

Vanguard Global Environmental Opportunities Stock Fund

Annual Sustainability Report | July 2024



Vanguard Global Environmental Opportunities Stock Fund seeks to provide long-term capital appreciation by investing in a highly selective portfolio of companies that the advisor, Ninety One North America, Inc. (Ninety One) deems to be positive contributors to environmental change involved in the process of decarbonization. The Annual Sustainability Report assesses the fund's sustainability profile as it relates to its investment strategy. In addition to providing transparency to investors on how the fund's holdings are contributing to environmental change and decarbonization, sustainability reporting can help hold the advisor accountable to the investment strategy.

Ninety One reports on contributions to decarbonization at the strategy level. This report assesses the portfolio holdings of Vanguard Global Environmental Opportunities Stock Fund and other Ninety One-managed mandates that use the same strategy.

Note: The views in this report represent those of Ninety One North America, Inc., and not necessarily those of Vanguard.

Vanguard's externally managed portfolios are managed by unaffiliated third-party investment advisors, and proxy voting and engagement for those portfolios are conducted by their respective advisors.



—
Investing for a
world of change

Global Environment

Sustainability Report 2024

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About this report

This report provides an assessment of the impacts made by companies in the Global Environment portfolio as at end-2023. It also assesses portfolio companies on other aspects of sustainability, including the extent to which we believe they are likely to benefit from growth driven by decarbonisation. Companies' impacts are measured via our decarbonisation key performance indicator (KPI), carbon avoided. Please note that we do not include assessments for holdings sold during the year, namely Brambles and Analog Devices. Technical terms are explained in the glossary towards the end of the report.



Welcome

Despite an escalation of extreme weather events, sentiment surrounding the pace of the energy transition has rarely been as negative – undermined by a confluence of higher interest rates, geopolitical tensions and an increasingly populist policy backdrop.

And yet the shift to a decarbonised world has continued. Clean-energy investment in 2023 is likely to have hit a record US\$2 trillion, almost twice the sum invested in fossil fuels. The big driver was China, where investment was up a whopping 75% year-on-year¹. Having built a low-cost decarbonisation supply chain, the country is ready to export. For (politically) understandable reasons, the US is reluctant to open its borders. But it has not opted for ‘no transition’, rather for a slower, more expensive one with home-grown clean-energy jobs.

Elsewhere, there have been encouraging signs. Solar installations in Vietnam have tripled in the last few years², while in Thailand electric cars now account for c.17% of auto sales, more than double the rate in the US³. These datapoints matter because they give cause for optimism on the biggest question in climate: whether emerging markets, which constitute the vast majority of emissions growth, will be able to transition to a low-carbon economy. But it is early days. These green shoots must be nurtured carefully to put the developing world securely on a net-zero pathway.

Deirdre Cooper
and **Graeme Baker**,
Co-Portfolio Managers,
Global Environment strategy



1. IEA 2024.
2. Rocky Mountain Institute. The Cleantech Revolution. June 2024.
3. Citigroup research.

**We also saw some very pleasing developments in our portfolio:**

- 100% of our companies now report Scope 1 and 2 emissions. When we launched the strategy in 2019, only 52% did so.
- 79% report some categories of Scope 3 emissions and 63% report all categories, compared to 32% and 16%, respectively, at launch.
- 67% report carbon avoided, vs. 28% in 2019.
- 87% reduced Scope 1 and 2 emissions intensity year-on-year, having made their own operations more efficient and lower carbon.
- 92% (of those that report it) reduced Scope 3 intensity year-on-year, meaning their supply chains and their products in use have become more efficient and lower carbon.
- 69% (of those that report it) increased their carbon avoided year-on-year. That is, they sold more products that help to avoid carbon, and those products were significantly better in terms of emissions than the baseline.
- 50% now have externally verified science-based emissions reduction plans.

All of these metrics have improved over the almost six years we have been running the strategy⁴, demonstrating that engaging with companies to encourage them to report emissions can help to drive real-world change. The figures may not increase every year, particularly as we add new positions. But they highlight the progress that can be made, and how much more there is still to do.

As shown in the Sustainability data dashboard section, Scope 1, 2 and 3 emissions intensity and carbon avoided also improved at the portfolio level. As well as real-world progress from the underlying companies, this is also driven by changes in position sizing and portfolio composition.

Reading the news, it sometimes seems as if “the best lack all conviction, and the worst are full of passionate intensity”. But the data tells a different story, one that shows the potential for high-performing and competitively priced technologies to accelerate decarbonisation, and for companies to change for the better.

We hope you find this report informative and look forward to keeping you updated on the portfolio in the year ahead.

4. We weren't able to show improvement metrics in our first sustainability report because we didn't have enough reported data to track.



Highlights

This report includes our first sustainability assessments of three companies that were added to the portfolio:

Carlisle
Companies

Industrie
de Nora

Power Grid
of India

Please note that Novozymes is now **Novonosis**.

Key portfolio carbon metrics

- As noted in the Welcome section, **69% of portfolio companies that report increased their carbon avoided year-on-year**. That is, they sold more products that help to avoid carbon, and those were significantly better in terms of emissions than the baseline. Carbon avoided is the key performance indicator (KPI) we use to measure companies' contribution to decarbonisation.
- In terms of their own emissions, **nearly 90% reduced Scope 1 and 2 emissions**; i.e., direct emissions from owned and controlled sources and indirect emissions from purchased energy.
- Approximately half of portfolio companies have committed to science-based targets for emissions reduction, unchanged from the previous year. **We maintain our ambition for 100%** to have done so by 2030.

We engaged with portfolio companies multiple times in 2023, adding up to **95 engagements** in total.

We engaged on a broad range of topics throughout the year, the most common of which were:

Climate change
(43%)

Work practices
(18%)

Biodiversity
(8%)

We cast **464 proxy votes** during the year.

- We voted 'abstain' or 'against' on at least one voting item at just over half of meetings (52%).
- This included on items relating to executive compensation and incentives, the election of board members, auditor approval and equity issuance.



A guide to the dashboard

The 'Sustainability dashboard' provides aggregated data for the Global Environment portfolio as at end-December 2023.

Emissions and carbon footprint

The metrics in this section focus on how companies are reducing their own emissions and/or contributing to the transition to a low-carbon economy via their products and services.

We monitor companies' progress via:

Reporting

We track the types of emissions that companies report (see [Glossary](#)). Comprehensive carbon reporting is an essential first step for developing effective climate strategies.

Carbon footprint

A measure of the total volume of greenhouse gases emitted by a company. See the glossary for an explanation of the types of emissions we track (Scope 1, 2 and 3). The change in carbon avoided is shown in a subsequent chart.

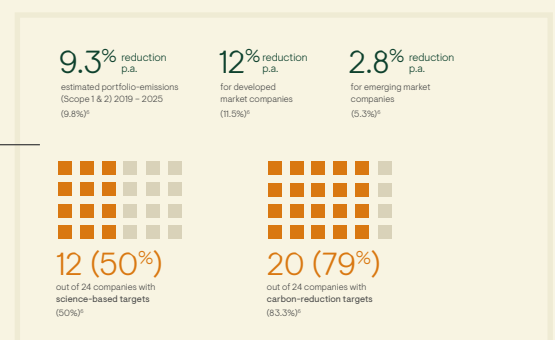
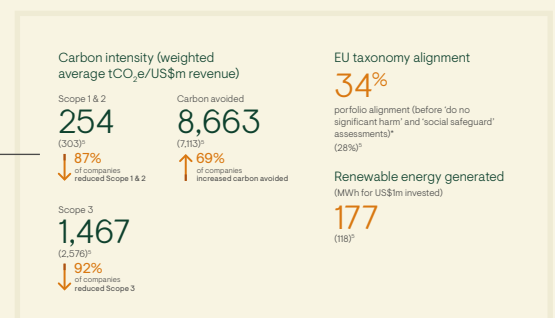
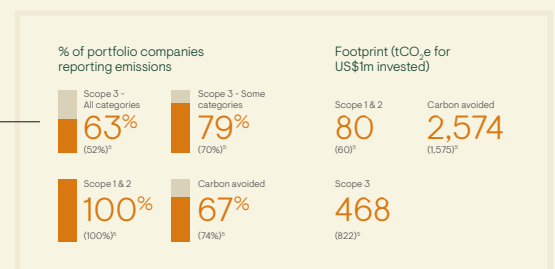
We also report **carbon avoided** by portfolio companies, a measure of the extent to which their products or services avoid emissions relative to the status quo products or services. Finally, we report the percentage of companies' revenues (or other appropriate metric) that are aligned with the **EU Taxonomy**, a classification system that aims to identify environmentally sustainable economic activities, as well as total renewable energy generated.

Carbon intensity

A measure of emissions per unit of revenue (or sales), which helps to track progress in reducing emissions over time and to compare companies of different sizes. The change in emissions intensity is shown in subsequent charts, for companies with and without science-based targets.

Net-zero ambitions

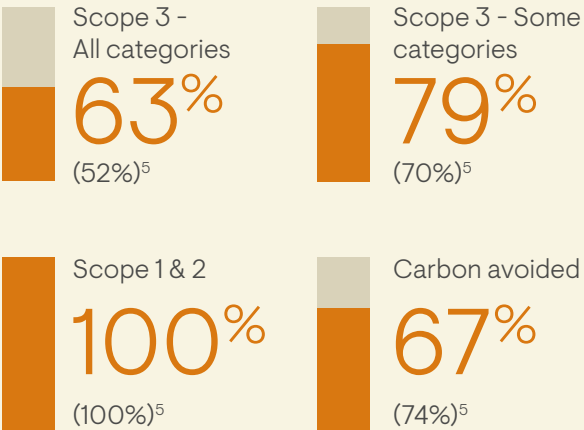
These metrics estimate the trend in annual emissions reduction (Scope 1 and 2) on average across the portfolio in the five years to end-2025, split between companies in developed and emerging markets. We also show the percentage of companies that have committed to science-based targets. Our ambition is for all portfolio companies to have done so by the end of this decade.



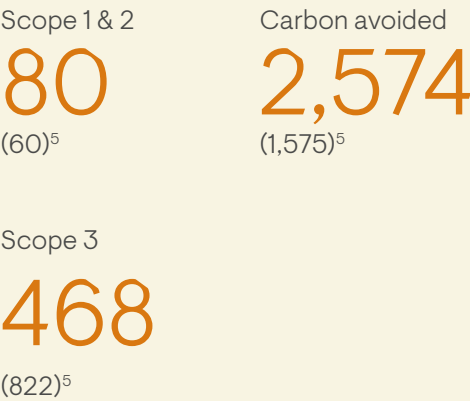


Sustainability dashboard

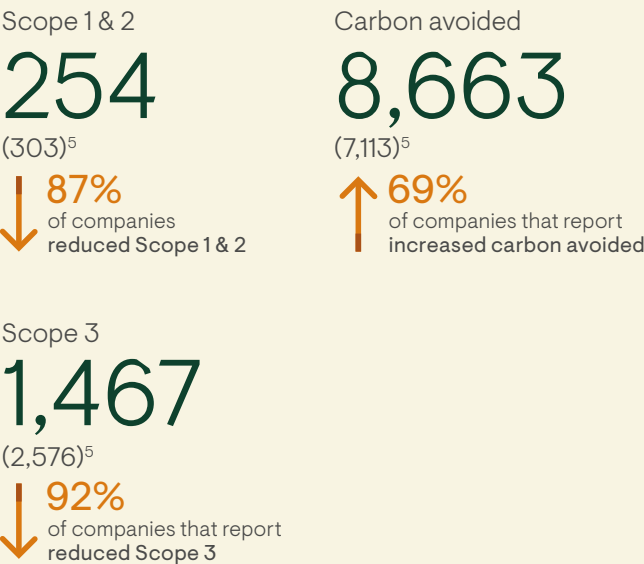
% of portfolio companies reporting emissions



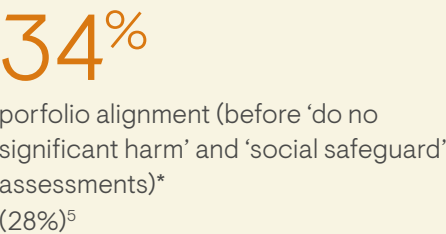
Footprint (tCO₂e for US\$1m invested)



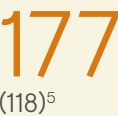
Carbon intensity (weighted average tCO₂e/US\$m revenue)



EU taxonomy alignment



Renewable energy generated (MWh for US\$1m invested)



5. Equivalent figures from last year's Sustainability Report are shown in brackets.
*To align with the taxonomy, an activity must make a substantial contribution to one of six defined environmental objectives. The percentage given here reflects holdings meeting this criterion. Full alignment also requires that an activity does no significant harm to the other environmental objectives, and complies with minimum safeguards.



Net-zero ambitions

We have updated our estimated emissions-reduction pathways, as below. The reduction improvements vs. last year are mostly due to changes in positioning, rather than companies accelerating their plans. CATL in particular has a very ambitious near-term emissions-reduction trajectory.

9.3% reduction
p.a.

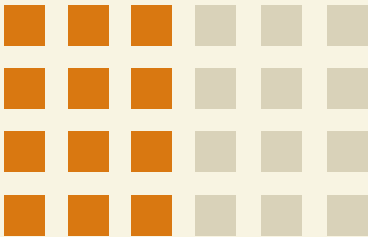
estimated portfolio-emissions
(Scope 1 & 2) 2019 – 2025
(9.8%)⁶

12% reduction
p.a.

for developed
market companies
(11.5%)⁶

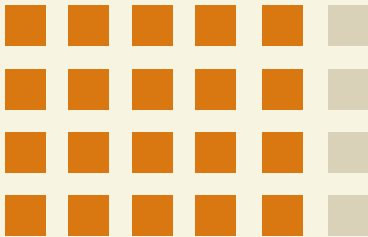
2.8% reduction
p.a.

for emerging market
companies
(5.3%)⁶



12 (50%)

out of 24 companies with
science-based targets
(50%)⁶



20 (83%)

out of 24 companies with
carbon-reduction targets
(83%)⁶

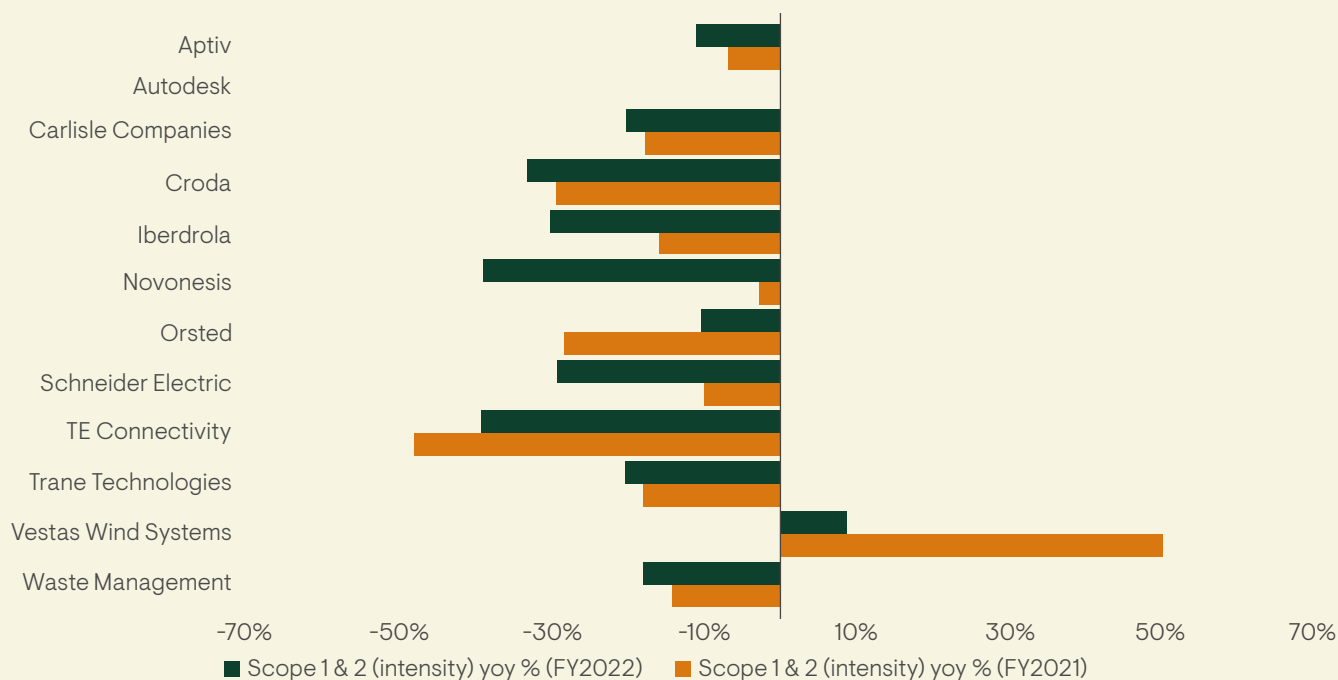
6. Equivalent figures from last year's Sustainability Report are shown in brackets.



Changes in emissions intensity

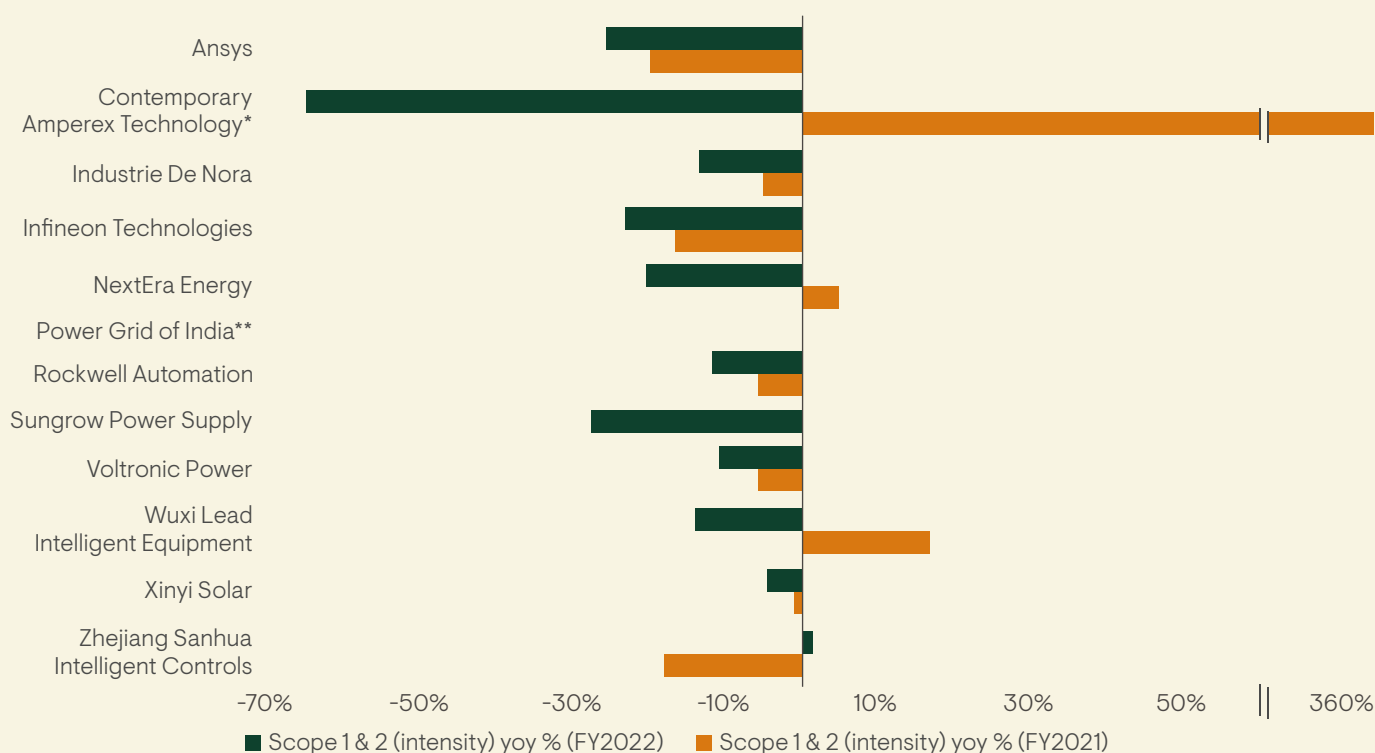
Portfolio companies with SBTi-approved science-based targets

