source 100% sustainable cocoa by 2025, this reflects Lindt's strong preparedness for upcoming regulatory and compliance risk.<sup>136</sup>

### Exhibit 27: Chocoladefabriken Lindt & Sprüngli AG\*

Name	Exchange	Market Cap (mil) (Daily) USD	ESG Risk Rating Assessment	Morningstar Rating Overall	Price/Fair Value	Economic Moat	Total Ret 1 Yr (Mo-End) USD
Chocoladefabriken Lindt & Spruengli AG	SIX Swiss Exchange	25,714.91	Medium	★★	1.04	Wide	-6.47

\*As of 22 November 2024

Source: Morningstar Sustainalytics, Morningstar

# Unpacking a Plastic-Less Future in Consumer Goods

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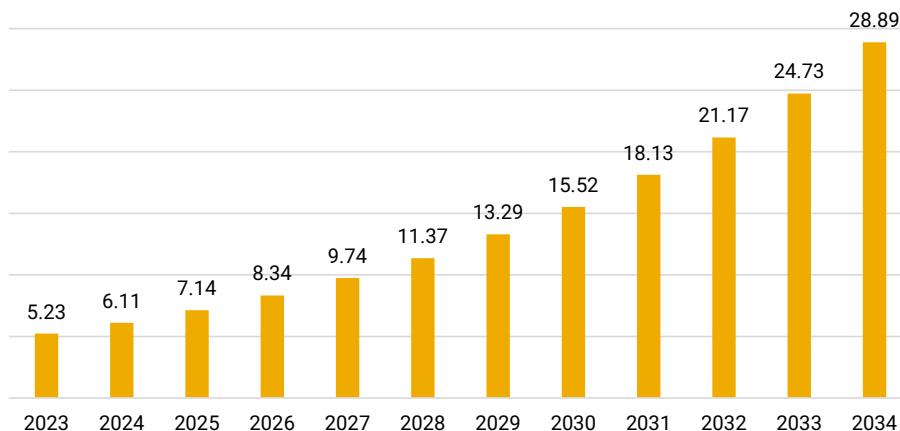
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In 2022, 175 countries voted to adopt the Global Plastics Treaty (GPT),<sup>137</sup> expressing their commitment to reduce plastic use and production and to adopt a polymer premium, charging fees for manufactured plastic products.<sup>138</sup> In April 2024, 160 financial institutions, representing USD 15.5 trillion in combined assets, echoed their support of a similar binding instrument.<sup>139</sup> With the GPT’s implementation in 2025, now is an opportune time for investors to consider how this treaty may impact plastic-reliant industries. Levies and bans on single-use plastics (SUPs), and consumer demand for an increase in recycled plastics or non-plastic packaging alternatives could lead to higher operational costs, supply chain disruptions and margin pressures for slow adapters. Legal and compliance risks for non-abiding firms are also increasing in key markets such as the EU<sup>140</sup> and North America.<sup>141</sup>

Fast-moving consumer goods (FMCG) firms (e.g., packaged foods, personal products) that invest in advanced technologies, such as chemical recycling to produce more post-consumer recycled (PCR) packaging<sup>142</sup> or venturing in biodegradables such as cornstarch or bamboo packaging<sup>143</sup> to replace SUPs, are likely to see increased demand and growth. Companies that proactively reduce their plastic footprint, through packaging innovation or 3R (reduce, reuse, recycle) initiatives could see higher demand, increased brand loyalty and be able to employ premium pricing. Firms could also tap into government support to tackle plastic waste, such as the European Investment Fund (EIF)’s EUR 50 million circular plastics funding and the Global Environment Facility (GEF)’s USD 107 million investment in food and beverage SUPs in 15 Global South countries.<sup>144, 145</sup>

According to Precedence Research, the global market size for plastic alternative packaging was USD 6.11 billion in 2024 and is expected to increase to USD 28.89 billion by 2034, at a 16.81% CAGR over the next 10 years. Considering regulatory developments and the consumer shift towards more sustainable packaging, adopting plastic alternatives could provide FMCG companies a competitive advantage.