Carbon intensity change year-on-year



Portfolio companies without SBTi-approved science-based targets

Carbon intensity change year-on-year

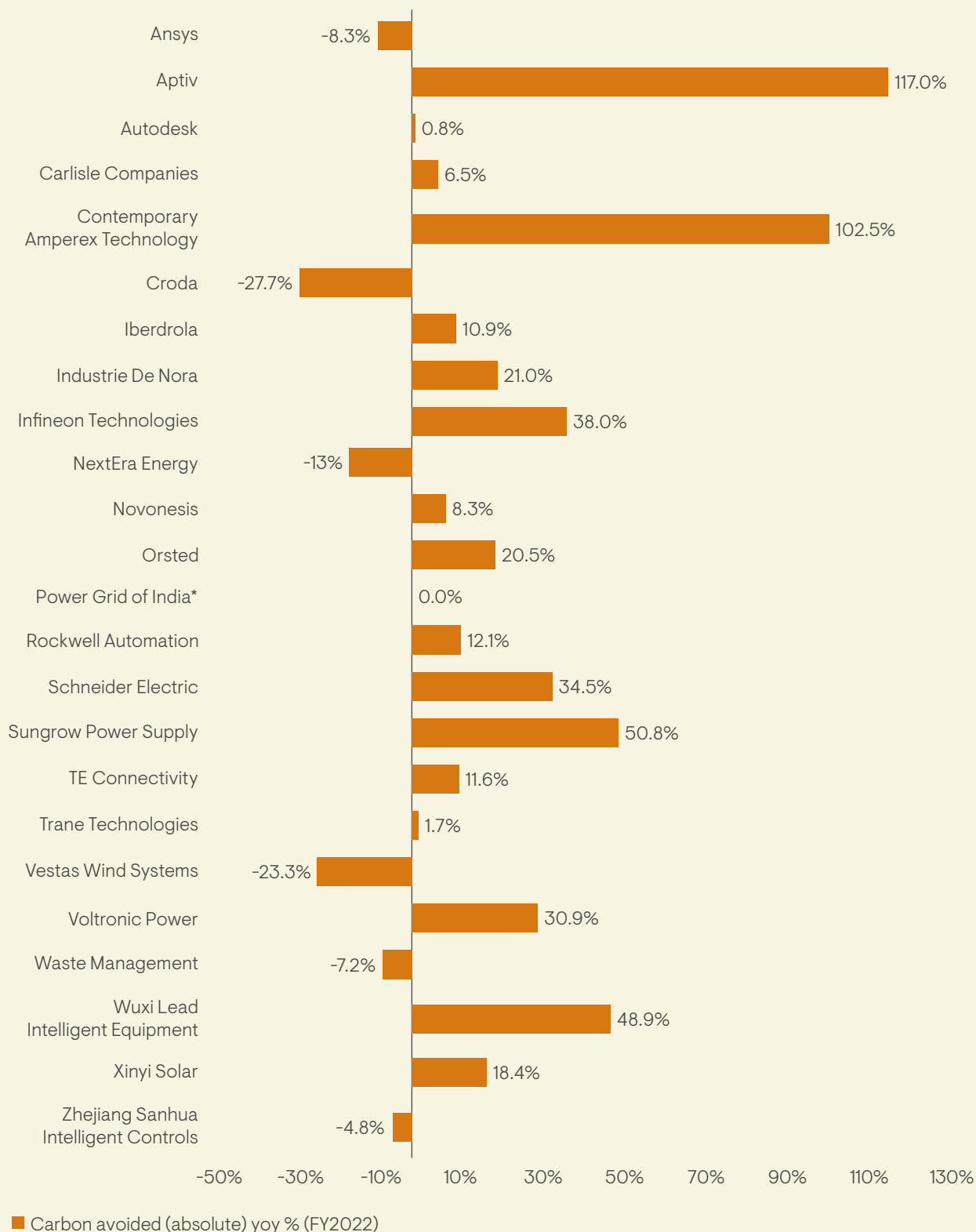


*Due to a shift from estimated emissions in FY2020 to reported emissions in FY2021, CATL's Scope 1 & 2 intensity increased by 352%, however it decreased significantly the following year as the company actions to address emissions took effect.

**Please note that historical data is unavailable for Power Grid of India, so there is no comparison over time.



Carbon avoided KPI progression (year-on-year change)



*Please note that historical data is unavailable for Power Grid of India, so there is no comparison over time.



Engagement and voting update

Engagements

We met with each portfolio company multiple times in 2023, adding up to more than 90 engagements during the year. Most of our engagements focused on environmental matters, with the remainder covering social and governance topics. Progress on the specific engagement goals we have set for each holding is reported in the company assessments. As ever, we would emphasise that any positive developments were not achieved by us alone, but rather are the result of the work of the investment community and the company itself.

Several engagements focused on disclosure of Scope 3 emissions. It has been great to see that Rockwell Automation is now delivering full Scope 3 reporting; and that Ansys is now disclosing 14 of the 15 Scope 3 categories, with only 'use of sold products' (often the most complex to calculate) yet to be completed. Similarly, during the year we discussed calculating and disclosing 'use of sold products' with Infineon; and 'purchased goods and services' with NextEra Energy. More broadly, engagements on this issue are continuing with our Chinese holdings, which are working hard to achieve full Scope 3 disclosure.

Another major theme of our engagements last year was diversity, including specific discussions on gender pay gaps and on workforce diversity more broadly. While the UK requires gender pay-gap disclosure, many companies are yet to report this data at the global level. Among our holdings, Autodesk and Sungrow Power Supply both say they have reached gender pay equity, but we hope to see them support this with data in the future.

Our engagements with several companies were aimed at gaining a better understanding of board effectiveness. This was a particular feature of our conversations with Ørsted, where we felt the board had lost focus on value creation. We view the appointment of Lene Skole as Chair as a significant positive step in this regard. Other related discussions during the year focused on the dual CEO/Chair role at NextEra Energy; director tenure at Autodesk and Waste Management; and governance practices at Rockwell Automation.



Proxy voting

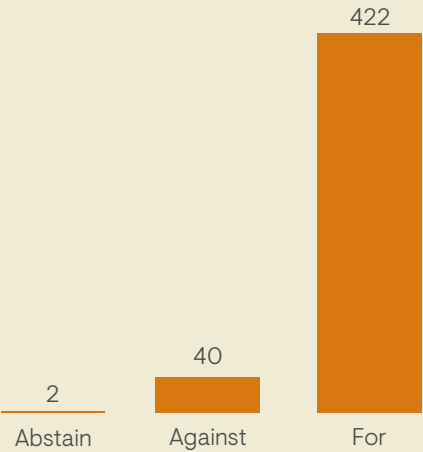
We voted on 464 proxy-voting items in 2023. A summary of our votes is shown on the following page, with details on notable individual votes provided in the company assessments. Most of the votes we cast against were on issues such as management compensation and director appointments.

For example, we voted against compensation items at Aptiv, where we felt disclosure on incentives was lacking; and at Iberdrola, where we felt compensation was not aligned with the comparison peer group. Other votes 'against' included: at Sungrow Power Supply, related to the fact that the criteria for the incentive plan did not focus sufficiently on profitable growth, in our view; and at CATL and Wuxi Lead Intelligent Equipment, because the targets included results that had already been partially reported. We voted against directors at NextEra Energy, Waste Management, Trane Technologies and Sungrow Power supply to encourage improved board dynamics. Finally, we supported a shareholder proposal at NextEra Energy relating to board skill and diversity.

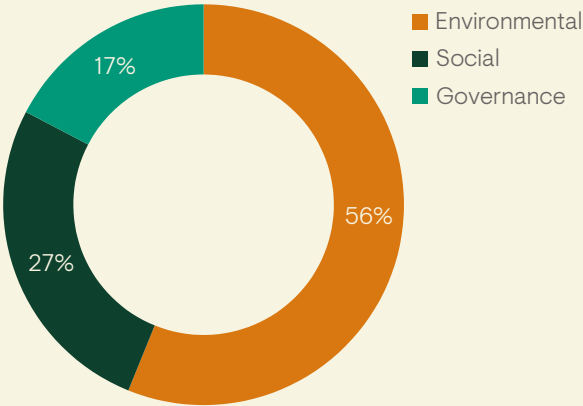




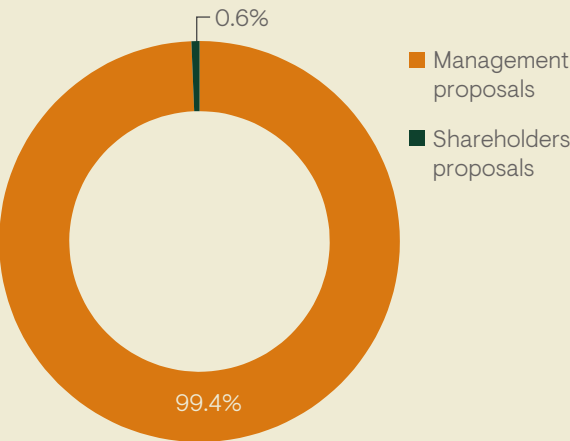
Number of votes cast



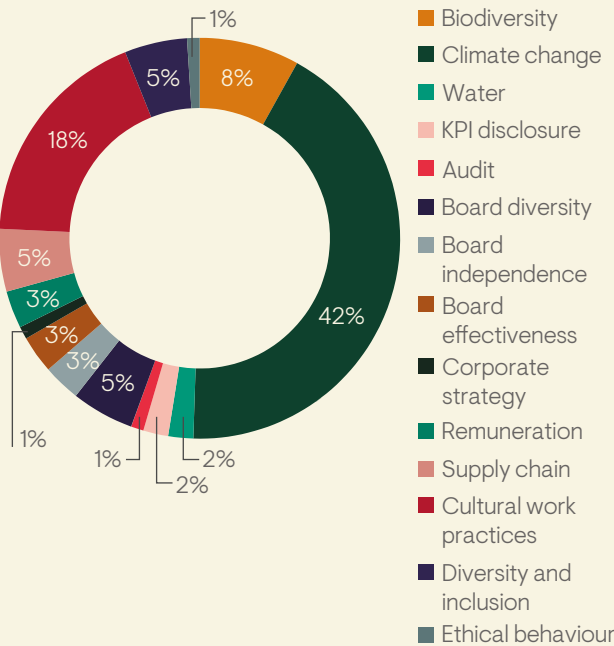
Engagement activities by category



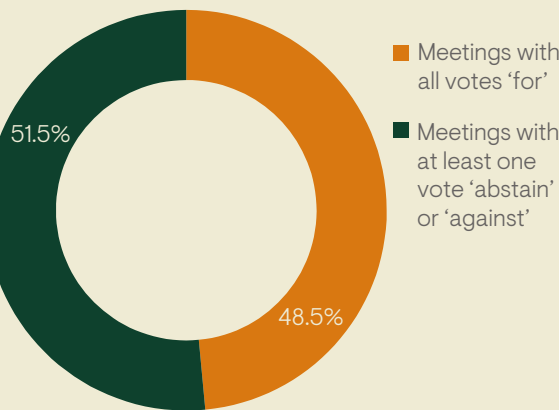
Vote resolutions by type for all votes made



Engagement activities by sub-category 2023



Votes cast (% of meetings)





How to read the company assessments

Company overview

Summary of investment case

Sustainable drivers of structural growth

Market position vs. peers

Strength and durability of return drivers

Assessment of externalities arising from the company's activities

Ansys

Ansys develops multi-physics simulation software for computer-aided engineering

Investment rationale
Ansys' simulation tools are used to predict how products will behave in the real world. Its software allows customers to reduce material inputs, increase energy efficiency and stimulate innovation within low-carbon technologies across renewable technologies, electrification solutions, and building and industrial processes. At the end of 2023, Ansys received an acquisition offer (c.US\$34bn) from Synopsys, a leader in electronic design automation solutions. The deal is expected to close in H1 2025.

Structural growth
Ansys' addressable market continues to grow rapidly, most notably via electrification, autonomy and 5G. For example, with electrification increasing the complexity of products, Ansys' software makes it possible to identify thermal and electrical issues during the design phase. The company's addressable market may also grow through what Ansys calls 'new adjacencies'. Within this component, Ansys offers solutions that support upfront simulation, digital twins and 3D printing. The breadth of Ansys' solutions enables it to contribute to decarbonisation across different markets.

Competitive advantage
Ansys is the global leader in multi-physics simulation software. Over time, the company has acquired leading simulation technology to develop its offering, and now provides the widest range of leading software solutions. This technology leadership is bolstered by a focus on research and development, and partnerships with key users such as Synopsys and Autodesk. Overall, Ansys has a substantial market share, estimated at 20-25%.

Sustainable returns
Ansys' returns have been stable over time, but the company has continued to invest, through acquisitions and capital expenditure, to strengthen its simulation-software platform. It is increasingly providing solutions for a wider array of engineering problems and expanding into new markets. Over the long-term, as the company matures and grows its platform capabilities, we expect returns to improve.

Externalities assessment

- Ansys passes the Do No Significant Harm, Good Governance and Social Safeguards tests, based on our analysis.
- The company currently relies largely on non-renewable energy sources and is aiming to reduce emissions by increasing allocations to renewable energy. Since Scope 1 and 2 emissions are small, this should be achievable in the short to medium term. Ansys increased its renewable energy consumption from 140MWh in 2021 to 211MWh in 2022. While the company is yet to commit to a science-based emissions target, it has set a carbon-reduction target of 15% by 2027.
- Ansys needs to continue to improve gender diversity. 23% of the global workforce is female. The company does not disclose its gender pay gap.

Decarbonisation

US\$31,524m
Market capitalisation

1 yr: 9%
5 yr: 10%
ROIC

1 yr: 10%
5 yr: 11%
Sales growth per share

0%
Taxonomy eligible revenues

0%
Taxonomy aligned revenues
Data provided are estimates sourced from Clarity AI

Carbon avoided
KPI

No commitment
SBTi status

Type of sustainable holding

Key financial metrics

Alignment with EU taxonomy of sustainable economic activity

Key performance indicator

Status of science-based targets

Abbreviations

Space permitting, we have generally spelled out abbreviations on first reference within each company assessment. The following terms are commonly used in the reports:

- Economic value added (EVA)
- Return on equity (ROE)
- Return on invested capital (ROIC)

Technical terms are explained in the glossary towards the end of the report.

12



How to read the company assessments continued

Change over time in key performance indicator

Change in intensity and explanation of drivers. The sources of the data are CDP and, for modelled data, MSCI.

Voting record during the year

Current engagement goals

KPI progression and emissions data

	FY 2020 (2021 reporting)	FY 2021 (2022 reporting)	YoY % change	FY 2022 (2023 reporting)	YoY % change
Carbon avoided (tCO ₂ e / %)	279,432	267,151	-4%	244,982	-8%

	FY 2020 (2021 reporting)	FY 2021 (2022 reporting)	YoY % change to intensity	FY 2022 (2023 reporting)	YoY % change to intensity
Carbon data	Absolute Intensity	Absolute Intensity		Absolute Intensity	
Scope 1 & 2	16,045 10	15,133 8	-20%	12,268 6	-26%
Scope 3	170,354 101	206,944 109	8%	223,471 108	-1%

	Reported or modelled data	Comments
Carbon avoided	Estimated	The reduction in carbon avoided was the result of automotive sales making up a smaller share of Ansys' total product mix (which our estimate leverages).
Scope 1 & 2 intensity	Reported	Scope 1 and 2 intensity fell with lower energy consumption, higher renewable energy use.
Scope 3 intensity	Estimated	Scope 3 continues to be estimated. However, Ansys has significantly improved its Scope 3 reporting, with 14 categories now covered. The final, and most complex, calculation is use of sold products. Once this has been calculated, we will switch to a reported number.

Engagement

2023 engagement goal	Engagement activity	Outcome
Scope 3 emissions disclosure	Company meeting	Scope 3 disclosure has improved significantly. Once use of sold products is included, we will consider this a full Scope 3 figure.
Carbon avoided disclosure	Company meeting	Ansys is working on this calculation and is aiming to release further product handprints.
Unadjusted gender pay gap disclosure	Company meeting	The company has released data for the UK and is collecting data to report on a global basis.
Board gender diversity	N/A	While we recognise the need to improve board gender diversity, we believe Ansys has a strong board, so this is a longer-term goal.
Science-Based Target initiative commitment	Company meeting	The company has taken an initial step, setting a target to reduce emissions by 15% by 2027. It says it will look to set a science-based target within the next two years.

Proxy voting

We supported all items.

2024 engagement goals

- Disclosing Scope 3 emissions
- Disclosing carbon avoided
- Disclosing unadjusted gender pay gap
- Improving board gender diversity
- Committing to the Science-Based Target initiative

Change in emissions over time

Engagement goals, progress and outcomes

General risks. The value of investments, and any income generated from them, can fall as well as rise. Costs and charges will reduce the current and future value of investments. Past performance does not predict future returns. Investment objectives may not necessarily be achieved; losses may be made. Target returns are hypothetical returns and do not represent actual performance. Actual returns may differ significantly. Environmental, social or governance related risk events or factors, if they occur, could cause a negative impact on the value of investments.

Specific risks. **Currency exchange:** Changes in the relative values of different currencies may adversely affect the value of investments and any related income. **Derivatives:** The use of derivatives is not intended to increase the overall level of risk. However, the use of derivatives may still lead to large changes in value and includes the potential for large financial loss. A counterparty to a derivative transaction may fail to meet its obligations which may also lead to a financial loss. **Equity investment:** The value of equities (e.g. shares) and equity-related investments may vary according to company profits and future prospects as well as more general market factors. In the event of a company default (e.g. insolvency), the owners of their equity rank last in terms of any financial payment from that company. **Concentrated portfolio:** The portfolio invests in a relatively small number of individual holdings. This may mean wider fluctuations in value than more broadly invested portfolios. **Sustainable Strategies:** Sustainable, impact or other sustainability-focused portfolios consider specific factors related to their strategies in assessing and selecting investments. As a result, they will exclude certain industries and companies that do not meet their criteria. This may result in their portfolios being substantially different from broader benchmarks or investment universes, which could in turn result in relative investment performance deviating significantly from the performance of the broader market. **Emerging and Frontier market (inc. China):** These markets carry a higher risk of financial loss than more developed markets as they may have less developed legal, political, economic or other systems.



Company sustainability assessments

Ansys	17	Power Grid of India	41
Aptiv	19	Rockwell Automation	43
Autodesk	21	Schneider Electric	45
Carlisle Companies	23	Sungrow Power Supply	47
Contemporary Amperex Technology	25	TE Connectivity	49
Croda	27	Trane Technologies	51
Iberdrola	29	Vestas Wind Systems	53
Industrie De Nora	31	Voltronic Power Technology	55
Infineon Technologies	33	Waste Management	57
NextEra Energy	35	Wuxi Lead Intelligent Equipment	59
Novonesis (formerly Novozymes)	37	Xinyi Solar	61
Orsted	39	Zhejiang Sanhua Intelligence Controls	63

No representation is being made that any investment will or is likely to achieve profits or losses similar to those achieved in the past, or that significant losses will be avoided.
This is not a buy, sell or hold recommendation for any particular security. For further information on specific portfolio names, please see the Important information section.

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Investment rationale

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Sustainable returns

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Externalities assessment

- Ansys passes the Do No Significant Harm, Good Governance and Social Safeguards tests, based on our analysis.
- The company currently relies largely on non-renewable energy sources and is aiming to reduce emissions by increasing allocations to renewable energy. Since Scope 1 and 2 emissions are small, this should be achievable in the short to medium term. Ansys increased its renewable energy consumption from 140MWh in 2021 to 211MWh in 2022. While the company is yet to commit to a science-based emissions target, it has set a carbon-reduction target of 15% by 2027.
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Taxonomy aligned revenues

Data provided are estimates sourced from Clarity AI

Carbon avoided

KPI

No commitment

SBTi status



KPI progression and emissions data

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Scope 1 & 2	16,045	10	15,133	8	-20%	12,268	6	-26%
Scope 3	170,354	101	206,944	109	8%	223,471	108	-1%
	Reported or modelled data		Comments					
Carbon avoided	Estimated		The reduction in carbon avoided was the result of automotive sales making up a smaller share of Ansys' total product mix (which our estimate leverages).					
Scope 1 & 2 intensity	Reported		Scope 1 and 2 intensity fell with lower energy consumption, higher renewable energy use.					
Scope 3 intensity	Estimated		Scope 3 continues to be estimated. However, Ansys has significantly improved its Scope 3 reporting, with 14 categories now covered. The final, and most complex, calculation is use of sold products. Once this has been calculated, we will switch to a reported number.					

Engagement

2023 engagement goal	Engagement activity	Outcome
Scope 3 emissions disclosure	Company meeting	Scope 3 disclosure has improved significantly. Once use of sold products is included, we will consider this a full Scope 3 figure.
Carbon avoided disclosure	Company meeting	Ansys is working on this calculation and is aiming to release further product handprints.
Unadjusted gender pay gap disclosure	Company meeting	The company has released data for the UK and is collecting data to report on a global basis.
Board gender diversity	N/A	While we recognise the need to improve board gender diversity, we believe Ansys has a strong board, so this is a longer-term goal.
Science-Based Target initiative commitment	Company meeting	The company has taken an initial step, setting a target to reduce emissions by 15% by 2027. It says it will look to set a science-based target within the next two years.

Proxy voting

We supported all items.

2024 engagement goals

- Disclosing Scope 3 emissions
- Disclosing carbon avoided
- Disclosing unadjusted gender pay gap
- Improving board gender diversity
- Committing to the Science-Based Target initiative

Aptiv

Aptiv is a global technology company that serves the auto industry

Investment rationale

A net-zero aligned future for mobility is likely to include electric, autonomous vehicles powered by zero-emissions energy. We believe Aptiv is a leader in enabling the transition to an electrified, software-defined vehicle of the future. A rapid shift from internal combustion engines to electric vehicles (EVs) is already underway. Although EV sales growth in the US and EU has disappointed recently, we continue to see structural growth worldwide.

Structural growth

Aptiv provides technology spanning the brain and nervous system of the car and is directly exposed to the move towards an electrified transport system. The company saw good absolute growth (+12%) in 2023, but growth-over-market (GOM) was disappointing (+2%), driven by customer mix and auto-worker strikes, and a slowdown in its high-voltage (pure-play EV) business as the year progressed. Aptiv expects 5% growth from high voltage for 2024 and has a 6% GOM target. This highlights its leverage to Western EV demand-growth, which we believe will improve over the medium term. Aptiv is also exposed to the faster-growing local Chinese market, where it is seeing 30% growth and its active-safety segment continues to grow at >20%.

Competitive advantage

Aptiv provides high-voltage content in 50% of all EVs produced today. Its high-voltage book has grown from seven customers a few years ago to >20 today and will be >25 in 2025. It is on one-third of all auto platforms and has a scale and cost advantage. It remains one of the only full-systems solutions providers and global systems integrator, which should help it maintain its leading market-share and strong relationships with original equipment manufacturers and leading EV brands globally.

Sustainable returns

Aptiv has significant operating leverage, relatively low capital-intensity and a focus on costs. Growth in software and continued scale benefits across segments such as high voltage should grow margins over time. It is targeting 17% operating margins by 2030 (vs. 11% today), with the majority driven by volume and efficiencies, partly from growth in software (80% gross profit margin and >30% EBIT margins). We see significant operating leverage and the potential for strong cash generation (with a target of >US\$5bn of free cashflow by 2030).

Externalities assessment

- Aptiv passes the Do No Significant Harm, Good Governance and Social Safeguards tests, based on our analysis.
- The company remains reliant on non-renewable energy but has targets to move to 100% renewable energy by 2030. Renewable energy consumption rose from 4% to 13% over the last reporting period.
- Only 30% of the board is female. While we believe the board is strong, gender diversity needs to continue to improve. Aptiv is committed to the principles of equal opportunity, equal pay for equal work within markets, and diversity and inclusion. Representation of women in the workforce is 49% but only 26% in management (this has marginally improved from 24%). The gender pay gap has improved and is now at parity. Gender and racial diversity in management and technical roles is improving, but there is more to be done.

Decarbonisation

US\$25,378m

Market capitalisation

1 yr: 19%

5 yr: 13%

ROIC

1 yr: 12%

5 yr: 6%

Sales growth per share

0%

Taxonomy eligible revenues

0%

Taxonomy aligned revenues

Data provided are estimates sourced from Clarity AI

Carbon avoided

KPI

Verified

SBTi status



KPI progression and emissions data

	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change	FY 2022 (2023 reporting)		YoY % change
Carbon avoided (tCO ₂ e / %)	2,302,288		14,285,714		521%	31,000,000		117%

	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change to intensity	FY 2022 (2023 reporting)		YoY % change to intensity
Carbon data	Absolute	Intensity	Absolute	Intensity		Absolute	Intensity	
Scope 1 & 2	322,870	25	364,394	23	-7%	362,497	21	-11%
Scope 3	7,298,105	559	13,908,733	891	59%	11,854,715	678	-24%

	Reported or modelled data	Comments
Carbon avoided	Reported	Strong growth in carbon avoided was due to increased pure-play EV exposure.
Scope 1 & 2 intensity	Reported	The decrease was driven by increased renewable energy use.
Scope 3 intensity	Reported	Rising emissions from purchased goods and services was more than offset by a fall in emissions from use of sold products. This was due to an increase in pure-play EVs within the sales mix.

Engagement

2023 engagement goal

Engagement activity	Outcome
SBT progression	Company meeting Aptiv has SBTi-approved near-term targets for Scope 1, 2 and 3, aiming to replace all Scope 1 and 2 emissions with renewable energy, and to reduce Scope 3 by 47.4% by 2030. SBTi has not released criteria for the auto sector, so Aptiv does not have a long-term SBTi-approved target. Once these criteria have been set, we expect Aptiv's net-zero commitments to be sufficient for approval.
Water and biodiversity reporting	Company meeting Biodiversity is not a material risk, but Aptiv is working on reducing the use of raw materials such as copper in a car and increasing use of recycled copper. It has reported to CDP on water since 2013. We would class the business as low water-intensity.
Diversity and inclusion	Company meeting We have pushed Aptiv to improve its gender pay gap and increase female representation in management and technical roles, and to increase racial diversity in management and technical roles. The gender pay gap is now at parity, and diversity in management and technical roles is improving but with more to be done. Aptiv's approach focuses on using its leadership programme to develop talent and increasing internal hiring. We will continue to monitor diversity and inclusion and engage again if necessary.

Proxy voting

We voted against the advisory vote to ratify executive officers' compensation. The Compensation Committee adjusted the annual incentive plan to "more accurately recognize management's strong performance amidst macroeconomic headwinds outside of its control". While this is permitted, we felt disclosures were inadequate to establish how the proposed payouts had been affected.

2024 engagement goals

- Improving diversity and inclusion
- Monitoring science-based targets

Autodesk

Autodesk provides computer-aided design (CAD) software for the construction and manufacturing industries

Investment rationale

To decarbonise construction, which accounts for almost 40% of global energy-related emissions, the very low level of digitisation in the sector needs to be addressed. Autodesk is driving the adoption of building information modelling (BIM), which enables the creation and management of digital information throughout the construction lifecycle. Autodesk's BIM tools can support low-carbon design and greater resource efficiency by reducing embodied emissions and buildings' operational emissions. Its manufacturing tools also contribute to lower carbon-intensity design.

Structural growth

Regulation and rising demand for low-carbon construction are driving greater adoption of products like those Autodesk makes, in particular its BIM tools. BIM penetration globally is low; even in developed markets, it is not used by most of the industry. And where penetration is higher, more sophisticated BIM software is required. Autodesk has been developing a platform of solutions for all stages of the construction lifecycle, increasing productivity and convenience to the customer and thereby creating the opportunity to increase pricing as well as sales volumes. The company also has a rapidly growing manufacturing design segment, and makes tools such as Fusion 360, which supports CAD, manufacturing and engineering.

Competitive advantage

Autodesk is a global leader in design software, with a market share we estimate at c.30%. Few companies can compete with the breadth of its offering. In recent years, Autodesk has focused on integrating its tools into a platform to provide a one-stop solution covering the design, construction and manufacturing phases. This will enable the unification of workflows across construction and manufacturing lifecycles. We also believe the company's focus on evolving its culture (via "culture add") supports talent retention and continuous innovation.

Sustainable returns

Autodesk's returns have been highly variable in recent years as the company has been transitioning to a cloud/subscription service. It has also been implementing a new transaction model, which increases its direct relationship with customers (vs. distributor relationships). These evolutions have the potential to support an improvement in margins and returns in the long-term.

Externalities assessment

- Autodesk passes the Do No Significant Harm, Good Governance and Social Safeguards tests, based on our analysis.
- Autodesk says it has reached gender pay parity, but we would like to see this disclosed in future reports.

Decarbonisation

US\$52,084

Market capitalisation

1 yr: 28%

5 yr: 21%

ROIC

1 yr: 16%

5 yr: 20%

Sales growth per share

0%

Taxonomy eligible revenues

0%

Taxonomy aligned revenues

Data provided are estimates sourced from Clarity AI

Carbon avoided

KPI

Verified

SBTi status



KPI progression and emissions data

	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY change	FY 2022 (2023 reporting)		YoY change
Carbon avoided (tCO ₂ e / %)	86,057,400		80,883,000		-6%	81,526,500		1%
	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change to intensity	FY 2022 (2023 reporting)		YoY % change to intensity
Carbon data	Absolute	Intensity	Absolute	Intensity		Absolute	Intensity	
Scope 1 & 2	969	0	686	0	0	1,156	0	0
Scope 3	124,884	38	101,913	27	-29%	114,060	26	-4%
	Reported or modelled data		Comments					
Carbon avoided	Estimated		We continue to engage on reporting carbon avoided. The higher estimate is a result of higher estimated US construction emissions.					
Scope 1 & 2 intensity	Reported		Scope 1 and 2 emissions rose due to improved data from Autodesk's new fleet vendor.					
Scope 3 intensity	Reported		Absolute emissions increased most materially within business travel. Intensity declined as revenue growth outpaced the rise in emissions.					

Engagement

2023 engagement goal	Engagement activity	Outcome
Carbon avoided disclosure	Company meeting	Carbon avoided is a complex calculation. While Autodesk is committed to reporting it, it will not do so until its estimate is sufficiently rigorous and science-based.
Water and biodiversity reporting improvement	N/A	We had discussed this topic with Autodesk the previous year. While we note that it is not material for the company, we would like to see disclosure in the medium term, which Autodesk acknowledged. As this is less material than other items, we will remove it from our engagement goals to focus on the most relevant issues.
Unadjusted gender pay gap disclosure	Company meeting	As noted last year, Autodesk has suggested it has achieved gender pay parity. However, only UK data is currently disclosed. We are waiting for reporting on a global basis before closing this item.
Board director tenure	Company meeting	Autodesk is committed to refreshing directors to maintain board strength. The current average director tenure is seven years. Following an audit committee investigation in early 2024, which concluded without any restatement of previously reported financial statements, we continue to engage with the board.

Proxy voting

We supported all items (after gaining a better understanding of the current state of board tenure).

2024 engagement goals

- Disclosing carbon avoided
- Disclosing unadjusted gender pay gap
- Board practices

Carlisle Companies

Carlisle Companies is the largest provider of commercial roofing materials and insulation in the US

Investment rationale

Carlisle Companies is the US market leader in energy-efficient roofing solutions for commercial properties. Its broad range of products, spanning roofing membranes and insulation, offers the highest level of energy efficiency in the industry. We see Carlisle's continuous improvement culture, focused on the Carlisle Operating System, as equipping the business well to motivate employees and drive ongoing innovation.

Structural growth

We expect Carlisle Companies to enjoy strong structural growth from the decarbonisation of commercial buildings through more efficient roofing materials. It is the only US player whose product offering covers the building envelope, from membranes and insulation to air-vapor barriers. Carlisle's lightweight and cost-effective polyiso insulation products provide energy-efficient solutions for buildings in any region and climate, as well as attractive customer paybacks. Its spray polyurethane foam roof system reduces a building's energy use by up to 40% vs. traditional insulation materials. Finally, air barriers can yield 30% savings on heating and energy consumption. As of 2023, 65% of Carlisle's core sales came from LEED (Leadership in Energy and Environmental Design) qualified products, as certified by the US Green Building Council.

Competitive advantage

Carlisle Companies operates in a consolidated industry. It is differentiated by having the broadest product portfolio and superior customer service. Its products come with 10-30 year warranties, which we regard as a reflection of their quality. Its strengths in distribution mean that most of its sales are delivered straight to the construction site, even if the sale is made through third-party distributors, reducing work pattern friction for customers. We see Carlisle's continuous improvement culture, focused on the Carlisle Operating System, as equipping the business well to motivate employees and drive ongoing innovation.

Sustainable returns

Carlisle Companies delivered cash returns of 28%, an improvement from the five-year average of 20%. Its culture of continuous improvement, significant portfolio streamlining and a focus on value-based pricing have helped to more than double financial returns over the last decade.

Externalities assessment

- Carlisle passes the Do No Significant Harm, Good Governance and Social Safeguards tests, based on our analysis,
- Discussions are ongoing on Carlisle Companies' efforts to reduce the emissions intensity of its purchased goods and services, which make up 72% of its Scope 1, 2 and 3 emissions.
- We continue to explore with them the use of possible bio-based alternatives in their supply chain
- We have discussed with management the importance of including a ROIC-based compensation key performance indicator into long-term compensation to incentivise sensible capital allocation. Carlisle Companies has a strong record on capital allocation, but this would align the company with industry best practice.

Decarbonisation

US\$15,210m
Market capitalisation

1 yr: 14%

5 yr: 12%
ROIC

1 yr: -13%

5 yr: 4%
Sales growth per share

0%
Taxonomy eligible revenues

0%
Taxonomy aligned revenues
Data provided are estimates sourced from Clarity AI

Carbon avoided
KPI

Verified
SBTi status



KPI progression and emissions data

	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change	FY 2022 (2023 reporting)		YoY % change
Carbon avoided (tCO ₂ e / %)	-		31,000,000		-	33,000,000		6%
	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change to intensity	FY 2022 (2023 reporting)		YoY % change to intensity
Carbon data	Absolute	Intensity	Absolute	Intensity		Absolute	Intensity	
Scope 1 & 2	213,882	54	213,450	44	-18%	193,315	35	-20%
Scope 3	-	-	3,155,512	656	-	3,480,747	639	-3%
	Reported or modelled data		Comments					
Carbon avoided	Reported		The increase in carbon avoided came from growth in energy-saving roofing products.					
Scope 1 & 2 intensity	Reported		Scope 1 and 2 intensity declined due to continued investment in manufacturing energy efficiency.					
Scope 3 intensity	Reported		Purchased goods and services account for 76% of Scope 3 emissions. The company is seeking to make Scope 3 improvements by changing procurement of chemical inputs. It is trialling bio-oils as alternative inputs.					

Engagement

2023 engagement goal	Engagement activity	Outcome
Dual Chair/CEO role	Company meeting	We have encouraged both the Chair/CEO and general counsel to consider splitting the Chair/CEO roles. The lead independent director serves to avoid conflicts of interest.
Validation of SBTi net-zero targets	Company meeting	SBTi net-zero targets have been approved.
Disclosure of employee engagement and turnover data	Company meeting	We continue to press for better disclosure of employee data.
Executive compensation	Company meeting	We have encouraged Carlisle Companies to include a ROIC component within management remuneration.
Biodiversity disclosure	Company meeting	The company says it will improve biodiversity disclosure in its next CDP report.

Proxy voting

This holding was initiated in 2023 subsequent to the AGM, so there is no voting activity to report.

2024 engagement goals

- Splitting the CEO/Chair roles
- Lowering the tenure of directors
- Including ROIC as component of executive compensation
- Improving biodiversity disclosure

Contemporary Amperex Technology

CATL is the largest electric-vehicle (EV) battery and energy storage system (ESS) battery manufacturer globally

Investment rationale

Contemporary Amperex Technology (CATL) is the largest EV and ESS battery manufacturer globally. The company has industry-leading profitability and directly contributes to the global transition to EVs and renewable energy. In 2023, it shipped 260GWh of EV batteries, equivalent to supplying 5m EVs and plug-in hybrids. That year, it also shipped 74GWh of ESS batteries, which equates to 40% of the global market.

Structural growth

We forecast rapid electrification of transport, with EVs going from 13% of vehicle sales today to c.50% by 2030, driving an increase of EV battery demand from 705GWh in 2023 to more than 3TWh by 2030. The ESS market is growing even faster, from 160GWh in 2023 to more than 1TWh by 2030. At end-2023, CATL had generated 1-year revenue growth of 19% and a 5-year CAGR of 63% on a per-share basis.

Competitive advantage

CATL has the largest manufacturing scale globally, at 552GWh at end-2023. This has enabled it to become a cost leader, due to economies of scale and supply-chain pricing power. It also has the highest absolute research and development spending among battery producers globally (US\$2.6bn in 2023), more than its three major South Korean competitors combined. It has a comprehensive battery product portfolio, with global leadership in several key categories, including: lithium ferrophosphate (LFP), a cobalt-free battery with lower cost and better safety; cell-to-pack technology such as the Qilin battery, supporting 1,000km driving range on a single charge; and emerging battery technologies such as solid-state and semi-solid-state batteries, lithium iron manganese phosphate (LFMP) batteries, and sodium-ion batteries.

Sustainable returns

Despite the asset-heavy business model of battery-cell manufacturing, the competitive advantages above helped CATL generate a 7-22% ROIC and 11-34% ROE since its listing in 2018. Many of CATL's peers have been loss making most of the time. Its average ROE for the last five years was 19%. It also had >50% share of net profit and as much as 70% share of non-restricted cash in 2023, when most peers were struggling to navigate tough price competition and geopolitical uncertainty.

Externalities assessment

- CATL passes the Do No Significant Harm, Good Governance and Social Safeguards tests, based on our analysis.
- CATL advocates a 'battery passport', which would allow full traceability of emissions and supply-chain data at the battery-pack level. Also, CATL's Sichuan Plant has been certified as the world's first zero-carbon battery factory.
- CATL has not disclosed all Scope 3 categories, but we expect it to improve its reporting and are engaging with the company on this.
- Despite CATL being a member of several responsible-mining industry alliances, we would like to see more detailed data and disclosure on the natural and social capital externalities linked to its use of battery metals. However, we believe CATL is a global leader in this regard and will leverage its industry position to push for better sustainability across the supply chain.
- CATL has not disclosed its gender pay gap or employee turnover. Board gender diversity is lacking, with one female director out of nine.

Decarbonisation

US\$101,136m

Market capitalisation

1 yr: 10%

5 yr: 9%

ROIC

1 yr: 19%

5 yr: 63%

Sales growth per share

98%

Taxonomy eligible revenues

94%

Taxonomy aligned revenues

Data provided are estimates sourced from Clarity AI

Carbon avoided

KPI

No commitment

SBTi status



KPI progression and emissions data

	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change	FY 2022 (2023 reporting)		YoY % change
Carbon avoided (tCO ₂ e / %)	14,918,002		40,643,377		172%	82,300,000		102%
	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change to intensity	FY 2022 (2023 reporting)		YoY % change to intensity
Carbon data	Absolute	Intensity	Absolute	Intensity		Absolute	Intensity	
Scope 1 & 2	310,092	42	3,846,796	190	352%	3,242,833	66	-65%
Scope 3	10,459,868	1,433	28,505,172	1,410	-2%	14,632,451	299	-79%
	Reported or modelled data		Comments					
Carbon avoided	Estimated		The total comprises about 90% from EVs and the rest from ESS applications.					
Scope 1 & 2 intensity	Reported		CATL has made solid progress towards its 2025 net-zero core operations (Scope 1 and 2) emissions target, primarily through a significant increase of zero-carbon electricity consumption to 27% in 2022.					
Scope 3 intensity	Estimated		CATL has reported Scope 3 for which it has data, of 14.6mt tons (vs. 8.9mt the prior year, like-for-like). This covers six categories and 15 subsidiaries within the organisational boundary identified by CATL. The company has explained why the remaining Scope 3 categories were either irrelevant or have not yet been calculated (the latter notably include use of sold products). MSCI modelled data for 2022 was 59mt, which is based on auto-sector averages rather than EV specific ones. We believe CATL's figure is a better estimation and have therefore now moved to reported data from the MSCI estimate. Completing Scope 3 reporting remains an engagement goal.					

Engagement

2023 engagement goal	Engagement activity	Outcome
Scope 3 and carbon avoided disclosure, science-based targets	Company meeting, site visits	We visited CATL's zero-carbon factory in Sichuan. The company has talked about making an impact through quantifiable carbon avoided as a next step.
Disclosure on supply-chain management, biodiversity impact, employee turnover, and diversity and inclusion	Company meeting	CATL has issued a more comprehensive ESG report this year. Improvements include disclosures on supply-chain management protocols (metrics to assess, onboard and engage with suppliers), and female representation in management (up 1.5% to 18%).

Proxy voting

We voted against the equity incentive plan as it partially includes already-reported financial results of the current fiscal year. We supported all other items.