**Exhibit 28: Plastic Alternative Packaging Market Forecast, 2024-2034 (USD bn)\***



\*Includes Starch or Cellulose-Based, Polylactic Acid (PLA) Alternatives

Source: Precedence Research<sup>146</sup>

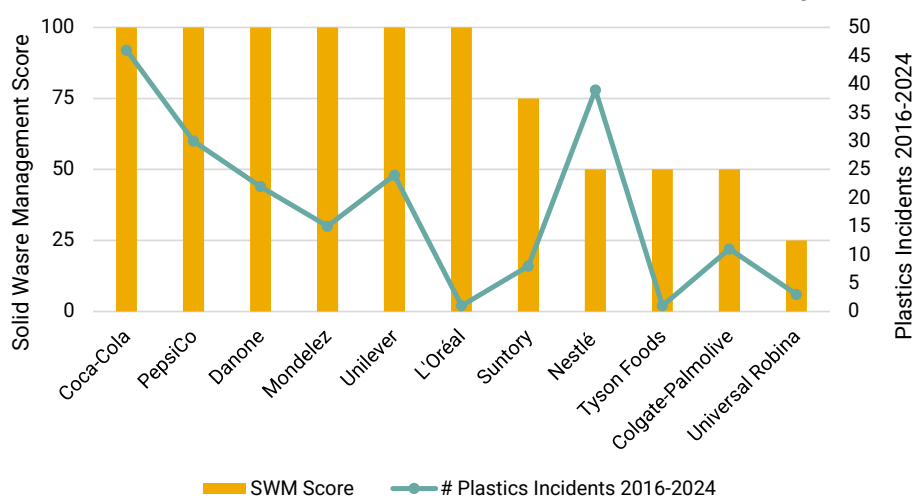
## Plastics Controversies and Solid Waste Management

The OECD reported that plastic waste generated worldwide in 2019 totaled 353 million tonnes – more than twice the level generated in 2000. Of this amount, 52% of plastic waste came from packaging and consumer goods.<sup>147</sup> NGO reports, brand audits, and a recent scientific study<sup>148</sup> have called out FMCG firms for contributing to global plastic waste pollution.

Exhibit 29 below shows that even companies that display strong solid waste management (SWM), with policies and robust 3R initiatives, such as Coca-Cola, PepsiCo, Danone, Mondelez, and Unilever, have been involved in plastics-related controversies from 2016 to 2024. In May 2021, Coca-Cola, PepsiCo, and Mondelez formed a EUR 1.2 million fund aimed at making flexible plastic recycling accessible for retailers and consumers.<sup>149</sup> Still, Coca-Cola has the most plastic-related incidents in this sample, followed by Nestlé, owing primarily to the volume of their output. Coca-Cola produces approximately 134 billion PET bottles annually<sup>150</sup> while Nestlé’s product portfolio has over 10,000 types of packaged food and beverages.<sup>151</sup> In November 2023, both companies and Danone were defendants in a legal complaint filed with the European Commission over misleading claims on the recyclability of their PET plastic water bottles sold in Europe.<sup>152</sup> In the US, FMCG companies face a growing number of plastics-related lawsuits at the federal and state level.<sup>153</sup>

By redesigning its food packaging, Mondelez reduced 1,000 tonnes of virgin plastic from its supply chain in 2023<sup>154</sup> and it plans to roll out 80% recycled plastics packaging for 300 million Cadbury products in 2025.<sup>155</sup> L’Oréal, which has the fewest plastics incidents (i.e., one) and one of the highest SWM scores, has set virgin plastics reduction targets and increased its use of recyclable and recycled PET packaging. Its peers have similar initiatives, but the high demand/low supply of PCR packaging and technological barriers pose challenges to the industry’s shift towards plastic-less production.

**Exhibit 29: SWM Scores and Plastics Incidents for Select FMCG Companies**



Source: Morningstar Sustainability



# L'Oréal SA

## Personal Products Leader in Plastic Waste Mitigation

Domicile: France  
 Industry: Household Products  
 Subindustry: Personal Products  
 Ticker: PAR:OR

### Key insights

- L'Oréal considers eco-design in its packaging through initiatives in its own 3R (reduce, replace, recycle) strategy, which has been in place since 2007.
- Through its L'Oréal for the Future program, the company set a 2030 target to use 100% recycled or bio-based plastics for its product packaging (at 32% as of 2023).
- In 2023, it contributed EUR 50 million to the Circular Innovation Fund and partnered with biotech firm Carbios to develop enzymatically recycled plastic.

Domiciled in France, L'Oréal derives revenue from beauty products including skincare (40% of 2023 sales), makeup (17%), haircare (21%), fragrance (12%), and hygiene products (10%). The company's main markets are Europe (24% of 2023 sales), North America (29%) and North Asia (29%). With 37 brands, including Lancôme, Maybelline, Kiehl's, L'Oréal Paris and Garnier, the company's products are sold mainly in plastic packaging, as well as cardboard, metal and glass.<sup>156</sup> In 2023, L'Oréal's plastic packaging use totaled more than 170,000 tonnes.