2024 engagement goals

- Disclosing full Scope 3
- Disclosing carbon avoided
- Improving disclosure on biodiversity impact
- Disclosing employee turnover
- Setting science-based targets

Croda

Croda is an oleochemical producer that uses c. 60% biological inputs in production

Investment rationale

Croda's output includes ingredients for products such as skin creams, vaccines and biological pesticides; they replace carbon-intensive, fossil-fuel-based alternatives. The company enables decarbonisation in industries such as personal care and crop protection. In addition, some of its products offer efficacy advantages; for instance, its adjuvants decrease the active ingredients required in a pharmaceutical product to deliver the same health outcome. We believe environmental revenues will increase long-term, with the majority of Croda's research and development pipeline being bio-based.

Structural growth

Within consumer care, we expect increasing demand for products based on 'natural' or 'organic' ingredients derived from bio-based sources (as opposed to petrochemicals). Croda is a key partner for companies like L'Oréal, which is targeting 95% bio-based ingredients by 2030. Within life sciences, Croda's products focus on the delivery of drugs to plants and humans. Its agricultural products increase crop productivity, reducing pressure on land and mitigating negative impacts such as deforestation and soil degradation. In FY2023, the company experienced destocking across consumer care, crop care and industrial specialities, which was a material headwind to growth. Despite these short-term pressures, we remain positive on the long-term growth opportunities.

Competitive advantage

The foundation of Croda's competitive advantage is its intellectual capital. The company is focused on continuing to develop its in-house intellectual property and growing revenues from 'New and Protected Products' (NPP), which currently represent around 34% of sales; a small decline from 35% last year was the result of lower sales of COVID lipids. Thanks to its leading technology and market share within niches, Croda has strong relationships with customers, which are often partners in product development (which can take up to four years, depending on the complexity of the chemistry).

Sustainable returns

Croda has evidenced an ability to deliver strong returns in the long term. Its oleochemicals are often critical inputs into products, and typically account for only a small proportion of the total cost of a product, which we expect will allow Croda to retain pricing power in the long-term. As noted, operating deleverage resulting from destocking has weakened profitability, but we expect this to recover along with revenue growth in the medium-term.

Externalities assessment

- Croda passes the Do No Significant Harm, Good Governance and Social Safeguards tests, based on our analysis.
- Non-renewable energy accounts for 63% of total energy consumption, an improvement from 68% in 2022. This should continue to improve as Croda progresses with its science-based emissions target.
- Croda does not report emissions to water (related to nitrates, phosphates and pesticides); while they are likely to be small, we have requested disclosure.
- The company is assessing its impacts and dependencies on nature. It aims to be nature-positive by 2030.
- The mean gender pay gap is 7.9%, vs. 7.2% in FY2022. This figure focuses on the UK and needs to be expanded to cover the global business.

Decarbonisation

US\$9,000m
Market capitalisation

1 yr: 5%

5 yr: 11%
ROIC

1 yr: -19%

5 yr: 2%
Sales growth per share

0%
Taxonomy eligible revenues

0%
Taxonomy aligned revenues
Data provided are estimates sourced from Clarity AI

Carbon avoided
KPI

Verified
SBTi status



KPI progression and emissions data

	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change	FY 2022 (2023 reporting)		YoY % change
Carbon avoided (tCO ₂ e / %)	839,220		951,000		13%	687,925		-28%
	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change to intensity	FY 2022 (2023 reporting)		YoY % change to intensity
Carbon data	Absolute	Intensity	Absolute	Intensity		Absolute	Intensity	
Scope 1 & 2	177,464	99	182,463	70	-29%	121,093	47	-33%
Scope 3	984,871	552	1,141,057	439	-20%	920,578	356	-19%
	Reported or modelled data		Comments					
Carbon avoided	Reported		Carbon avoided declined with the sale of PTIC.					
Scope 1 & 2 intensity	Reported		Absolute and intensity Scope 1 and 2 declined with lower volumes, increased use of renewable energy and energy efficiency measures and the sale of the Performance Technologies & Industrial Chemicals (PTIC) business to Cargill (the deal completed in 2022).					
Scope 3 intensity	Reported		Scope 3 declined with the sale of PTIC.					

Engagement

2023 engagement goal	Engagement activity	Outcome
Enhance carbon avoided disclosure	Company meeting/letter	We participated in the Institutional Investors Group on Climate Change's (IIGCC's) Net Zero Engagement Initiative campaign, along with peers. Croda is revisiting its sustainability strategy, including reviewing its approach to carbon avoided.
Monitoring progress on the Science-Based Target initiative	Company meeting/letter	Croda is working to better understand its downstream emissions (it has already much-improved its understanding of upstream emissions).
Land/biodiversity targets and disclosure	Company meeting	As noted, Croda is assessing its impacts and dependencies and has an ambitious 'nature-positive' target. While we await details, we have asked for greater disclosure of key raw-material inputs.
Disclose emissions to water	N/A	As noted last year, although this is likely small, we are awaiting further disclosure.
Gender pay gap	N/A	We are awaiting further disclosure.

Proxy voting

We supported all items in 2023. However, prior to voting we engaged the board on remuneration practices. We believed that management's long-term incentive targets could be more ambitious. However, as we felt absolute pay was not excessive, we supported the remuneration item but continued the conversation. Given the limited progress, we voted against the remuneration practices in the 2024 AGM. We have added this as an engagement goal for 2024.

2024 engagement goals

- Enhancing carbon avoided disclosure
- Monitoring progress on the Science-Based Target initiative
- Progressing towards land/biodiversity targets and related disclosures
- Disclosing emissions to water
- Improving lender pay gap
- Evolving remuneration practices

Iberdrola

Iberdrola is a global leader in clean energy, grids and storage

Investment rationale

Sustainable decarbonisation will require a complete change in how we generate electricity, moving away from fossil fuels towards renewable energy, mainly wind and solar. It will also require significant investment in electricity networks and storage to reduce losses and better integrate renewables. Iberdrola operates more than 42GW of renewable energy in Europe, the US and Latin America, supplying electricity to almost 100m people and employing over 40,000. It also owns regulated networks in Spain, the UK, the US and Brazil.

Structural growth

Iberdrola is the market leader in owning renewable-energy generating capacity in Europe, with leading positions in Spain, the UK, Mexico and Brazil. The International Energy Agency's net-zero roadmap requires a 3x increase in renewable energy by 2030 and 10-20x increase by 2050. We believe Iberdrola has a key role in delivering this and hence is extremely well positioned for structural growth. By the end of this decade, Iberdrola expects to exceed €65bn in network assets and reach 95GW of installed renewable capacity, thanks to new investments of €65-75bn between 2026 and 2030. Revenue is not the most indicative growth metric for utilities. Operating income and EBITDA grew 12% and 8%, respectively, during the year.

Competitive advantage

We believe Iberdrola's market-leading position in developing wind- and solar-generating capacity gives it several competitive advantages, including access to the best sites (wind especially can vary significantly depending on the location), more competitive turbine pricing and better financing terms. The company's position as an integrated utility means it is well positioned to provide a full net-zero solution including grids, renewable energy, energy efficiency and hydrogen.

Sustainable returns

Iberdrola's long-term ROE compares well to other European utilities, and earnings quality has significantly improved in recent years as renewables and networks have grown as a percentage of the business. The company also benefits from a relatively low cost of capital, so typically generates good returns above its weighted-average cost of capital.

Externalities assessment

- Iberdrola passes the Do No Significant Harm, Good Governance and Social Safeguards tests, based on our analysis.
- Renewable energy exposure continues to grow as a part of Iberdrola's power mix and it has clear science-based targets.
- Regarding gender diversity, there was a small increase in the percentage of women in the workforce (24%) and woman in management (28%), but we would like to see higher female representation. As noted in the following section, only 16% of engineering students in Spain are female.

Decarbonisation

US\$83,398m

Market capitalisation

1 yr: 5%

5 yr: 5%

ROIC

1 yr: -8%

5 yr: 7%

Sales growth per share

56%

Taxonomy eligible revenues

40%

Taxonomy aligned revenues

Data provided are estimates sourced from Clarity AI

Carbon avoided

KPI

Verified

SBTi status



KPI progression and emissions data

	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change	FY 2022 (2023 reporting)		YoY % change
Carbon avoided (tCO ₂ e / %)	31,299,730		27,720,320		-11%	30,741,473		11%
	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change to intensity	FY 2022 (2023 reporting)		YoY % change to intensity
Carbon data	Absolute	Intensity	Absolute	Intensity		Absolute	Intensity	
Scope 1 & 2	14,885,263	393	15,314,828	331	-16%	13,148,422	231	-30%
Scope 3	57,851,881	1,529	50,585,239	1,093	-29%	42,585,615	749	-31%
	Reported or modelled data		Comments					
Carbon avoided	Reported		The increase was driven by continued growth in renewable-energy deployment and energy-efficiency measures.					
Scope 1 & 2 intensity	Reported		The decrease in direct emissions was driven by increasing renewable energy within the production mix.					
Scope 3 intensity	Reported		The decrease in Scope 3 emissions was due to a significant fall in use of sold products and lower emissions from purchased goods and services and fuel-and-energy-related activities (not included in Scope 1 or 2).					

Engagement

2023 engagement goal	Engagement activity	Outcome
Monitor science-based target	Company meeting	Iberdrola is on track. The company aims to achieve carbon neutrality for Scope 1 and 2 by 2030, offsetting any residual emissions after 2030. The ultimate aspiration is to achieve net zero emissions by 2040.
Diversity and inclusivity	Company meeting	Gender diversity in middle management and above is good for the sector (>35% female representation) everywhere except in Spain. We note that in Spain only 16% of students in engineering/science are women, so female representation >33% is above average. This is an area that needs to be supported and improved.
Land/biodiversity targets/disclosure	Company meeting	Iberdrola was an early adopter of the taskforce on nature-related financial disclosures. It aims to be net positive in nature by 2030. By 2025, it aims to have assessed 20% of its generation fleet from a biodiversity perspective and have a mitigation plan in place (100% by 2030). 100% of facilities commissioned should have these two elements. It now carries out ecosystem measurement before it builds anywhere, forecasting the impact if construction goes ahead. The aim of the mitigation plan is to keep nature as it was prior to Iberdrola using a site.

Proxy voting

We voted against the advisory vote on the remuneration report, given inconsistency with the compensation peer group and relative-performance peer group. We supported all other items.

2024 engagement goals

- Monitoring science-based targets
- Improving diversity and inclusivity
- Making progress on biodiversity
- Engaging on director remuneration

Industrie De Nora

De Nora makes specialist energy-efficient electrodes for electro-chemical processes

Investment rationale

De Nora is a leader in manufacturing electrodes, which are critical components in electro-chemical processes. A key growth driver for the company is manufacturing and selling electrodes into the green-hydrogen value chain. Within green-hydrogen electrolysis, a significant structural-growth opportunity levered to decarbonisation, we expect the company to replicate its profitable leadership position in other areas (chlor-alkali, electrowinning, electronics and water).

Structural growth

The company is exposed to multiple structural-growth drivers stemming from its expertise in producing the most energy-efficient electrodes globally. We see a long-term growth runway for its green-hydrogen exposed energy-transition business, with green hydrogen the likely solution for hard-to-abate sectors such as steel. We also see structural-growth opportunities within electrowinning (copper foil for electric vehicles), electronics and water purification/filtration.

Competitive advantage

De Nora is a market leader across at least 85% of its revenue base, with >50% market share in key segments. A niche provider of mission-critical components, it has scale and cost leadership and unique technological capabilities, which enable the company to develop innovative products and solutions for a broad range of industries, including chemical, energy and water treatment. There is a high degree of technological overlap across the key areas of the business and it has strong customer relationships. It has also shown an ability to pass a significant proportion of cost increases on to customers.

Sustainable returns

Returns have been above the cost of capital over the past seven years, with an improving trend over that period. De Nora listed in 2022 and is still in an early growth phase within two of its three main segments. There is evidence of improving margins and returns, and this trend can continue as the company scales and sees its aftermarket/service business grow. It generated a c.20% EBITDA margin and 16% operating profit in 2023. We expect continued growth in ROIC given De Nora's strong competitive advantages.

Externalities assessment

- De Nora passes the Do No Significant Harm, Good Governance and Social Safeguards tests, based on our analysis.
- The company is still reliant on non-renewable electricity but has targets to use 40% renewables by 2026 and 100% by 2030. We will monitor progress.
- De Nora is working to improve its gender pay gap, with a current target of <5% in total and 0% for new hires.

Decarbonisation

US\$3,501m

Market capitalisation

1 yr: 12%

5 yr: 9%

ROIC

1 yr: -5%

5 yr: n/a*

Sales growth per share

*Listed in 2022. Delivered +16% absolute sales growth in EUR terms.

28%

Taxonomy eligible revenues

9%

Taxonomy aligned revenues

Data provided are estimates sourced from Clarity AI

**Carbon
Avoided**

KPI

**No
commitment**

SBTi status



KPI progression and emissions data

	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change	FY 2022 (2023 reporting)		YoY % change
Carbon avoided (tCO ₂ e / %)	6,606,082		7,951,683		20%	9,620,095		21%
	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change to intensity	FY 2022 (2023 reporting)		YoY % change to intensity
Carbon data	Absolute	Intensity	Absolute	Intensity		Absolute	Intensity	
Scope 1 & 2	25,933	45	31,436	43	-5%	33,517	37	-14%
Scope 3	-	-	-	-	-	34,750,334	38,686	-
	Reported or modelled data		Comments					
Carbon avoided	Modelled		The increase in the estimate was due to strong growth in sales of climate solutions.					
Scope 1 & 2 intensity	Reported		The improvement was driven by the installation of solar at a facility in Germany and of LED lighting in Brazil and Pittsburgh; heat recovery during thermal treatment in the Rodenbach plant; and electrification of the forklift fleet in Brazil and Germany.					
Scope 3 intensity	Reported		Scope 3 is company-reported for the first time. The reported figure is higher than our estimates and significantly higher than consultants' estimates. As a result of the long operating life of De Nora products, most of the emissions are generated during product use.					

Engagement

2023 engagement goal	Engagement activity	Outcome
Scope 3 reporting to CDP	Company meeting	Having begun reporting Scope 3 in its sustainability report, De Nora is expected to report Scope 3 to CDP this year. The company aims to develop a sustainable supply chain, with >50% of suppliers evaluated for sustainability by 2030.
Carbon avoided reporting	Company meeting	De Nora expects to assess lifecycle emissions and the sustainability of all new products by 2025 and all products by 2027. It aims to have >80% of R&D spending having a positive impact on the UN Sustainable Development Goals.
SBTi	Company meeting	The company plans to submit its emissions targets to SBTi in 2024. Its targets include halving Scope 1 and Scope 2, and Scope 3 intensity, by 2030.
Diversity & inclusion	Company meeting	De Nora has adopted a diversity, equity & Inclusion policy and launched a mental-health awareness project.

Proxy voting

We supported all items.

2024 engagement goals

- Reporting Scope 3 emissions to CDP
- Submitting emissions targets to SBTi
- Reporting carbon avoided

Infineon Technologies

Infineon is the world's largest power semiconductor supplier

Investment rationale

Infineon is a market-leading power semiconductor company. We expect its products to see structural growth as electricity generation moves away from fossil fuels towards renewable energy, mainly wind and solar; as ground transportation moves from internal combustion engines (ICEs) towards electric vehicles (EVs) powered by renewable energy; and as a consequence of efforts to increase energy efficiency. Within renewable energy, Infineon supplies the top 10 wind-turbine and solar-inverter companies with power semiconductors. Within automotive, an electric car has twice the semiconductor content of an ICE vehicle, especially within the powertrain where Infineon is a leader.

Structural growth

In the past 10 years, Infineon has grown revenues by 16% per year on average, significantly faster than the global semiconductor market's c.6% CAGR. Because of the company's significant market share in power semiconductors and tailwinds from the structural-growth drivers outlined above, we expect this to continue. Management expects revenues to grow at >10% through the cycle, with the Automotive (ATV) and Green Industrial Power (GIP) segments growing faster than the company average.

Competitive advantage

Infineon's biggest advantage is its strong semiconductor design and manufacturing capabilities, as well as the long and trusted track records of its products. Also, a new management team has been focusing on a 'systems' approach (rather than components only) to capture more value in key markets, especially automotive and industrials. This is a differentiator vs. emerging competitors, especially in China. Infineon also has strong product leadership and ambitious capacity-expansion plans in wide-bandgap semiconductors, namely silicon carbide (SiC) and gallium nitride (GaN), which can support greater power efficiency and performance, and present higher barriers to entry. In 2023, Infineon had a global market share of 31% in power semiconductors within automotives, well ahead of the #2 player with 20%, and a significant advance from 11% in 2010. It also has 21% market share across all power discrete devices and modules. No competitor has a double-digit share.

Sustainable returns

Infineon has historically generated high and increasing returns. It outsources significantly less manufacturing than some peers, so fluctuations in capacity utilisation rates will impact its returns through cycles (the 2020 COVID impact being a case in point). 2023 was a strong year with a 21% ROE and 14% ROIC. Infineon's strategy is to work increasingly with outsourcing partners where it sees no or little differentiation to in-house production to optimise capital efficiency and generate higher returns. For emerging technologies such as SiC and GaN, Infineon will produce in-house. It aims to capture more value share with its system approach.

Externalities assessment

- Infineon passes the Do No Significant Harm, Good Governance and Social Safeguards tests, based on our analysis.
- We note that there is only one female director out of five on the management board, but overall female representation is 38% across the two-tiered boards.

Decarbonisation

US\$54,616m

Market capitalisation

1 yr: 14%

5 yr: 10%

ROIC

1 yr: 15%

5 yr: 13%

Sales growth per share

57%

Taxonomy eligible revenues

0%

Taxonomy aligned revenues

Data provided are estimates sourced from Clarity AI

Carbon avoided

KPI

Committed

SBTi status



KPI progression and emissions data

	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change	FY 2022 (2023 reporting)		YoY % change
Carbon avoided (tCO ₂ e / %)	56,000,000		72,450,000		29%	100,000,000		38%
	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change to intensity	FY 2022 (2023 reporting)		YoY % change to intensity
Carbon data	Absolute	Intensity	Absolute	Intensity		Absolute	Intensity	
Scope 1 & 2	864,748	90	993,677	75	-17%	886,671	58	-23%
Scope 3	4,206,435	438	5,889,528	445	2%	7,926,333	514	16%
	Reported or modelled data		Comments					
Carbon avoided	Reported		This is based on estimated savings from automotive, industrial drives, solar photovoltaic and wind energy.					
Scope 1 & 2 intensity	Reported		Infineon's Scope 1 and 2 intensity reduced by 11%, mainly driven by more use of renewable energy.					
Scope 3 intensity	Estimated		The reported Scope 3 figure is 2.14mt, significantly less than MSCI estimates. However, the reported figure covers seven categories, and upstream coverage is incomplete. We therefore decided to stick with MSCI estimates. In December 2023, Infineon officially joined the SBTi. We plan to move to reported Scope 3 next year, given it will need to be thoroughly calculated and reported to obtain SBTi target validation.					

Engagement

2023 engagement goal	Engagement activity	Outcome
Setting a Scope 3 target and science-based target	Company meeting	Infineon is in the process of SBTi target validation, including setting a Scope 3 target.
'Use of sold product' reporting	Company meeting	Infineon stressed that estimating Scope 3 (use of sold products) is extremely difficult as it is a business-to-business company and in many cases does not know the end use of its products.
Biodiversity impact disclosure	Company meeting	Biodiversity is managed through Infineon's sustainability management system. Analysis has been conducted before construction of production sites to identify risks and avoid significant harm.

Proxy voting

We supported all items.

2024 engagement goals

- Validating SBTi targets
- Reporting Scope 3
- Improving gender diversity

NextEra Energy

NextEra Energy is a leading generator of electricity from wind and solar, and the North American leader in renewable energy

Investment rationale

Sustainable decarbonisation requires a rapid shift away from fossil fuels towards renewable energy, mainly wind and solar. It also requires significant investment in electricity networks to reduce losses and better integrate renewables. NextEra Energy operates 19GW of wind energy and 8GW of solar across the US and Canada. It also operates 89,180 miles of transmission and distribution lines.

Structural growth

NextEra Energy is the market leader in owning renewable-generating and battery-storage capacity in the US. We believe it has a key role in delivering the International Energy Agency's net-zero roadmap, which requires a doubling of investments to triple renewable capacity by 2030, and hence is extremely well positioned for structural growth. This is evidenced by its current expected build-out of 33-42GW by 2026, which is c.2x the current operating renewables portfolio. This expected growth is increasing each year. We expect the Inflation Reduction Act to drive further growth going forward. Additionally, decarbonising the electricity sector results in excess energy that may be converted into green hydrogen to decarbonise other sectors of the economy. GAAP revenues are not a particularly informative metric for regulated utilities because fuel is a pass-through, but NextEra Energy expects to grow earnings-per-share at c.8% through 2026, which we believe is backed by highly visible capital-expenditure plans and is in line with historical growth rates.

Competitive advantage

We believe NextEra Energy's market-leading position and first-mover status in developing wind, solar and battery storage capacity in the US gives it several competitive advantages, including access to the best sites (access to interconnection is critical and wind resource especially can vary significantly by location), more competitive turbine pricing (NextEra Energy is one of the largest capital spenders in the US across all industries), better financing terms and proprietary data. Longer term, we believe the company may be able to capitalise on its market position to benefit from growth of the hydrogen economy. NextEra's distinctive culture appears to deepen the competitive advantage, with a strong employee ownership mindset continuing to drive innovation from the bottom up.

Sustainable returns

NextEra Energy has consistently generated market-leading returns, with an ROE c.2% above the sector average. We expect this trend to continue. We also see the Inflation Reduction Act as a potential driver of better longer-term returns.

Externalities assessment

- The company passes the Do No Significant Harm, Good Governance and Social Safeguards tests, based on our analysis.
- Having invested heavily in decarbonisation, NextEra Energy's emissions are 51% lower than the industry average.
- We monitored allegations of incorrectly channelled political donations in Florida and were pleased to see the Federal Election Commission dismiss the case.

Decarbonisation

US\$122,920m

Market capitalisation

1 yr: 7%

5 yr: 5%

ROIC

1 yr: 31%

5 yr: 9%

Sales growth per share

97%

Taxonomy eligible revenues

29%

Taxonomy aligned revenues

Data provided are estimates sourced from Clarity AI

Carbon avoided

KPI

No commitment

SBTi status



KPI progression and emissions data

	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change	FY 2022 (2023 reporting)		YoY % change
Carbon avoided (tCO ₂ e / %)	39,382,821		39,395,709		0%	34,286,018		-13%
	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change to intensity	FY 2022 (2023 reporting)		YoY % change to intensity
Carbon data	Absolute	Intensity	Absolute	Intensity		Absolute	Intensity	
Scope 1 & 2	43,326,682	2,407	43,064,606	2,523	5%	42,016,462	2,005	-21%
Scope 3	19,666,464	1,093	21,224,706	1,243	14%	18,637,810	889	-28%
	Reported or modelled data		Comments					
Carbon avoided	Reported		Carbon avoided declined with the lower carbon intensity of the US grid. Please note that FY2021 is restated as the company no longer includes nuclear in its carbon-saving methodology.					
Scope 1 & 2 intensity	Reported		Absolute Scope 1 and 2 continued to decrease as NextEra Energy continued to build out renewable generation.					
Scope 3 intensity	Estimated		The company does not report all Scope 3 categories, making it challenging to monitor progress. Reporting, and ultimately setting an emission- reduction plan for Scope 3, is a key engagement target.					

Engagement

2023 engagement goal	Engagement activity	Outcome
Report Scope 3 emissions	Multiple company meetings/Letter sent	In collaboration with CalSTRS, we again engaged on reporting Scope 3 and setting a reduction target. Steel is the biggest source of Scope 3. As the green-hydrogen sector matures, management should become more confident it can source low- carbon steel.
Set a science-based emissions-reduction target	Multiple company meetings	We agree with the company that its 'real zero' plan to be carbon emissions free in its own operations by 2045 is well below 2-degree aligned. However, we would like to see the plan externally assessed. This engagement was also in collaboration with CalSTRS.
Independent Chair/strengthen lead independent role	Multiple company meetings/letter	NextEra Energy is making good progress on improving board tenure and diversity. That said, we believe an independent Chair is best practice. We would like to see a more clearly defined role for the new incoming lead independent director, and would like the company to review the benefits of an independent Chair. We have been making the case with the support of CalSTRS and our engagement letter has been reviewed by the board and executive management.

Proxy voting

We voted against multiple directors to express our view that best practices should be adopted, for example separating the CEO and Chair. We also voted against ratification of the auditor given long tenure to encourage the company to consider refreshment. Finally, we supported a shareholder resolution that encouraged further disclosure on board skills and diversity.

2024 engagement goals

- Reporting Scope 3 emission
- Committing to the Science-Based Target initiative
- Improving governance with an independent Chair and a strengthened lead independent director role

Novonesis (formerly Novozymes)

Novonesis is a global provider of biosolutions

Investment rationale

Novonesis – formed in January 2024 through the combination of Novozymes and Chr. Hansen – is the global leader in enzymes, functional proteins and microbes, which serve as biological catalysts to speed up chemical reactions. Its bio-based products help to improve yields (e.g., of crops), increase energy efficiency (e.g., via lower washing temperatures), and reduce emissions and hazardous waste across the value chain.

Structural growth

Biotech offers decarbonisation solutions across many sectors. Within household and consumer care, Novonesis is helping to reduce petrochemical use and energy consumption. In the food system (one-third of global emissions), its products help to reduce waste (30% of all food is wasted), improve crop yields, reduce fertiliser use and enable plant-based meat alternatives. Biofuels also support growth for the company as its technology enhances yields. Looking further out, Novonesis’ research and development pipeline is creating additional potential in areas such as reducing plastic waste and carbon capture.

Competitive advantage

We believe Novonesis’ competitive moat has been strengthened by the new combination. The company now combines Novozymes’ world-leading enzyme business (>6,500 patents) with the world’s largest microbe library from Chr. Hansen (>3,400 patents). This is key to its future competitive position: enzymes and microbes have complementary roles in biological and environmental processes.

Sustainable returns

The sustainability of Novonesis’ returns is supported by end-market diversification, scale and intellectual property, which drive a gross profit margin consistently above 54% (which, for both Novozymes’ and Chr. Hansen’s history, is among the best-in-class in the industry) and peer-leading historical ROIC. In the near term, the acquisition reduces returns. However, over the longer term, given the strengthened competitive position and increased optionality to invest in new verticals, we see potential for a significant return on incremental invested capital relative to peers.

Externalities assessment

- Novonesis passes the Do No Significant Harm, Good Governance and Social Safeguards tests, based on our analysis.
- The company report 82% of energy consumption is from renewables, up from 68% in the previous year. Novozymes had, and now Novonesis has a target of 100% electricity consumption from renewables by 2030. We continue to monitor this.

Decarbonisation

US\$15,275m
Market capitalisation

1 yr: 14%
5 yr: 18%
ROIC

1 yr: 2%
5 yr: 5%
Sales growth per share

0%
Taxonomy eligible revenues

0%
Taxonomy aligned revenues
Data provided are estimates sourced from Clarity AI

Carbon avoided
KPI

Verified
SBTi status



KPI progression and emissions data

	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change	FY 2022 (2023 reporting)		YoY % change
Carbon avoided (tCO ₂ e / %)	49,000,000		60,000,000		22%	65,000,000		8%
	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change to intensity	FY 2022 (2023 reporting)		YoY % change to intensity
Carbon data	Absolute	Intensity	Absolute	Intensity		Absolute	Intensity	
Scope 1 & 2	234,000	109	253,000	106	-3%	161,000	65	-39%
Scope 3	602,250	281	728,875	307	9%	768,657	309	1%
	Reported or modelled data		Comments					
Carbon avoided	Reported		Novonesis again increased carbon avoided in the reporting period.					
Scope 1 & 2 intensity	Reported		The reduction in Scope 1 and 2 intensity was mainly driven by a continued focus on energy efficiency and increased sourcing of renewable electricity.					
Scope 3 intensity	Reported		The marginal increase in Scope 3 intensity was driven by higher emissions from purchased goods and services, upstream transportation, and distribution and business travel.					

Engagement

2023 engagement goal	Engagement activity	Outcome
Monitoring progress on the Science-Based Target initiative	Company meeting	We had several discussions regarding the combination with Chr. Hansen, which also had an SBTi target. Chr. Hansen's reported emissions intensity for 2022 was lower than Novozymes'. We will continue to monitor these targets and look forward to seeing full reporting for the combined group.
Enhanced carbon avoided disclosure	Company meeting	We continue to believe Novonesis should report more than just the biofuel-related carbon avoided. We will follow up on this once we have updated figures for the combined company.

Proxy voting

We supported all items.

2024 engagement goals

- Reporting combined/total emissions
- Monitoring science-based emissions targets
- Improving carbon avoided reporting for the new organisation

Orsted

Orsted is the global leader in developing, constructing, and operating offshore wind farms

Investment rationale

With more than three decades' experience in a broad range of green-energy solutions, Orsted is a leading player in offshore wind technology. It also offers potential future exposure to hydrogen production. As at December 2023, Orsted had installed renewable capacity of c.16GW, which included c.9GW of offshore wind, c.4GW of onshore wind and c.1GW of solar. In 2023, 93% of its generation was from renewables, up 2% vs. 2022.

Structural growth

Orsted is the world's largest offshore wind developer and asset owner, and hence we believe it is well placed to benefit from structural growth driven by the need for a massive and accelerated build-out of renewable energy. Offshore wind technology has been maturing in recent years, and its deployment is poised to accelerate in the near term especially across Europe. Orsted plans to build c.35-38GW of renewable capacity (of which c.22GW would be offshore) by 2030, which is twice its current capacity, subject to meeting value-creation thresholds to try to ensure sustainable growth.

Competitive advantage

Orsted's competitive advantages derive from its long experience in developing and operating complex offshore projects; its in-house engineering, procurement and construction capabilities to innovate and optimise wind farms; its procurement scale to negotiate supplier contracts; and capital-recycling efficiency.

Sustainable returns

Orsted's returns improved significantly after 2015, with an average ROIC from 2016-2021 of c.11%, as more offshore wind projects came online and the company sold stakes in projects to external investors, resulting in significant farm-down gains (under Orsted's farm-down strategy, ownership shares in existing assets are sold to recycle capital into other projects). However, more recently, Orsted has had to confront multiple challenges, including higher commodity prices and interest rates, as well as an immature supply chain in the US which led to project cancellations, impairments and significant value destruction. We have been reassured by a recent strategic update that emphasised improved risk governance and bidding discipline in pursuit of return-accretive growth that would deliver 150-300bps over the weighted-average cost of capital. We continue to monitor the execution of farm-downs, which is critical to maintaining healthy credit metrics.

Externalities assessment

- Orsted passes the Do No Significant Harm, Good Governance and Social Safeguards tests, based on our analysis, although we continue to engage on governance.
- We continue to engage on biodiversity to better understand Orsted's net-positive biodiversity ambition in offshore. We encouraged the company to complete a CDP Forest report to strengthen its sustainability credentials in its biomass business.

Decarbonisation

US\$23,355m

Market capitalisation

1 yr: -11%

5 yr: 5%

ROIC

1 yr: -31%

5 yr: 1%

Sales growth per share

86%

Taxonomy eligible revenues

86%

Taxonomy aligned revenues

Data provided are estimates sourced from Clarity AI

Carbon avoided

KPI

Verified

SBTi status



KPI progression and emissions data

	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change	FY 2022 (2023 reporting)		YoY % change
Carbon avoided (tCO ₂ e / %)	13,100,000		15,100,000		15%	18,200,000		21%
	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change to intensity	FY 2022 (2023 reporting)		YoY % change to intensity
Carbon data	Absolute	Intensity	Absolute	Intensity		Absolute	Intensity	
Scope 1 & 2	1,852,790	241	2,142,802	173	-28%	2,510,970	155	-10%
Scope 3	25,114,200	3,269	18,179,132	1,472	-55%	10,984,000	678	-54%
	Reported or modelled data		Comments					
Carbon avoided	Reported		Carbon avoided rose with higher wind and solar power generation (partly offset by a decrease in sustainable-biomass generation).					
Scope 1 & 2 intensity	Reported		Absolute Scope 1 and 2 increased due to a scarcity of biomass supply and a fire at a wood-pellet silo. This resulted in using more coal in the short-term. This was partly offset by higher wind and solar generation. Intensity declined as revenue growth exceeded emissions growth.					
Scope 3 intensity	Reported		The material Scope 3 decline (absolute and intensity) was driven primarily by lower gas sales and a 10% reduction in emissions from commissioning of renewable assets.					

Engagement

2023 engagement goal	Engagement activity	Outcome
Strategic engagement on governance and risk management	Multiple company and board meetings/letter	We have been engaging management and the board on areas including risk governance, value-creation discipline, management strength, incentives, dividends and preserving credit ratings. We have been encouraged by the positive reception to our proposals, (ongoing) management changes to bolster infrastructure experience, the dividend holiday and a renewed focus on value creation over simply pursuing growth.
Monitor progress on SBT	Company meeting	We continue to discuss progress on emissions targets, with a focus on areas including the biomass business.
Biodiversity & CDP forest disclosure	Company meeting	We have been engaging to understand the net-positive goal and how it can be achieved. Currently, the company is focusing on the challenge of measurement.
Employee turnover	Company meeting	This engagement was initiated after turnover rose to 11.7% in 2022 (8.8% of which was voluntary). The company is aware of the need to promote and retain talent. In 2023, turnover declined to 9.6% (7.2% voluntary). With this normalisation, we removed the goal.

Proxy voting

We supported all items.

2024 engagement goals

- Maintaining engagement focus on governance and risk management
- Monitoring progress on science-based emissions targets
- Achieving net-positive biodiversity target and making CDP Forest disclosure

Power Grid of India

Power Grid is primarily engaged in the bulk transmission of power in India

Investment rationale

Power Grid is a majority state-owned enterprise primarily engaged in the bulk transmission of power through its extra-high voltage alternating current (EHVAC) and high voltage direct current (HVDC) transmission network in inter-state / inter-regional domains in India. India's power-generation mix is expected to undergo a massive shift towards renewable energy (target 500GW by 2030) over the next decade to meet increasing energy demands in a sustainable way. Power Grid, as a principal transmission developer / operator, is well placed to benefit from the build-out of the grid to integrate renewables.

Structural growth

Over the next decade, India's planned capital expenditure on inter-state transmission is >R2.8 trillion (US\$34 billion). As the transmission company with the largest market share, Power Grid should be a beneficiary of this expenditure, driving its structural growth.

Competitive advantage

With regulated monopoly status and running 83% of India's inter-state transmission assets, Power Grid derives its competitive moat from its unparalleled experience and scale advantages in procurement. This is further supported by its relatively low cost of capital, since it is backed by the government of India, which enhances Power Grid's ability to create and preserve value even in a competitive bidding environment.

Sustainable returns

With a regulated ROE of >15% and a realised ROE in the high 'teens' as a percentage, Power Grid has a sustainable return profile, positive value creation well above its cost of capital, and a strong cashflow profile.

Externalities assessment

- Power Grid passes the Do No Significant Harm, Good Governance and Social Safeguards tests, based on our analysis.
- The company does not currently disclose its Scope 3 emissions. It does not have an emissions reduction target.
- We believe gender and board diversity can be improved.

Decarbonisation

US\$26,508m

Market capitalisation

1 yr: 10%

5 yr: 9%

ROIC

1 yr: 8%

5 yr: 8%

Sales growth per share

97%

Taxonomy eligible revenues

0%

Taxonomy aligned revenues

Data provided are estimates sourced from Clarity AI

Carbon avoided

KPI

No commitment

SBTi status



KPI progression and emissions data

	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change	FY 2022 (2023 reporting)		YoY % change
Carbon avoided (tCO ₂ e / %)	-		-		-	22,013,234		-
	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change to intensity	FY 2022 (2023 reporting)		YoY % change to intensity
Carbon data	Absolute	Intensity	Absolute	Intensity		Absolute	Intensity	
Scope 1 & 2	-	-	-	-	-	356,980	65	-
Scope 3	-	-	-	-	-	1,347,679	246	-
	Reported or modelled data		Comments					
Carbon avoided	Estimated		We currently rely on an estimate but hope to move to a reported number over time.					
Scope 1 & 2 intensity	Reported		Power Grid only began reporting Scope 1 and 2 in 2022.					
Scope 3 intensity	Estimated		The company does not currently report Scope 3, so we have used estimated data.					

Engagement

2023 engagement goal	Engagement activity	Outcome
Board composition	Company meeting	We sought greater board independence and gender diversity. The company has appealed to the Department of Public Enterprises to make the required director appointments (see proxy voting).
Emission disclosure	Company meeting	We sought disclosure of Scope 2 and 3 (the company already disclosed Scope 1). The company has now disclosed Scope 2 and we hope to see Scope 3 disclosures in the future.
Science-based target	Company meeting	We made the company aware of the SBTi organisation and the need for a carbon-reduction goal.

Proxy voting

We expressed our strong preference for a more independent and gender-diverse board by voting against the re-election of two directors and have engaged with the company on this. We understand that the appointment of executive directors comes under the purview of the President of India, and the appointment of government nominees and independent directors comes under the purview of Department of Public Enterprises. Power Grid is in talks with the latter to make the requisite director appointments to achieve much needed diversity and independence. We supported all other items.

2024 engagement goals

- Disclosing Scope 3 emissions
- Committing to a science-based emissions target
- Disclosing carbon avoided
- Improving board diversity and independence

Rockwell Automation

Rockwell Automation is a global leader in industrial automation and digital transformation

Investment rationale

More than 20% of emissions come from manufacturing plants. Rockwell Automation's solutions address this, enabling visibility and control of manufacturing processes via its hardware and software, and accelerating energy and resource efficiency across a range of sectors. Its solutions help companies make more efficient use of water, air, gas, electricity and steam; reduce Scope 1 and /or Scope 2 emissions; minimise waste; develop new recycling technologies; and advance the circular economy.

Structural growth

Rockwell Automation's hardware includes programmable logic controllers, variable speed drives and intelligent conveyor systems. Its software includes predictive analytics software and asset optimisation software, to name a few. These solutions enable plant managers in any manufacturing end-market to drive resource efficiency and improve the sustainability of manufacturing. We think the company is well positioned to benefit from structural growth driven by ongoing investments in smarter, greener factories, as well as the significant capital expenditure on electrifying transportation.

Competitive advantage

Rockwell Automation's durable sources of competitive advantage include its: market leadership in the US; deep domain expertise across industries; focus on being an outcome-oriented problem-solving partner to its clients; distribution capabilities; and strong partnerships, which create the potential to expand into new adjacencies.

Sustainable returns

Rockwell Automation has historically delivered a ROIC of >20% and ROE of >30%. Over the long term, we think best-in-class margins will continue to support the higher return profile of the company, a result of execution excellence, increasing revenue share from higher-margin structural-growth opportunities, and capital discipline. The high ROE is further supported by proactive capital management.

Externalities assessment

- Rockwell Automation passes the Do No Significant Harm, Good Governance and Social Safeguards tests, based on our analysis.
- In our view, the company needs to improve renewable energy consumption in its own operations and board gender diversity.

Decarbonisation

US\$35,575m

Market capitalisation

1 yr: 19%

5 yr: 24%

ROIC

1 yr: 18%

5 yr: 8%

Sales growth per share

0%

Taxonomy eligible revenues

0%

Taxonomy aligned revenues

Data provided are estimates sourced from Clarity AI

Carbon avoided

KPI

Committed

SBTi status



KPI progression and emissions data

	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change	FY 2022 (2023 reporting)		YoY % change
Carbon avoided (tCO ₂ e / %)	2,707,459		2,835,967		5%	3,179,203		12%

	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change to intensity	FY 2022 (2023 reporting)		YoY % change to intensity
Carbon data								
Scope 1 & 2	108,100	17	109,700	16	-6%	109,498	14	-12%
Scope 3	2,334,497	369	2,612,544	373	1%	15,331,000	1,976	430%

	Reported or modelled data	Comments
Carbon avoided	Estimated	The increase reflected revenue growth. We continue to engage on improving carbon avoided disclosure.
Scope 1 & 2 intensity	Reported	The decline in Scope 1 and 2 intensity was due to the company maintaining flat absolute emissions while growing revenue by 11%.
Scope 3 intensity	Reported	The company recently started to report Scope 3. FY 2021 is an estimate.

Engagement

2023 engagement goal	Engagement activity	Outcome
Source renewable energy for own consumption	Company meeting	Rockwell Automation is aiming to be carbon neutral for Scope 1 and 2 by 2030. As well as improving operational efficiency, the company is pursuing virtual power purchase agreements.
Report Scope 3 and adopt science-based target	Company meeting/letter	The company provided full Scope 3 disclosure and committed to SBTi target validation in 2023.
Report carbon avoided	Company meeting	Management wants more robust data before reporting carbon avoided. It has released a calculator for customers to analyse energy savings. The 2020 acquisition of Kalypso has helped to articulate a coherent message.
Improve governance practices and board gender diversity	Company meeting	See proxy voting.

Proxy voting

We supported all items. We continue to engage on adopting better governance practices, such as the majority-voting rule and separating the CEO/Chair roles.