Since 2007, L'Oréal has adopted eco-design packaging for its products, with its own 3R (reduce, replace, recycle) strategy. Its L'Oréal for the Future sustainability program, launched in June 2020, sets the group's 2030 targets, including the use of 100% recycled or bio-based plastics for its product packaging. In 2023, the company used 32% recycled and bio-based plastics and is expected to reach 50% by 2025.<sup>157</sup> Through the program, it invested EUR 50 million in the Circular Innovation Fund (CIF), which targets companies involved in circular packaging solutions and recycling and waste innovations.<sup>158</sup> Moreover, L'Oréal has set an interim target for all its plastic packaging to be reusable, refillable, recyclable, or compostable by 2025; in 2023 it was at 44% of the target.

In 2023, L'Oréal partnered with French biochemistry company Carbios to develop the first cosmetic bottle from enzymatically recycled plastic, an innovation that enables all types of PET waste to be recycled, as well as the production of 100% recycled and recyclable PET products.<sup>159</sup> Despite several promising initiatives, the lack of appropriate recycling infrastructure to boost plastic packaging circularity remains a major hurdle, not only for L'Oréal, but for the entire industry.<sup>160</sup>

### Exhibit 30: L'Oréal SA\*

Name	Exchange	Market Cap (mil) (Daily) USD	ESG Risk Rating Assessment	Morningstar Rating Overall	Price/Fair Value	Economic Moat	Total Ret 1 Yr (Mo-End) USD
L'Oréal SA	Euronext - Euronext Paris	192,426.95	Low	★★★★	0.84	Wide	-24.71

\*As of 12/13/2024

Source: Morningstar Sustainalytics, Morningstar

# Tapping into the Growth of the Alcohol-Free Market

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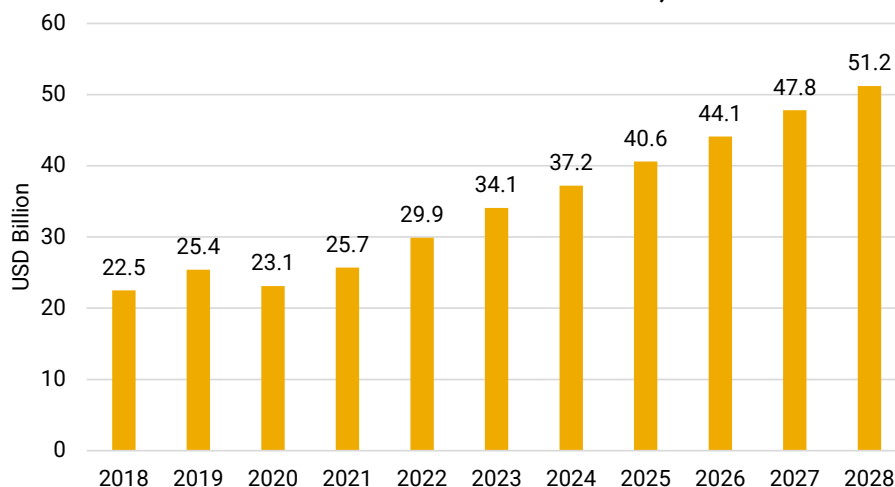
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The no- and low-alcohol global market was valued at USD 13 billion in 2023, a 62% increase since 2018, according to the International Wine and Spirits Record (IWSR), a global drinks data provider.<sup>161</sup> The non-alcoholic beer and cider segment is leading the market with 72% of the category’s volume in 2023.<sup>162</sup> As shown in Exhibit 31, global sales of non-alcoholic beer could reach USD 40.6 billion in 2025, almost double the value that was recorded in 2018.<sup>163</sup> The growth is not limited to beer; non-alcoholic spirits are projected to increase at a CAGR of 8.6% (2024-2030),<sup>164</sup> while non-alcoholic wines are expected to increase at an 11.6% CAGR (2024-2031).<sup>165</sup>

The non-alcoholic market is still considerably smaller than alcohol, but its growth brings opportunities to the alcohol industry, which has faced challenges in recent years driven by tight consumer spending and competitive pressure. Still, the industry is undervalued; the average share price in our sample of 26 Beer, Wine and Spirits (BWS) firms is trading 20% below Morningstar’s fair price value as of November 2024.<sup>166</sup>

BWS firms that are investing in the no- and low-alcohol<sup>167</sup> space are well positioned to experience tailwinds from the rapid growth of this market. The demand for non-alcoholic alternatives also presents an opportunity for BWS companies to mitigate the inherent risks of alcohol<sup>168</sup> while avoiding increasing regulatory and compliance risks. Aligned with the WHO’s Global Alcohol Reduction Action Plan 2022-2023, the European Commission has set a goal to achieve a 10% reduction in harmful alcohol use by 2025.<sup>169</sup> Policy proposals in the works include increasing excise taxes on alcoholic beverages, tightening restrictions on the sale of alcohol in public settings, such as during sporting events, and requiring health warning labels on alcoholic products.<sup>170</sup> Considering these risks, companies investing in strong programs to reformulate their products and include non-alcoholic alternatives as a key aspect of their long-term business strategy could gain from the expansion of the no- and low- alcohol categories.