2024 engagement goals

- Monitoring progress on company's sourcing of renewable energy for its own operations
- Disclosing strategy to enable adoption of SBTi-validated long-term emissions targets
- Monitoring progress towards disclosing carbon avoided
- Improving board gender diversity and governance practices

Schneider Electric

Schneider Electric is a global specialist in energy management and industrial automation

Investment rationale

Schneider Electric provides energy-management and industrial-automation solutions. The company serves the major transitions towards a more electric, decentralised, decarbonised and digitised world. It combines world-leading energy technologies, real-time automation, software and services, leveraging its digital platform EcoStruxure to accelerate customers' and partners' transitions towards a sustainable future.

Structural growth

The electrification of fossil-fuel processes supports demand for Schneider Electric's low- and medium-voltage products, given that many more electrical appliances need to be connected to progress towards net zero. Sales of many products from the company's energy-management segment are driven by the need for better energy efficiency, particularly in Schneider's key end-markets such as data centres, buildings and utilities. This should help Schneider Electric meet its target of 80% of revenues from green solutions by 2025. With a significant installed base worldwide, Schneider Electric can focus on growing its software and service businesses.

Competitive advantage

Continued innovation and a high-quality offering have enabled Schneider Electric to maintain a sizeable market share across many parts of its energy-management segment. The company also has a large global distribution channel, which has been key to the success of its low-voltage products (it is the global #1 in this segment). A 'multi-hub' operating model puts a strong focus on building local teams, which allows for more efficient decision-making. Other advantages include the mission-critical nature of Schneider Electric's products and services, and the company's strong brand and reputation for reliability. Schneider Electric also benefits from cross-selling opportunities across energy management and industrial automation, and from having the most complete offering among its peers. The firm has a distinctive culture reflecting its decentralised approach to its business structure, differentiating its approach to peers, and placing autonomy with employees at the point of customer interaction. This bolsters nimbleness and drives robust employee engagement and motivation through the workforce.

Sustainable returns

In addition to innovation and product/service quality, positioning around mega-trends has helped Schneider Electric build significant market share in most of its business lines. The company has expanded its margins over the past few years and shown strong pricing power. We believe this can continue over the medium term thanks to Schneider Electric's leadership, focus on cost control, and growth in higher-margin segments such as software and services.

Externalities assessment

- Schneider Electric passes the Do No Significant Harm, Good Governance and Social Safeguards tests, based on our analysis.
- We continue to monitor progress towards SBTi targets and the company's own carbon avoided targets.

Decarbonisation

US\$115,210m

Market capitalisation

1 yr: 11%

5 yr: 9%

ROIC

1 yr: 5%

5 yr: 7%

Sales growth per share

46%

Taxonomy eligible revenues

28%

Taxonomy aligned revenues

Data provided are estimates sourced from Clarity AI

Carbon avoided

KPI

Verified

SBTi status



KPI progression and emissions data

	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change	FY 2022 (2023 reporting)		YoY % change
Carbon avoided (tCO ₂ e / %)	134,000,000		84,000,000		-37%	113,000,000		35%
	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change to intensity	FY 2022 (2023 reporting)		YoY % change to intensity
Carbon data								
Scope 1 & 2	287,356	10	294,051	9	-10%	229,347	6	-29%
Scope 3	66,144,376	2,303	68,874,865	2,015	-13%	60,952,497	1,693	-16%

	Reported or modelled data	Comments
Carbon avoided	Reported	Carbon avoided rose in 2022, following a year of supply chain constraints.
Scope 1 & 2 intensity	Reported	The reduction in Scope 1 and 2 was a result of lower emissions from gas, the vehicle fleet and grid electricity.
Scope 3 intensity	Reported	The reduction in Scope 3 was driven by an energy-scenarios update for use of sold products, based on the International Energy Agency's World Energy Outlook 2022, reflecting countries' latest climate commitments.

Engagement

2023 engagement goal	Engagement activity	Outcome
Progress towards SBTi targets	Company meeting	Schneider Electric continues to work on achieving carbon neutral operations by 2025.
Progress on carbon avoided	Company meeting	In 2023, carbon avoided was 110m tCO ₂ e.
Replace sustainability index/ratings in management compensation key performance indicators	Company meeting	The company has taken action to replace sustainability index/external ratings with Scope 1-3 reductions in management's long-term incentive plan.
Employee-engagement measurement and disclosure	Letter	We would like to see further disclosure on employee engagement, both quantitative and qualitative.

Proxy voting

We voted against the authorisation to issue equity with pre-emptive rights. The amount exceeded Ninety One's limit of 33%. We supported all other items.

2024 engagement goals

- Monitoring progress towards SBTi targets
- Monitoring progress on carbon avoided

Sungrow Power Supply

Sungrow is the world's largest manufacturer of solar inverters and provider of integrated energy storage systems.

Investment rationale

Sungrow Power Supply is the world's largest manufacturer of solar inverters, a crucial part of a solar power plant. In 2023, the company shipped 130GW of solar inverters, representing a >30% share of the global market. It is also a leader in energy-storage systems, solar-power project development and wind converters, with additional product capabilities in electric-vehicle (EV) charging and hydrogen electrolyzers. All of Sungrow Power Supply's business segments directly contribute to global decarbonisation.

Structural growth

Sungrow Power Supply benefits from global solar demand growth and increasing adoption of energy-storage systems, highlighted by its five-year per share CAGR of 46%. Annual solar-inverter shipments increased to 120GW in 2022 from 17GW in 2019, and energy-storage systems shipments, which only started in 2019, were 11GWh in 2023. Both segments are direct beneficiaries of long-term structural growth from decarbonisation.

Competitive advantage

Sungrow Power Supply has strong product advantages supported by heavy investment in research and development (R&D). In 2022, it spent US\$345m on R&D, the most in the solar-inverter industry even without adjusting for purchasing-power parity. The company leads in new product launches and technology improvements, portfolio breadth, product functionality and efficiencies. 'Bankability' (the willingness of prospective lenders to finance projects that use Sungrow equipment) is another advantage. Sungrow Power Supply is among the top three companies by bankability globally according to Bloomberg New Energy Finance. Aftersales service quality is also strong, with >10 years of overseas service experience. The company maintains competitive pricing due to having the largest supply capacity globally, which drives economies of scale and supply-chain pricing power.

Sustainable returns

Despite the volatility of underlying demand in the solar industry, Sungrow Power Supply generated its highest ever ROE and ROIC last year, of 41% and 22%, respectively. The average ROE for the last five years was 21%. These returns are underpinned by the company's competitive advantages and by a beneficial customer mix, among whom utility scale customers are the majority, which value performance, service and scale of supply, rather than focusing only on price.

Externalities assessment

- Sungrow Power Supply passes the Do No Significant Harm, Good Governance and Social Safeguards tests, based on our analysis.
- Sungrow has not disclosed Scope 3, but we expect it to report this next year. It also has not disclosed gender pay gap data; we are engaging on this.
- Board gender diversity is lacking, with only one female director out of nine.
- Employee turnover is also ticking up, to 16% in 2022, primarily due to mid- to low-level employees being poached by competitors, reflecting the company's industry-leading position. The senior team remains stable.

Decarbonisation

US\$18,319m

Market capitalisation

1 yr: 22%

5 yr: 12%

ROIC

1 yr: 79%

5 yr: 46%

Sales growth per share

100%

Taxonomy eligible revenues

100%

Taxonomy aligned revenues

Data provided are estimates sourced from Clarity AI

Carbon avoided

KPI

No commitment

SBTi status



KPI progression and emissions data

	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change	FY 2022 (2023 reporting)		YoY % change
Carbon avoided (tCO ₂ e / %)	174,500,000		252,000,000		44%	380,000,000		51%
	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change to intensity	FY 2022 (2023 reporting)		YoY % change to intensity
Carbon data	Absolute	Intensity	Absolute	Intensity		Absolute	Intensity	
Scope 1 & 2	28,722	10	38,234	10	-	43,257	7	-28%
Scope 3	2,432,101	869	3,046,973	814	-6%	4,806,097	803	-1%
	Reported or modelled data		Comments					
Carbon avoided	Reported		The calculation is based on a cumulative 340GW of installed power electronics devices.					
Scope 1 & 2 intensity	Reported		Scope 1 and 2 intensity reduced by 28%, representing solid progress towards Scope 1 and 2 carbon neutrality by 2028.					
Scope 3 intensity	Estimated		Scope 3 was reported for FY2023, following our engagements. However, the company did not provide historical data for FY2022. MSCI intensity estimates are similar to the reported FY2023 figure.					

Engagement

2023 engagement goal	Engagement activity	Outcome
Disclose Scope 1 and 2 to cover global operations; disclose Scope 3	Company meeting, site visits	In the 2023 ESG report, Sungrow reported Scope 1 and 2 for subsidiaries internationally. It also disclosed Scope 3 for the first time. More details will be available in the next CDP report.
Improve the carbon avoided methodology	Company meeting	We have engaged on improving the robustness of carbon avoided calculations. The new carbon avoided number for FY2023 will reflect an up-to-date carbon intensity figure for global grids.
Improve gender diversity	Company meeting	We acknowledge this as a structural issue for the power electronics industry. This remains a long-term engagement target.

Proxy voting

We voted against the equity incentive plan as it was based on achieving either revenue-growth or profit-growth targets, therefore risking encouraging unprofitable growth. We also voted against the re-election of a male independent director whose expertise was not in power electronics. We believe suitable expertise can be found elsewhere. We supported all other items.

2024 engagement goals

- Disclosing full Scope 3
- Validating emission targets via SBTi
- Improving gender diversity

TE Connectivity

TE Connectivity offers connectivity and sensor solutions across transport, industrial and datacentre applications

Investment rationale

TE Connectivity's solutions enable sustainable decarbonisation across industries and end-use applications. The company helps customers produce smaller, lighter and more energy efficient products, and supports the electrification of automobiles through its connectivity applications – a key value and carbon-avoided impact driver of the investment. Exposure to other structural growth areas like renewables, factory automation and datacentre energy efficiency increase the carbon avoided impact.

Structural growth

TE Connectivity is positively exposed to structural growth via its broad range of connectivity and sensor solutions. Its products can withstand harsh environments, which is important as the electrification of vehicles creates higher-voltage environments that require more robust terminal and connector products, and double the content opportunity vs. traditional internal combustion engine vehicles. Management expects medium-term organic revenue growth of 4-6%, driven by strong structural-growth drivers, particularly the shift to electric vehicles, with M&A adding another 1% annually.

Competitive advantage

TE Connectivity has an industry-leading position in manufacturing a broad portfolio of safety-critical custom-designed engineered connectivity products. This is enabled by close working relationships with customers that allow the company to better anticipate and respond to customer needs, especially in the transport segment. Further, the low-dollar-value but high safety-critical nature of TE Connectivity's content vs. the total cost of a car creates defensible margins and relatively high switching costs.

Sustainable returns

Over 2011-2021, TE Connectivity generated a ROIC of c.14%. Excluding 2020 (the COVID shock), it has generated a ROIC ex-cash of c.15% in the same period. On average, the company has delivered value-accretive growth, with a ROIC greater than the weighted-average cost of capital on the back of exposure to secular growth areas, a strong orderbook and portfolio pruning. Net operating profit less adjusted taxes (NOPLAT) margins were c.13-14% on average. Management expects to expand operating margins by 30-80bps annually.

Externalities assessment

- TE Connectivity passes the Do No Significant Harm, Good Governance and Social Safeguards tests, based on our analysis.
- The company procures large quantities of metals, including copper and gold. It has made substantial progress on reporting supplier compliance including miners and smelters and we continue to engage with the company to reach 100% coverage of raw material suppliers.
- TE Connectivity has reduced its lost time injury frequency rate and total incident rate by 50% over the last three years while keeping its manufacturing employees base globally largely stable at 54,000.
- We continue to seek enhancement of emissions disclosures and greater gender diversity on the board.

Decarbonisation

US\$43,664m

Market capitalisation

1 yr: 14%

5 yr: 13%

ROIC

1 yr: 1%

5 yr: 5%

Sales growth per share

100%

Taxonomy eligible revenues

0%

Taxonomy aligned revenues

Data provided are estimates sourced from Clarity AI

Carbon avoided

KPI

Verified

SBTi status



KPI progression and emissions data

	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change	FY 2022 (2023 reporting)		YoY % change
Carbon avoided (tCO ₂ e / %)	275,542		736,373		167%	821,806		12%
	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change to intensity	FY 2022 (2023 reporting)		YoY % change to intensity
Carbon data	Absolute	Intensity	Absolute	Intensity		Absolute	Intensity	
Scope 1 & 2	558,285	46	361,338	24	-48%	237,892	15	-39%
Scope 3	4,304,797	354	4,399,582	295	-17%	3,341,036	205	-30%
	Reported or modelled data		Comments					
Carbon avoided	Estimated		TE Connectivity provided first-time disclosure of carbon avoided in its FY2023 sustainability report. However, the calculation captures overall industry/applications carbon avoided that the company helps enable, rather than its contribution to those savings based on its sales. For example, it included estimated emission savings from all EV sales globally in the reported 47m tonnes, instead of a portion of that attributable to TE Connectivity. Therefore we have continued using our estimated number.					
Scope 1 & 2 intensity	Reported		Certified renewable sources accounted for 77% of TE's global electricity consumption in FY2023. This resulted in a 45% decrease in Scope 2 emissions from electricity since FY2022.					
Scope 3 intensity	Reported		The above represents a full Scope 3 reported number (90% is within purchased goods and services), while FY2021 was an estimate. As part of its SBTi commitment, it aims to achieve 30% absolute Scope 3 reduction by 2032.					

Engagement

2023 engagement goal	Engagement activity	Outcome
Report carbon avoided	Company meeting	We provided the company with peer examples and methodologies to quantify carbon avoided. It provided first-time disclosure of carbon avoided in the FY2023 sustainability report.
Enhance disclosure of Scope 3 emissions and adopt Science based targets	Company meeting, letter	Through individual and collaborative engagement with other investors, the company has adopted SBTi-validated short-term targets. Engagement is ongoing on enhanced Scope 3 disclosure and SBTi-validated long-term targets.
Labour management and supply chain practices	Company meeting	We have been discussing supply-chain traceability /sustainability with the company throughout the year in our meetings, and the company has launched tools to enable traceability at the bill-of-materials/part level, and modified its sourcing policy to require emissions-reduction plans from bidders.
Board diversity	Company meeting	Gender diversity has improved from 21% to 25% at the senior management level. Female representation on the board is 36%. The company reports engagement index levels of 80.

Proxy voting

We voted for all items. However, we note the long tenure of some board members (>10 years) and continue to emphasise board refreshment.

2024 engagement goals

- Disclosing full Scope 3 by including downstream Scope 3 emissions
- Disclosing strategic initiatives to enable adoption of SBTi-validated long-term targets
- Improving board-level gender diversity and refreshing the board

Trane Technologies

Trane Technologies provides heating, ventilation and air conditioning (HVAC) solutions

Investment rationale

Trane Technologies is a leader in large, complex, applied commercial HVAC systems, residential HVAC units and transportation refrigeration. It has an aggressive decarbonisation target, the 'Gigaton Challenge', aiming to reduce customers' cumulative carbon footprints by 1 gigaton of CO₂e by 2030. This is among the largest climate commitments by a business-to-business company. In its emerging thermal-management business, Trane Technologies is well placed for the transition from oil & gas boilers to heat pumps, electric heating and district heating, and from high- to low-GWP refrigerants. Global-warming potential (GWP) is a measure of the potency of a greenhouse gas.

Structural growth

Trane Technologies' growth is underpinned by the need to address the 15% of global emissions generated by the heating and cooling of buildings. With 70-80% of revenues driven by replacement demand, the company's primary structural-growth driver comes from replacing older, less-efficient equipment, which often uses potent greenhouse gases. Several regulatory tailwinds are benefiting Trane Technologies. The relevant regulations will be phased in over time, which means that regulation should be a consistent support for some years.

Competitive advantage

Trane Technologies' competitive advantages stem in part from its engineering excellence and high-quality direct salesforce that have established deep customer relationships. Its market leadership is most notable in applied commercial HVAC, where complexity is greatest; users include hospitals and datacentres, which require a high level of system control. We think the company has a strong customer value proposition, supported by its product innovation and healthy customer paybacks, which also help Trane Technologies to justify price increases. The company has a strong reputation for employing and developing skilled engineers, in an industry with a shortage of skilled labour.

Sustainable returns

Trane Technologies consistently generates strong revenue growth, margins and operating leverage, with adjusted EBITDA margins of >17% and revenue growth of 9% in FY2023. It performs well from an operating perspective, driving cost savings and hence operating leverage. With US\$60m of cost savings in FY2023, total cost savings since FY2020 have reached US\$300m, delivering on management's targets. At the end of 2023, Trane Technologies delivered incremental returns of 39%, far exceeding the target of >25% incremental operating margins. This high level of operating returns reflects strong end-market demand and Trane Technologies leadership position in complex projects. Cost savings enable additional investment in innovation, which should help the company sustain its competitive position and returns. Trane Technologies ended FY2023 with a backlog of US\$6.9bn, more than twice historical norms. The backlog was mostly in applied systems and was driven by retrofitting.

Externalities assessment

- Trane Technologies passes the Do No Significant Harm, Good Governance and Social Safeguard tests, based on our analysis.
- The company needs to continue improving its energy mix. In 2023, 68% of its electricity was directly or indirectly from renewables. 26 locations operate with 100% renewable electricity, up from seven in 2022, making up 51% of total electricity use. It is a member of RE100, the global corporate renewable energy initiative, and aims to reach 100% renewable electricity by 2040.
- Trane Technologies does not disclose its gender pay gap. Gender diversity in leadership needs to improve, though there has been incremental progress, with 25% women in leadership in 2023 vs. 23% in 2019. The company is targeting gender parity in leadership roles.

Decarbonisation

US\$55,501m

Market capitalisation

1 yr: 19%

5 yr: 14%

ROIC

1 yr: 12%

5 yr: 4%

Sales growth per share

100%

Taxonomy eligible revenues

0%

Taxonomy aligned revenues

Data provided are estimates sourced from Clarity AI

Carbon avoided

KPI

Verified

SBTi status



KPI progression and emissions data

	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change	FY 2022 (2023 reporting)		YoY % change
Carbon avoided (tCO ₂ e / %)	7,700,000		42,300,000		449%	43,000,000		2%
	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change to intensity	FY 2022 (2023 reporting)		YoY % change to intensity
Carbon data	Absolute	Intensity	Absolute	Intensity		Absolute	Intensity	
Scope 1 & 2	348,770	28	318,718	23	-18%	293,347	18	-20%
Scope 3	242,354,105	19,459	402,705,277	28,487	46%	339,701,943	21,242	-25%
	Reported or modelled data		Comments					
Carbon avoided	Reported		The company continues to see an improvement in carbon avoided, although the rate of change slowed between 2022 and 2021. Trane remains early in the lifecycle of its gigatonne challenge and we expect the pace of improvement to increase as the shift to more efficient refrigerants occurs.					
Scope 1 & 2 intensity	Reported		FY2021-2022 intensity reduction was driven by a transition to lower-GWP refrigerants, more efficient HVAC systems and energy efficient operations.					
Scope 3 intensity	Reported		FY2021-2022 intensity reduction was due to electrification and refrigerant transition.					

Engagement

2023 engagement goal	Engagement activity	Outcome
Gigaton Challenge progress	Company meeting	The company is making steady progress towards its targets. It has released a net-zero roadmap showing the timeline of expected emissions reductions and key stages.
Improving gender diversity in leadership	Company meeting	To shift towards equitable leadership development, Trane Technologies operates a Women's Leadership programme (280 graduates in 2023) and a Women in Action programme (1,730 participants in 2023).
Board refreshment	Company meeting	We have been engaging with Trane Technologies about board refreshment for several years. While our proxy voting (see below) continued to support board continuity and strategy, we continue to push for refreshment at an appropriate pace to ensure independence. We have seen improvements in board composition, with four new directors appointed in recent years. The board is gender neutral.

Proxy voting

Consistent with our proxy voting activity in the prior year, we voted against two tenured directors on the audit committee, as we would like to see an independent audit committee. We supported all other items.

2024 engagement goals

- Making progress on the Gigaton Challenge
- Improving gender diversity
- Refreshing the board

Vestas Wind Systems

Decarbonisation

Vestas Wind Systems is the world's largest wind-turbine manufacturer and service provider

Investment rationale

Sustainable decarbonisation requires a radical transformation from a fossil-fuel powered world to green energy, mainly wind and solar. Vestas Wind Systems designs, manufactures and services wind turbines globally, and is the world's largest supplier of wind-energy technology. Combined with its expertise, this means it has a significant impact on how the renewables industry scales and matures. A Vestas Wind Systems' turbine is energy neutral after only 5-8 months of operation and delivers the highest energy payback of all current energy technologies.

Structural growth

Wind and solar are now the cheapest sources of renewable energy in over two-thirds of the world, including the US, China, India and Brazil. Stable and high demand for onshore wind, coupled with the improving economics of offshore wind projects – against the backdrop of a need for mass electrification and rising energy-security concerns – means the wind-technology sector is likely to experience extended periods of high growth. Further, we expect Vestas Wind Systems' large installed base to produce a steady stream of service revenues (servicing is critical to maintaining wind-asset health and productivity). In 2023, the company achieved industry-leading revenue and secured preferred-supplier agreements worldwide, with an order intake of 18.4GW. We expect structural tailwinds to continue to support its long-term growth.

Competitive advantage

Vestas Wind Systems' primary competitive advantage is in its service business. First, long service contracts (the average contract length is >10 years) enable the company to lock-in high returns for extended periods, as well as creating the potential for high-value aftermarket sales like digital services or power-curve upgrades. Second, 95% of the operation and maintenance orders signed by Vestas Wind Systems are performance guaranteed. Customers prefer performance-guaranteed contracts to maximise turbine utilisation and achieve more predictable returns by sharing risks/rewards with the original equipment manufacturer (OEM). But only OEMs like Vestas Wind Systems, with a large installed base and spare parts access, are willing to take on such project risks. Finally, the company's scale improves service efficiency, helping it to maintain a sizeable market share in the higher-margin service segment of a consolidated industry.

Sustainable returns

Following a cost-cutting programme that began in 2013, Vestas Wind Systems consistently generated strong returns vs. peers. However, the last three years have been challenging for the wind OEM industry owing to supply-chain instability, which led to cost inflation and constraints on turbine delivery. Due to a lack of a cost pass-through mechanism in pricing previously and long delivery lead times, industry returns were negatively impacted, and Vestas Wind Systems was no exception. At the same time, the wind industry has undergone consolidation, resulting in a more stable competitive environment. We expect Vestas Wind Systems to keenly pursue profitability improvement in various ways, including ramping up Vestas Development and pursuing its 'One Vestas' strategy, whereby onshore and offshore opportunities are given equal footing, with a client-centric focus. The company remains optimistic about reaching a 10% earnings-before-interest-and-taxes margin in the medium term and a minimum 20% ROCE through the cycle.

Externalities assessment

- The company passes the Do No Significant Harm, Good Governance and Social Safeguards tests, based on our analysis.
- Vestas Wind Systems has one of the most ambitious carbon-reduction programmes of any company worldwide, targeting carbon neutrality by 2030 without offsets.

US\$32,122m

Market capitalisation

1 yr: 6%

5 yr: 3%

ROIC

1 yr: 6%

5 yr: 9%

Sales growth per share

99%

Taxonomy eligible revenues

99%

Taxonomy aligned revenues

Data provided are estimates sourced from Clarity AI

Carbon avoided

KPI

Verified

SBTi status



KPI progression and emissions data

	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change	FY 2022 (2023 reporting)		YoY % change
Carbon avoided (tCO ₂ e / %)	493,000,000		532,000,000		8%	408,000,000		-23%
	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change to intensity	FY 2022 (2023 reporting)		YoY % change to intensity
Carbon data								
Scope 1 & 2	73,127	4	101,963	6	50%	99,428	7	9%
Scope 3	9,794,000	579	10,564,110	573	-1%	8,177,390	536	-6%
	Reported or modelled data		Comments					
Carbon avoided	Reported		The 2022 decline was due to industry-wide supply-chain constraints, which slowed down turbine deliveries during the year.					
Scope 1 & 2 intensity	Reported		The small increase was driven by a revenue decline in 2022, while absolute emissions were approximately flat.					
Scope 3 intensity	Reported		The reduction in Scope 3 emissions was a result of lower emissions from purchased goods and services.					

Engagement

2023 engagement goal	Engagement activity	Outcome
Progress towards SBTi targets	Company meeting	We discussed the rationale behind Vestas' 2050 net-zero commitment being removed by SBTi. The company continues to work on 2030 targets, aiming for carbon neutrality without offsets.
Progress on initiating biodiversity policies	Company meeting	The company is still conducting an internal assessment. It is working with an external consultant to measure the impact and will follow up with relevant key performance indicators to track progress.

Proxy voting

In 2023, we abstained in a vote to ratify PricewaterhouseCoopers as auditor due to long tenure (since 1998) and because we regarded non-audit fees (as a percentage of total fees paid to the audit firm) as high. We supported all other items.

2024 engagement goals

- Monitoring progress on the Science-Based Target initiative
- Initiating biodiversity policies
- Disclosing gender pay gap

Voltronic Power Technology

Voltronic Power Technology supplies UPS and PV inverters.

Investment rationale

Voltronic is a design and manufacturing service (DMS) supplier for uninterruptible power systems (UPS) and photovoltaic (PV) inverters. PV inverters are a crucial part of solar power generation systems and Voltronic's UPS drive improved energy efficiency, particularly in emerging markets.

Structural growth

Given the global focus on energy independence, we expect the PV inverter segment to grow c.20% annually in the medium term. 2022 was a particularly strong year, supported by strong demand in Europe, South Africa and Pakistan. However, this was followed by a year of destocking. The compound annual growth rate of the UPS industry has been >5% historically, but 2023 was also impacted by destocking headwinds. As the environment normalises, we expect Voltronic's growth to return to its historical double-digit level. Over the long-term, we believe stable growth will continue in developed markets due to the build-out of datacentres and enterprise servers. In emerging markets, there are even larger growth opportunities, where greater infrastructure development is required. In addition, the company continues to benefit from outsourcing trends among tier-1 customers. Its product suite now includes energy storage systems and electric vehicle chargers.

Competitive advantage

With no brand of its own, rather creating bespoke solutions for other companies, Voltronic does not compete with its customers, which helps to protect relationships with them. This is an advantage relative to competitors who also manufacture for their own brands. Customer 'stickiness' is enhanced by the extensive due diligence involved to be approved as a supplier. Original design manufacturer (ODM) certification takes at least six months; and each product must be audited and approved for sale, which takes another 6-12 months. Finally, the company benefits from economies of scale that enable it to design and manufacture UPS and solar inverters at a lower cost than other companies – an advantage that is growing due to investment in manufacturing facilities in China. The company is also continuing to invest in increasing its manufacturing base in Vietnam to improve flexibility in the context of US/China geopolitical tensions.

Sustainable returns

Voltronic has delivered an average ROE of c.40% over the last 10 years, partly driven by global customers increasingly outsourcing UPS production to lower cost manufacturers. It offers a quality service that we believe will enable it to maintain these returns over the longer term. A more favourable product mix should also help sustain returns: the company offers UPS with higher power densities (for datacentres and enterprise-scale solutions), which generate better margins.

Externalities assessment

- Voltronic passes the Do No Significant Harm, Good Governance and Social Safeguards tests, based on our analysis.
- Board gender diversity still stands at 37.5%, a significant improvement from 11% in 2018.
- As noted last year, we would like to see the company progress towards establishing a science-based target.

Decarbonisation

US\$4,906bn

Market capitalisation

1 yr: 35%

5 yr: 36%

ROIC

1 yr: -17%

5 yr: 10%

Sales growth per share

100%

Taxonomy eligible revenues

35%

Taxonomy aligned revenues

Data provided are estimates sourced from Clarity AI

Carbon avoided

KPI

No commitment

SBTi status



KPI progression and emissions data

	FY 2020 (2021 reporting)	FY 2021 (2022 reporting)	YoY % change	FY 2022 (2023 reporting)	YoY % change
Carbon avoided	670,301	765,310	+14%	1,002,145	+31%

Emissions data progression

	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change to intensity	FY 2022 (2023 reporting)		YoY % change to intensity
Carbon data	Absolute	Intensity	Absolute	Intensity		Absolute	Intensity	
Scope 1 & 2	19,304	32	19,304	32	-6%	21,744	29	-11%
Scope 3	643,103	1,387	768,882	1,266	-9%	804,669	1,055	-17%

	Reported or modelled data	Comments
Carbon avoided	Reported	Carbon avoided increased with strong UPS and PV inverter sales.
Scope 1 & 2 intensity	Reported	Voltronic reports Scope 1, 2 and 3 (all categories). Based on FY2022 data, absolute emissions increased with higher revenues, but declined on an intensity basis with revenue growth outpacing emissions.
Scope 3 intensity	Reported	As above

Engagement

2023 engagement goal	Engagement activity	Outcome
Science-Based Target commitment	Company meeting (Taiwan)	The company has not yet committed to setting a science-based net-zero target through the SBTi. However, it has set targets to be net zero in its operations by 2035 and to have a net-zero supply chain by 2050. While the intentionality is present (in addition to making practical progress towards decarbonisation in its operations), we believe a decarbonisation target is best set within an SBTi framing, hence we will continue to engage on this topic.

Proxy voting

We supported all items.

2024 engagement goals

- Setting an SBTi target
- Improving board gender diversity

Waste Management

Decarbonisation

Waste Management is the largest waste-collection and processing company in the US

Investment rationale

Waste Management has an extensive landfill network that permanently sequesters carbon and other greenhouse gases. The company also employs methane-capture technology on an increasing portion of its landfill sites and uses this gas to produce and sell renewable natural gas (RNG). In addition, Waste Management is a significant player in the recycling industry, collecting and sorting materials such as metal, paper, plastic and glass, which reduces the requirement for virgin materials.

Structural growth

We believe the company is exposed to multiple structural-growth drivers, including rising volumes of US household and business waste, which should drive revenues from collections and landfill. In the near-term, Waste Management has seen slower volume growth but this has been more than offset by strong pricing. We also expect to see growing demand for recycled materials and RNG, in which the company is deploying approximately US\$2.2bn of incremental capital expenditure. The US government's National Recycling Goal is to increase the recycling rate across the country to 50% by 2030, up from c.32% currently (due to fairly high levels of paper and card recycling).

Competitive advantage

Waste Management has a large market share in the consolidated US waste industry. Its competitive advantages arise from its leading network: it has the largest number of landfill sites and recycling facilities in the US. The mission-critical nature of waste collection and disposal further strengthens its pricing power. Waste Management also has a leading capability to capture methane at its landfill sites (which is released as waste decomposes). Waste Management have focused on workplace practices that go beyond monetary compensation (such as education for employee dependents) which has supported lower employee turnover (voluntary turnover declined to 15% from 20% in 2022).

Sustainable returns

Waste Management's return on capital has been improving with US waste industry consolidation and landfill commissioning becoming harder. We expect this trend to continue, with the company's pricing power supported by increasing monetisation of its asset base through better utilisation of recycling facilities and sales of RNG.

Externalities assessment

- Waste Management passes the Do No Significant Harm, Good Governance and Social Safeguards tests, based on our analysis.
- Female board representation remains 33%. We have been engaging with the company on this, as well as on board tenure. We expect further board refreshment, which should move this ratio towards 50%.
- We would like additional disclosure on matters including emissions to water, gender pay gap and biodiversity.

US\$72,137m

Market capitalisation

1 yr: 12%

5 yr: 11%

ROIC

1 yr: 6%

5 yr: 8%

Sales growth per share

100%

Taxonomy eligible revenues

26%

Taxonomy aligned revenues

Data provided are estimates sourced from Clarity AI

Carbon avoided

KPI

Verified

SBTi status



KPI progression and emissions data

	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change	FY 2022 (2023 reporting)		YoY % change
Carbon avoided (tCO ₂ e / %)	52,720,000		52,080,000		-1%	48,320,000		-7%
	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change to intensity	FY 2022 (2023 reporting)		YoY % change to intensity
Carbon data	Absolute	Intensity	Absolute	Intensity		Absolute	Intensity	
Scope 1 & 2	16,975,324	1,115	17,158,208	957	-14%	15,460,480	785	-18%
Scope 3	3,502,992	230	3,357,742	187	-19%	1,488,094	76	-60%
	Reported or modelled data		Comments					
Carbon avoided	Reported		The small decline in carbon avoided was a result of lower contribution from recycling, landfill sequestration and renewable energy generation.					
Scope 1 & 2 intensity	Reported		The reduction in Scope 1&2 emissions is a result of lower landfill emissions (with higher capture and cover), lower truck mileage and higher renewable energy use.					
Scope 3 intensity	Reported		The decline in Scope 3 was due to a change in calculating emissions. The company now uses environmental input-output data to do so.					

Engagement

2023 engagement goal	Engagement activity	Outcome
Board tenure and diversity	Proxy vote	Average board tenure is now five years and only one director has a tenure of more than 10 years. We will continue to discuss diversity.
Sustainability targets for management compensation	Company meeting/Letter	In collaboration with CalSTRS, we asked the company to integrate sustainability considerations into management compensation. It has done so in short term incentives, but not yet long-term incentives.
Methane capture and measurement	Company meeting	Waste Management continues to make progress on capture and beneficial use of landfill gas. With a validated science-based target, we believe there is a robust framework around this topic (goal removed).
Disclose unadjusted gender pay gap	N/A	The company discloses the ratio of basic salary and remuneration of females to males, which is currently 95%.
Disclose emissions to water	N/A	No update this year.
Biodiversity disclosure	Company meeting	The company has a robust environmental compliance programme and works with the wildlife habitat council. It has not yet completed a broad analysis of exposure to sensitive ecosystems.

Proxy voting

We voted against a board member with excessive tenure. The company had confirmed the director was leaving the board in 2024, but we maintained our position to show consistency in requesting less tenured directors. We supported all other items.

2024 engagement goals

- Improving board diversity
- Adopting sustainability targets in management compensation
- Disclosing emissions to water
- Improving biodiversity disclosure

Wuxi Lead Intelligent Equipment

Wuxi Lead primarily designs, manufactures and sells lithium-ion battery production equipment and provides services

Investment rationale

Sustainable decarbonisation will require a rapid transition from internal combustion engine cars to electric vehicles (EVs), and from fossil fuels-based power generation to renewable energy combined with energy storage systems (ESS). Wuxi Lead is the largest equipment supplier for producers of lithium-ion batteries globally. It serves Chinese customers such as CATL and BYD, and increasingly international customers such as Volkswagen, Northvolt and Automotive Cells Company (a Total, Stellantis and Mercedes joint venture).

Structural growth

We forecast rapid electrification of transport, with EVs going from 13% of vehicle sales today to c.50% by 2030, driving an increase in EV battery demand from 705GWh in 2023 to an expected >3TWh by 2030. The ESS market is growing even faster, from 160GWh in 2023 to a projected >1TWh by 2030. Wuxi Lead has grown battery equipment revenues by a 56% compound annual growth rate since its listing in 2015, mainly from Chinese battery capacity expansion. We expect growth to be supported by demand from outside of China in future. Wuxi Lead is also a leading solar photovoltaic and hydrogen fuel-cell equipment provider in China.

Competitive advantage

Wuxi Lead's competitive advantages including durable customer relationships, expanding high-margin international sales, and fast delivery and service response times (vs. Japanese and Korean competitors). The company can supply fully integrated lithium-ion battery production lines and offer cost-effective, timely service to customers, and works closely with tier-1 battery manufacturers in China and internationally. It has more pricing power than its peers due to its products' performance and the level of customisation it provides. It also has a sales, manufacturing, service and R&D presence globally, which is crucial for capturing market growth outside of China. The company has a distinctive culture, prioritising innovation and pragmatism. It is heavily influenced by its founder/largest owner, Yanqing Wang, a technician by training who commits to spend 10% of sales on R&D and allocates R&D budget based on the innovative prospects of each division.

Sustainable returns

In FY2023, Wuxi Lead generated a 15% ROE and a 13% ROIC. Although this was the lowest since COVID, due to headwinds in revenue recognition and working capital, its asset-light business model enables a high gross-margin revenue profile. We believe the company's strong competitive advantages should continue to support strong returns on capital.

Externalities assessment

- Wuxi Lead passes the Do No Significant Harm, Good Governance and Social Safeguards tests, based on our analysis.
- The company remains reliant on non-renewable energy sources as it draws electricity directly from the grid in Jiangsu province. In 2023, 84% of electricity consumed in Jiangsu was non-renewable.
- Wuxi Lead does not have a clear emissions target for Scope 1 or 2 emissions. It disclosed Scope 3 emissions for the first time in its 2023 ESG report, although details are not yet available given the time lag of the detailed CDP report.
- Of eight directors, only one is female and three are independent. The company does not disclose its unadjusted gender pay gap or employee turnover.

Decarbonisation

US\$5,646m

Market capitalisation

1 yr: 13%

5 yr: 15%

ROIC

1 yr: 19%

5 yr: 25%

Sales growth per share

91%

Taxonomy eligible revenues

91%

Taxonomy aligned revenues

Data provided are estimates sourced from Clarity AI

Carbon avoided

KPI

No commitment

SBTi status



KPI progression and emissions data

	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change	FY 2022 (2023 reporting)		YoY % change
Carbon avoided (tCO ₂ e / %)	676,871		1,313,464		94%	1,955,181		49%
	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change to intensity	FY 2022 (2023 reporting)		YoY % change to intensity
Carbon data	Absolute	Intensity	Absolute	Intensity		Absolute	Intensity	
Scope 1 & 2	15,664	18	32,948	21	17%	37,411	18	-14%
Scope 3	1,039,228	1,223	1,816,943	1,168	-4%	11,349,008	5,478	369%
	Reported or modelled data		Comments					
Carbon avoided	Estimated		The increase was mainly driven by an increase in battery and solar equipment revenues.					
Scope 1 & 2 intensity	Reported		Scope 1 and 2 intensity was little changed year-on-year in CNY terms.					
Scope 3 intensity	Estimated		Following our engagements, Wuxi Lead disclosed Scope 3 for FY2023 in its 2023 ESG report. We have used this figure to estimate the FY2022 Scope 3 emissions shown here. This results in a 4.7x increase year-on-year vs. the MSCI-modelled figure shown for FY2021.					

Engagement

2023 engagement goal	Engagement activity	Outcome
Scope 1 & 2 targets	Company meeting	Wuxi Lead believes it can commit to a 2030 target, but will need to follow up on this after further internal discussions.
Scope 3 carbon emissions	Company meeting	The company was already working on this at the time of engagement. The data was disclosed when the ESG report was released in April 2024.
Carbon avoided estimates	Company meeting	This is an ongoing discussion.
Diversity	Company meeting	We suggested several data points to start disclosing, such as R&D staff turnover ratio (vs. overall employee turnover). We recognise the challenge for manufacturing and electrical companies to increase female representation at board, management and employee level. This remains a long-term engagement target.

Proxy voting

We voted against a share-incentive plan proposed in October 2023, as the target partly included already published financial results. We also voted against a proposal to use own funds to invest in financial products as we believe the proposal lacked details of the specific types of investments that would be authorised for purchase. We supported all other items.

2024 engagement goals

- Setting Scope 1, 2 and 3 emission targets
- Disclosing carbon avoided disclosure
- Disclosing unadjusted gender pay gap disclosure
- Improving board gender diversity
- Committing to the Science-Based Target initiative

Xinyi Solar

Xinyi Solar is the world's largest producer of solar glass

Investment rationale

Xinyi Solar, the world's largest producer of solar glass, is directly exposed to the solar industry, and therefore well placed to benefit from the move away from fossil fuels to generate electricity towards renewable energy, mainly wind and solar. At year-end 2023, it had ultra-clear solar glass capacity of 25,800t per day, equating to c.25% of the global solar-glass market. It also owned 5.94GW of solar-power projects (built or acquired).

Structural growth

Xinyi Solar is directly exposed to growth in solar demand. Its main product, solar glass, is a critical component in solar panels, shielding against moisture, corrosion and physical damage to solar cells. The company has plans to add another 6,400t/day of capacity by the end of 2024. The business is well-placed to benefit from the trend towards bifacial panels (two panes instead of one, increasing power-yield by 10-30%), which increases demand for solar glass.

Competitive advantage

Xinyi Solar's main advantages are its technological expertise, gained through two decades of experience, lower production costs and scale economics. Its size gives it a stronger bargaining position regarding input costs than its smaller peers. The ability to secure capacity expansion approval has increasingly become a source of competitive advantage for industry leaders like Xinyi Solar, as the Chinese government tightens the approval process for the renewables industry to tackle oversupply.

Sustainable returns

Xinyi Solar enjoys a high gross profit margin and return on capital relative to its second-tier peers. Despite headwinds in the first half of 2023, including a spike in the cost of natural gas and price competition across the renewables supply chain in China, Xinyi Solar managed to deliver a 27% gross margin, 14% ROE and 11% ROIC for the year. This was the company's weakest year since 2012, but its returns were still significantly better than most of its subscale peers, which struggled to maintain positive profits.