**Exhibit 31: Estimated Global Sales of Non-Alcoholic Beer, 2018-2028**



Source: Statista Market Insights

### Assessing BWS Alcohol-Free Strategies

To gauge the preparedness of BWS firms to tap into this growing market while mitigating relevant ESG risks, we assess their product health policy to determine whether they have a formal policy recognizing the negative health consequences of their products and commit to provide more responsible options to consumers. We also assess their nutrition and health programs by evaluating the strength of their efforts to introduce healthier alternatives to their portfolio or reformulate existing products. For BWS companies, we look for initiatives focused on introducing non-alcoholic alternatives.<sup>171</sup> Strong programs include quantitative targets and monitoring efforts to expand non-alcoholic brand extensions.

As shown in Exhibit 32, over half (15 of 26) of this sample of BWS firms demonstrate weak performance on both indicators (lower left quadrant). Most of these companies are distillers or wine producers (10 of 15), reflecting technological constraints in the development of non-alcoholic wine and spirit alternatives that meet taste expectations.<sup>172</sup> While some firms have started introducing non-alcoholic alternatives, such as Diageo, the producer of Tanqueray 0.0%,<sup>173</sup> companies in this quadrant lack evidence of targets related to introducing healthier products, which is important for integrating non-alcoholic alternatives into their long-term business strategy.

Just four companies fall into the stronger performance quadrant (upper right). Two of these companies are clear standouts: Asahi Group Holdings (Asahi) and Heineken NV (Heineken) have comprehensive nutrition and health programs, along with very strong product health policies. Dutch brewer Heineken aims to have a zero-alcohol option for two strategic brands in 90% of its markets by 2025.<sup>174</sup> Asahi, a leading Japanese brewer, has set several targets to expand its no- and low-alcoholic portfolio, and we note that it is one of the only companies in the sample that provides some transparency into its non-alcoholic beer revenue.

**Exhibit 32: BWS Companies Distributed by Product Health Policy and Nutrition and Health Program Scores**



\* N = 26 BWS companies, higher scores indicate stronger management

Source: Morningstar Sustainalytics, November 2024

# Asahi Group Holdings

## Alcohol-free innovation

Domicile: Japan  
 Industry: Food Products  
 Subindustry: Beer, Wine and Spirits  
 Ticker: TKD: 2502

### Key insights

- Asahi has aligned its alcohol-reformulation strategy with the WHO's Global Alcohol Action Plan, 2022-2030.<sup>175</sup>
- The firm aims to achieve a 20% sales composition ratio of non-alcohol and low-alcohol beverages to major alcohol beverage products by 2030.<sup>176</sup>
- It reported 23.9% year-over-year revenue growth for its no-alcohol beer AND ready to drink segment in Japan for Q3 2024.<sup>177</sup>

Asahi Group Holdings (Asahi) is a leading brewer in Japan with an estimated 36.5% market share by volume in the country's beer and beer-like market. It first launched a zero-alcohol option in 2012 and has since been expanding its portfolio of no-alcohol alternatives. Its recent global brand launches include Asahi Super Dry 0.0%, Peroni Nastro Azzurro 0.0% and Kozeel 0.0%.<sup>178</sup> Asahi has established clear targets related to product reformulation. Globally, it aims to achieve a 20% sales composition ratio of non-alcohol and low-alcohol beverages to its major beverage products by 2030. In Europe, it is even more ambitious, aiming to achieve a 20% share of just non-alcoholic products in its portfolio by 2030. To meet these goals, Asahi's R&D activities are focused on developing and patenting de-alcoholization technologies to meet consumer taste and quality expectations.<sup>179</sup> Moreover, Asahi is investing in alcohol-free aligned business ventures, such as The Zero Proof, an online retailer of non-alcoholic beer, wine and spirits.<sup>180</sup>

Asahi also commits to display age restrictions on alcohol consumption on all products, including its non-alcoholic beverages sold under that brand. This initiative is especially important as the WHO warns the fragmented governance around the labeling and marketing of no- and low- alcohol products could mislead minors, bringing potential risks around marketing practices.<sup>181</sup> Asahi has aligned its strategy with the International Alliance for Responsible Drinking by committing to ensure alcohol-free brand extensions are not marketed to minors.<sup>182</sup> The firm reported 23.9% year over year revenue growth for its non-alcoholic beer/ready to drink segment in Q3 2024,<sup>183</sup> outpacing the expected 5% CAGR revenue at-home growth of the global non-alcoholic beer market from 2024 to 2028.<sup>184</sup> It has a strong strategy to create new drinking opportunities, which goes well beyond non-alcoholic product development, positioning it well to capitalize on the growth of the alcohol-free market, while also mitigating potential challenges that may arise in the future.