Externalities assessment

- Xinyi Solar passes the Do No Significant Harm, Good Governance and Social Safeguards tests, based on our analysis.
- Solar-glass production is energy intensive, involving heating up raw materials to extremely high temperatures via the combustion of natural gas. Solar panels typically pay back their embedded carbon footprint in 1-4 years, but we believe Xinyi Solar should be more ambitious in reducing its own emissions, notwithstanding the positive carbon externalities. According to Xinyi Solar's CDP report, only 5% of total energy consumption came from renewable energy sources in 2022.
- Xinyi Solar currently aims to reduce production-based emissions by 15% by 2027 vs. 2022. We are engaging to explore other zero-carbon options.
- The company joined the UN Global Compact in 2023, a positive step towards better managing human- and social-externality risks.

Decarbonisation

US\$5,198m

Market capitalisation

1 yr: 11%

5 yr: 13%

ROIC

1 yr: 30%

5 yr: 24%

Sales growth per share

100%

Taxonomy eligible revenues

100%

Taxonomy aligned revenues

Data provided are estimates sourced from Clarity AI

Carbon avoided

KPI

No commitment

SBTi status



KPI progression and emissions data

	FY 2020 (2021 reporting)	FY 2021 (2022 reporting)	YoY % change	FY 2022 (2023 reporting)	YoY % change
Carbon avoided (tCO ₂ e / %)	2,320,000	3,075,000	33%	3,640,000	18%

	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change to intensity	FY 2022 (2023 reporting)		YoY % change to intensity
Carbon data	Absolute	Intensity	Absolute	Intensity		Absolute	Intensity	
Scope 1 & 2	2,522,913	1,589	3,249,629	1,572	-1%	3,929,933	1,498	-5%
Scope 3	780,571	492	1,382,163	669	36%	1,555,749	593	-11%

	Reported or modelled data	Comments
Carbon avoided	Reported	The calculation is based on 4,396GWh of solar power generation. Xinyi Solar also reported 75.6mt of carbon avoided based on expected savings from solar modules produced in 2022 using solar glass it supplied. We have not included this as the underlying assumptions were unclear.
Scope 1 & 2 intensity	Reported	Scope 1 and 2 intensity declined due to progress on the production-based emissions reduction target.
Scope 3 intensity	Estimated	The intensity change reflects differences in MSCI estimated peer-group averages.

Engagement

2023 engagement goal	Engagement activity	Outcome
Monitor carbon emissions target progress	Company meeting	2022 was the last year of Xinyi Solar's five-year production-based emissions reduction plan. In 2023, the company set a new emissions-reduction target of -15% by 2027 vs. 2022. In its ESG report covering 2023, Xinyi Solar said it had achieved an emissions reduction of 12% in just the first year.
Work towards Scope 3 reporting	Company meeting	Xinyi Solar acknowledges the importance of reporting Scope 3 and is working towards doing so. However, it notes that gathering supply-chain data remains quite difficult in China.

Proxy voting

We voted against the equity issuance authorisation as it exceeds our internal dilution limit. We supported all other items.

2024 engagement goals

- Improving capital-allocation discipline
- Monitoring progress towards carbon emissions target
- Reporting Scope 3

Zhejiang Sanhua Intelligent Controls

Sanhua supplies automotive heat-management systems and HVAC (heating, ventilation and air conditioning) components.

Investment rationale

Sanhua is a leading global supplier of automotive heat-management systems and HVAC components. It is positively exposed to two sectors that require a rapid transition to decarbonise: automotive, which requires electrification; and HVAC, which needs a major efficiency upgrade. Sanhua's automotive heat-management solutions help maintain an optimal working temperature for batteries and improve driving range. The company also makes specialised components such as EXVs (electronic expansion valves), which are key for HVAC original equipment manufacturers to achieve high energy efficiency.

Structural growth

The electric vehicle and HVAC sectors provide significant structural-growth opportunities in the transition to a low-carbon economy. Sanhua achieved revenue growth in 2023 of 15%, comprising 32% growth in autoparts and 6% in HVAC. We forecast growth of the autoparts segment to CNY17bn (US\$2.4bn) by 2025, a further 31% CAGR vs. 2023, supported by a strong order backlog. The HVAC segment has seen a steady 13% CAGR since 2015, driven by increasing EXV adoption and market-share gains. Recently, Sanhua has seen strong heat-management component demand from energy storage systems, especially Tesla's Megapack and microchannel heat exchangers in North America.

Competitive advantage

Sanhua is a one-stop shop for HVAC and automotive heat-management components such as pipes, valves and heat exchangers. It has a global market share of >50% across many of these components, including EXVs. Its scale gives it a consistent cost advantage over its competitors. Sanhua is a leader in auto heat-management, with strong R&D and volume-manufacturing capabilities. It has achieved greater R&D efficiency by sharing research across autoparts and HVAC, while maintaining higher absolute R&D spending than its competitors.

Sustainable returns

Sanhua's gross margins have been approximately 25-30%, with net margins of at least 10%, since 2016. It has generated an ROE of 10-21% and a ROIC of 9-15% since the Global Financial Crisis. Sanhua's returns declined slightly in 2023, to 19% ROE and 12% ROIC, largely due to upfront investments in new growth areas. Returns have been achieved largely organically.

Externalities assessment

- Sanhua passes the Do No Significant Harm, Good Governance and Social Safeguards tests, based on our analysis.
- The company remains reliant on non-renewable energy, reflecting the eastern Chinese grid, which in 2023 had a percentage renewables share in the low double-digits.
- The company lacks Scope 3 emissions disclosure and Scope 1 and 2 emissions targets.
- Only one of nine directors is female. She joined the board in 2021.
- Sanhua does not disclose its unadjusted gender pay gap or employee turnover.

Decarbonisation

US\$15,454m

Market capitalisation

1 yr: 12%

5 yr: 12%

ROIC

1 yr: 12%

5 yr: 17%

Sales growth per share

100%

Taxonomy eligible revenues

0%

Taxonomy aligned revenues

Data provided are estimates sourced from Clarity AI

Carbon avoided

KPI

No commitment

SBTi status



KPI progression and emissions data

	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change	FY 2022 (2023 reporting)		YoY % change
Carbon avoided (tCO ₂ e / %)	765,531		53,880,000		6938%	51,320,513		-5%
	FY 2020 (2021 reporting)		FY 2021 (2022 reporting)		YoY % change to intensity	FY 2022 (2023 reporting)		YoY % change to intensity
Carbon data	Absolute	Intensity	Absolute	Intensity		Absolute	Intensity	
Scope 1 & 2	222,596	127	259,381	104	-18%	334,617	105	1%
Scope 3	1,941,229	1,105	2,053,311	827	-25%	4,061,806	1,280	55%
	Reported or modelled data		Comments					
Carbon avoided	Reported		Last year, Sanhua estimated carbon avoided for the first time via CDP, which included 128mt from microchannel heat exchangers (MCHXs), 50mt from EXVs, and 4mt from variable frequency drive (VFD) air conditioners. We only included EXVs and VFDs in our carbon avoided calculation, as we felt the assumptions behind the MCHX savings were too generous. This year, Sanhua reported carbon savings of 552mt from MCHXs, 45mt from EXVs and 6m from VFDs. We again only included carbon savings from EXVs and VFDs. The 5% decline was due to more conservative assumptions for EXVs.					
Scope 1 & 2 intensity	Reported		Sanhua's reported Scope 1 and 2 intensities were little changed year on year. We continue to engage with the company to improve on the completeness of its carbon reporting, as well as on setting an emissions target.					
Scope 3 intensity	Estimated		MSCI estimates differ year on year, driven by changes in the peer-group average.					

Engagement

2023 engagement goal	Engagement activity	Outcome
Scope 1 & 2 targets	Company meeting	The company will need to follow up pending internal discussions. It has received requests from customers globally to set a target.
Scope 3 reporting	Company meeting	Data is still being collected for Scope 3. Sanhua plans to disclose the figure in the next two years.
Improving carbon avoided methodology	Company meeting	Discussions are ongoing regarding the robustness of the underlying assumptions.
Auditor tenure, equity incentive plan, more details in the sustainability report	Company meeting	Sanhua is considering changing auditor due to tenure and is now collecting feedback from shareholders. It is considering adding further performance criteria to its incentive plan; ROE is the only metric at present. At Sanhua's request, we provided input on issues to cover in the ESG report, many of which were addressed in its inaugural report covering the year 2023.

Proxy voting

We voted against the reappointment of the auditor as we felt its tenure was too long. We supported all other items.

2024 engagement goals

- Setting Scope 1 and 2 emissions targets
- Reporting Scope 3
- Improving carbon avoided methodology
- Addressing auditor tenure
- Amending the incentive plan



Climate targets: details

Company (SBTi status)	Climate target detail
Ansys (No commitment)	Reduce Scope 1 and 2 15% by 2027 vs. a 2019 base year.
Aptiv (Verified)	Reduce absolute Scope 1 and 2 100% by 2030 vs. a 2021 base year. Reduce absolute Scope 3 47.4% within the same timeframe.
Autodesk (Verified)	Reduce absolute Scope 1 and 2 50% by FY2031 vs. a FY2020 base year. Reduce Scope 3 from purchased goods and services, fuel and energy-related activities, business travel and employee commuting 55% per dollar of gross profit over the same timeframe. Achieve 26.5% of suppliers by emissions, covering purchased goods and services and business travel, having science-based targets by FY2027. Continue sourcing 100% renewable electricity annually through FY2031.
Carlisle Companies (Verified)	Reduce absolute Scope 1 and 2 44.9% by 2030 vs. a 2021 base year (the target boundary includes land-related emissions and removals from bio-energy feedstocks). Reduce Scope 3 51.6% per pound of product produced within the same timeframe.
CATL (No commitment)	Scope 1 and 2 carbon neutral by 2025, and Scope 1,2 and 3 carbon neutral by 2035.
Croda International (Verified)	Reduce absolute Scope 1 and 2 46.2% by 2029 vs. a 2018 base year (the target boundary includes biogenic emissions and removals from bio-energy feedstocks). Reduce upstream Scope 3 13.5% within the same timeframe.
Iberdrola (Verified)	Overall target: Reach net-zero across the value chain by 2039. Near-term targets: Reduce absolute Scope 1, 2 and 3 65% by 2030 vs. a 2020 base year. Within this target, reduce Scope 1 and 2 from power generation 83% per kWh by 2030 vs. a 2020 base year. Reduce Scope 1 and 3 from fuel and energy-related activities covering all sold electricity 85% per kWh within the same timeframe. Reduce absolute Scope 3 from use of sold products 42% within the same timeframe. Reduce all remaining absolute Scope 3 46% within the same timeframe. Long-term targets: Reduce Scope 1, 2 and 3 90% by 2039 vs. a 2020 base year. Within that target, reduce Scope 1 and 2 from power generation 84% per kWh by 2039 vs. a 2020 base year. Reduce Scope 1 and 3 from fuel and energy-related activities covering all sold electricity 95% per kWh within the same timeframe. Reduce absolute Scope 3 from use of sold products 90% within the same timeframe. Reduce all remaining absolute Scope 3 90% within the same timeframe.
Industrie De Nora (No commitment)	Reduce absolute Scope 1 and 2 25% by 2027 and 50% by 2030. Reduce Scope 3 intensity 50% by 2030.
Infineon Technologies (Committed)	Reduce Scope 1 and 2 70% by 2025 vs. 2019. Become carbon neutral by 2030. Use 100% renewables by 2025.



Climate targets: details continued

Company (SBTi status)	Climate target detail
NextEra Energy (No commitment)	Reach 'real zero' goal no later than 2045: i.e., eliminating carbon emissions from operations at no additional cost to customers.
Novonesis (Verified)	Overall target: Reach net zero across the value chain by 2050. Near-term targets: Reduce absolute Scope 1 and 2 75% by 2030 vs. a 2018 base year (the target boundary includes biogenic emissions and removals associated with the use of bio-energy). Increase annual sourcing of renewable electricity from 37% in 2018 to 100% by 2025. Reduce absolute Scope 3 from purchased goods and services, fuel and energy-related activities, upstream transportation and distribution, waste generated in operations and business travel 35% by 2030 vs. a 2018 base year. Long-term targets: Reduce absolute Scope 1 and 2 90% by 2050 vs. a 2018 base year (the target boundary includes biogenic emissions and removals associated with the use of bio-energy). Reduce absolute Scope 3 from purchased goods and services, fuel and energy-related activities, upstream transportation and distribution, waste generated in operations and business travel 90% within the same timeframe.
Orsted (Verified)	Overall target: Reach net-zero across the value chain by 2040. Near-term targets: Reduce Scope 1 and 2 98% per kWh by 2025 vs. a 2006 base year (the target boundary includes land-related emissions and removals from bio-energy feedstocks). Reduce absolute Scope 3 50% by 2032 vs. a 2018 base year. Long-term targets: Reduce Scope 1 and 2 99.8% per kWh by 2040 vs. a 2006 base year. Reduce Scope 1, 2 and 3 (excluding from use of sold products) 99% per kWh by 2040 vs. a 2018 base year. Reduce absolute Scope 3 from use of sold products 90% by 2040 vs. a 2018 base year.
Power Grid Corp of India (No commitment)	No target.
Rockwell Automation (Committed)	Become Scope 1 and 2 carbon neutral by 2030.
Schneider Electric (Verified)	Overall target: Reach net zero across the value chain by 2050. Near-term targets: Reduce absolute Scope 1 and 2 76% by 2030 vs. a 2021 base year. Increase annual sourcing of renewable electricity from 82% in 2021 to 100% by 2030. Reduce absolute Scope 3 25% by 2030 vs. a 2021 base year. Long-term targets: Reduce absolute Scope 1 and 2 90% by 2050 vs. a 2021 base year. Reduce absolute Scope 3 90% within the same timeframe.



Climate targets: details continued

Company (SBTi status)	Climate target detail
Sungrow Power Supply (No commitment)	Become Scope 1 and 2 carbon neutral by 2028, Scope 3 carbon neutral by 2038, and net zero for Scope 1, 2 and 3 by 2048.
TE Connectivity (Verified)	Reduce absolute Scope 1 and 2 70% by 2030 vs. a 2020 base year. Reduce absolute Scope 3 – covering purchased goods and services, capital goods, fuel and energy-related activities and upstream transportation and distribution – 30% by 2032 vs. a 2022 base year.
Trane Technologies (Verified)	Overall target: Reach net-zero across the value chain by 2050. Near-term targets: Reduce absolute Scope 1 and 2 50% by 2030 vs. a 2019 base year. Reduce Scope 3 55% per cooling ton from use of sold products within the same timeframe. Long-term targets: Reduce absolute Scope 1 and 2 90% by 2050 vs. a 2019 base year. Reduce Scope 3 97% per cooling ton from use of sold products within the same timeframe.
Vestas Wind Systems (Verified)	Reduce absolute Scope 1 and 2 100% by 2030 vs. a 2019 base year (the target boundary includes biogenic emissions and removals from bio-energy feedstocks). Reduce Scope 3 emissions 45% per MWh delivered to the market by 2030 vs. a 2019 base year.
Voltronic Power Technology (No commitment)	Become carbon-neutral in operations by 2025. Achieve net zero by 2050. Have a net-zero supply chain by 2050.
Waste Management (Verified)	Reduce absolute Scope 1 and 2 42% by 2031 vs. a 2021 base year (the target boundary includes land-related emissions and removals from bio-energy feedstocks).
Wuxi Lead Intelligent Equipment (No commitment)	No target.
Xinyi Solar (No commitment)	Reduce Scope 1 and 2 per square metre 15% by 2027 vs. a 2022 base year.
Zhejiang Sanhua Intelligent Controls (No commitment)	No target.

Sources: company websites / publications. As at June 2024.



Governance and oversight

Every strategy in Ninety One's range labelled 'Sustainable' is subject to oversight and monitoring to ensure that it can deliver its sustainability characteristics and complies with regulatory requirements, as relevant. At the outset, the proposed investment approach of any new sustainable strategy must be approved via a structured report-back process and Ninety One's Global Product Committee.

Strategies in Ninety One's Sustainably Equity range must invest a minimum proportion of the portfolio in 'Sustainable Investments'. These are investments that can demonstrate a material, measurable and intentional contribution to an environmental or social characteristic, Ninety One has approved a number of methodologies for robustly assessing contributions to environmental and social characteristics, as follows:

- **Decarbonisation:** providing products or services that displace carbon emissions versus the alternative.
- **Climate adaptation and water:** contributing to helping those affected by the physical impacts of climate change.
- **Financial inclusion:** providing financial services to underserved groups.
- **Healthcare impact:** promoting healthcare inclusion and reducing health inequality.
- **Access to education:** disseminating educational and knowledge resources and providing training to help close skills gaps.
- **Digital inclusion:** bringing access to digital technologies, infrastructure and services to underserved cohorts.

For the Global Environment strategy, 100% of the investments are classified as sustainable investments under the decarbonisation methodology

Each methodology for assessing Sustainable Investments is reviewed by the Sustainable Investing Advisory Forum and approved by the Sustainability Committee before it can be used to classify Sustainable Investments.



Once a methodology has been approved, the investment team can invest in companies that it classifies as meeting the requirements of the methodology. Each quarter, all new Sustainable Investments made are reviewed by the Sustainable Investing Advisory Forum and approved by the Sustainability Committee to ensure ongoing oversight of the investment team's process for applying the approved methodologies.

This report has been reviewed by Ninety One's Sustainability team. For more information on sustainable investing at Ninety One, please see our annual [Sustainability and Stewardship report](#).





Glossary

Please note that the definitions in this glossary reflect the context in which the terms are used in this report.

Board of directors

A governing body of a company. Board directors are elected by shareholders and typically include external individuals with relevant expertise and members of the management team. See 'Executive/non-executive' director.

Carbon intensity

The amount of greenhouse gases generated by a company per unit of revenue generated.

Carbon footprint

The total volume of greenhouse gases generated by a company. Usually reported as 'CO₂ equivalent'.

Carbon avoided

The volume of greenhouse gas emissions avoided due to products, technologies and services that result in fewer emissions than the status quo products, technologies and services.

Competitive advantage

A factor that may give a company an advantage over its peers, such as larger size or superior technology.

Decarbonisation

The process of transitioning to a lower-carbon economy, including switching to renewable energy, increasing resource efficiency and electrifying transport and industrial processes (i.e., powering machines by electricity instead of higher-carbon power sources).

Engagement

Interacting with companies as a shareholder, for example to encourage positive change with respect to sustainability.

EU Taxonomy

A classification system to identify environmentally sustainable economic activities.

Executive director/non-executive director

An executive director is a member of a board of a company who is also employed by the company and typically has management responsibilities. A non-executive director is a member of a board who is not employed by the company and can provide an external perspective.

Externality

A cost a company imposes, or a benefit it confers, on people, society and the environment.

Greenhouse gases

Any gas (including carbon dioxide and methane) that contributes to the greenhouse effect (i.e., they trap heat in the atmosphere).

Key performance indicator (KPI)

In this context, a metric used to track the assess companies' performance on environmental or social issues.

Net Zero

Achieving a balance between the carbon emitted into the atmosphere, and the carbon removed from it.

Proxy vote

In this context, a vote cast on behalf of a shareholder in a company. Shareholder votes typically take place at companies' annual general meetings.



Glossary continued

Return on equity (ROE)

A measure of company profitability focused on how effectively management is using shareholders' funds.

Return on invested capital (ROIC)

A measure of company profitability focused on the return generated from capital investments made by management.

Science Based Targets initiative (SBTi)

An organisation that seeks to assist companies to set science-based emissions reduction targets, and that validates whether companies' emissions targets have met its criteria.

Science-based (emissions/net-zero) target

An emissions reduction target (and plan to achieve it) that is aligned with the goals of the Paris Agreement – limiting global warming to 1.5°C above pre-industrial levels – based on the latest climate science.

Scope 1, 2 and 3 carbon emissions

Categories of greenhouse gas emissions:
Scope 1 – All direct emissions from activities of a business or under its control. This includes fuel combustion on site such as heating boilers and vehicles. Scope 2 – Indirect emissions from energy purchased and consumed by a business. Emissions are created during the production of the energy which is eventually used by the business. Scope 3 – All indirect emissions not in Scope 2 i.e., from a business's activities, but from sources that it does not own or control. Also known as value chain emissions, this is often the greatest proportion of the carbon footprint and covers emissions associated with business travel, procurement, waste and water.

Structural growth

Economic growth resulting from changes in the structure of the economy – such as the transition to lower-carbon means of production and transportation – that is distinct from the cycle of economic expansion and contraction.



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