### Exhibit 33: Asahi Group Holdings\*

Name	Exchange	Market Cap (mil) (Daily) USD	ESG Risk Rating Assessment	Morningstar Rating Overall	Price/Fair Value	Economic Moat	Total Ret 1 Yr (Mo-End) USD
Asahi Group Holdings Ltd	Tokyo Stock Exchange	16,241.97	Low	★★★★	0.75	Narrow	-9.42

\*As of 12/13/2024

Source: Morningstar Sustainability, Morningstar

# Endnotes

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<sup>2</sup> "US Data Centre Announcements Tripled in First Half of 2024." Financial Times. Published October 2024. <https://www.ft.com/content/b4917cc0-05c7-434b-9c30-aa72fc06b614>

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<sup>6</sup> Note: Companies could see increased water usage, as many data centers require water for cooling techniques. This could be a significant concern for companies operating data centers in hotspot locations which are exposed to greater water risk.

<sup>7</sup> "Electricity 2024: Analysis and Forecast to 2026." International Energy Agency (IEA). Published January 2024. <https://iea.blob.core.windows.net/assets/6b2fd954-2017-408e-bf08-952fdd62118a/Electricity2024-Analysisandforecastto2026.pdf>

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<sup>11</sup> Wong, W. "Data Center Regulation Trends to Watch in 2025." Data Center Knowledge. Published November 2024. <https://www.datacenterknowledge.com/regulations/data-center-regulation-trends-to-watch-in-2025>

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<sup>15</sup> "2024 Environmental Sustainability Report." Microsoft. Published May 2024.

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<https://www.datacenterknowledge.com/management/google-is-switching-to-a-self-driving-data-center-management-system>

<sup>19</sup> Note: Historical FY2020 data for Meta and Alphabet has been revised (previously estimates only) and will be updated in Sustainalytics products in Q1 2025.

<sup>20</sup> "2023 ESG Report." IBM. Published April 2024. <https://www.ibm.com/downloads/documents/us-en/10a99803d62fd3a5>

<sup>21</sup> Note: Hot/cold aisle containment is a strategy used in data centers to improve energy efficiency and reduce cooling costs. It involves organizing server racks in a way that achieves the greatest separation of hot exhaust air and cold intake air.

<sup>22</sup> Gooding, M. "AI-Powered Heat Monitoring System Could Help Cut Data Center Emissions." Data Center Dynamics (DCD). Published February 2024. <https://www.datacenterdynamics.com/en/news/ai-powered-heat-monitoring-system-could-help-cut-data-center-emissions/>

<sup>23</sup> "IBM Brings the Speed of Light to the Generative AI Era with Optics Breakthrough." IBM. Published December 2024. <https://newsroom.ibm.com/2024-12-09-ibm-brings-the-speed-of-light-to-the-generative-ai-era-with-optics-breakthrough>

<sup>24</sup> "2023 ESG Report." IBM. Published April 2024. <https://www.ibm.com/downloads/documents/us-en/10a99803d62fd3a5>

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<sup>51</sup> With regard to product governance risks, outliers such as Philips and Johnson & Johnson have historically faced, and continue to face, significant controversies related to product quality and safety. Such controversies have resulted in substantial regulatory scrutiny and a series of product liability lawsuits, which have had material impacts on their operations. Companies working on addressing existing quality management issues may be less well positioned to handle new and complex quality risks brought by emerging digital technologies, including AI, at least for affected product categories.

<sup>52</sup> On the other hand, from the selected sample, 23% (8/35) of sector companies showcase relatively lower product governance risks (scores between 0-4) potentially making them better prepared and positioned to mitigate additional safety concerns brought by AI integration. Such companies usually go beyond regulatory compliance and certify their operations to best practice quality standards such as ISO 9001 or 13485 and cybersecurity standards such as HITRUST or ISO 27001, while demonstrating strong trial data transparency.

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grows, transparency about these ingredients will be key for companies to meet consumer expectations for health and quality.

[Are non-alcoholic drinks healthy? - BHF](#)

[Healthier drink choices | Diabetes UK](#)

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