Reaching Net Zero by 2050

European businesses can—and must—accelerate their efforts

accenture

Aligning around net zero

Since the Paris Climate Agreement in 2015, many companies have intensified their efforts to address climate change. In particular, the number of companies seeking to achieve net zero greenhouse gas emissions (net zero) by or before 2050 has grown rapidly in the past two years.

We see clear signs of progress. New Accenture research shows that 9% of European companies have been able to cut their emissions in half over the past decade.

But much more needs to be done. Although a few companies are on track to get to net zero before 2050, many more are not. And in many industries, getting there will require no less than a reinvention of the core business.

Our report outlines the state of the race to net zero and offers critical recommendations for companies that must up their pace to meet the deadline.

Executive summary

Corporate commitments to net zero emissions have accelerated. As of August 2021, almost one-third of the 1000+ largest listed European companies aim to reach net zero by 2050.

The companies making net zero commitments are responsible for more than two-thirds of the greenhouse gases (GHG) emitted by the 1000+ largest companies on the European stock exchanges. As they are generally the biggest emitters, they have the most drastic changes to make.

Targets work. Last decade, companies in our sample with a net zero goal reduced their emissions by 10% on average, while those without targets saw their emissions increase.

Yet just 5% are on track to meet their target if current trends continue.

If the pace of emissions reduction these companies have achieved over the past decade remains the same, less than one in ten (9%) companies will reach net zero in their operations by 2050, the deadline called for by the global community in the Paris Climate Agreement of 2015.

The pace of emissions reduction needs to double this decade—and then accelerate still more.

Seven industries—mostly in service sectors such as professional services and information & communications—will be on track for net zero in their operations by 2050 if they double the pace of emissions reduction in the next decade, and then accelerate another 50% to 70% in the following 10 years.

For five sectors, representing 42% of emissions in our sample, more radical acceleration will be needed to reach net zero by mid-century. This group of sectors includes automotive, construction and manufacturing.

Net zero by 2050 is feasible with swift, decisive action across the European business community.

To set the European business community on track to reach net zero by 2050, reinvention must become the norm. Execution at the speed required to meet that deadline demands a step-change in technology development and innovation, as well as purposeful collaboration across industries and value chains.

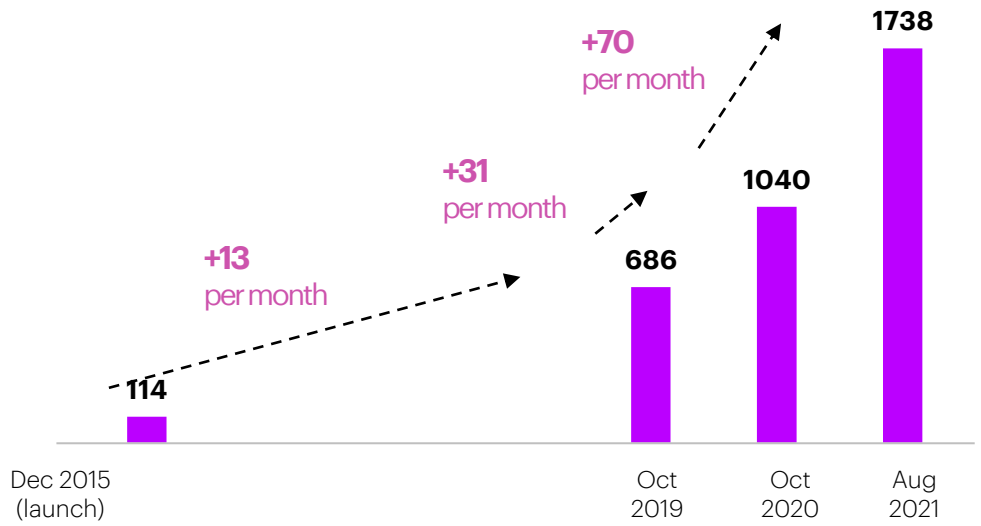
Europe's business community is engaged in the race to zero

The number of companies setting science-based emissions reduction targets has grown rapidly in the last two years even though there is no regulation requiring them to do so

The rise of science-based targets

Since its creation after the Paris Climate Agreement, the Science-based Target Initiative has helped more than 1700 companies set an emissions reduction target in line with climate science, with a rapid acceleration of uptake in the past two years.

Number of companies worldwide committed to a science-based target

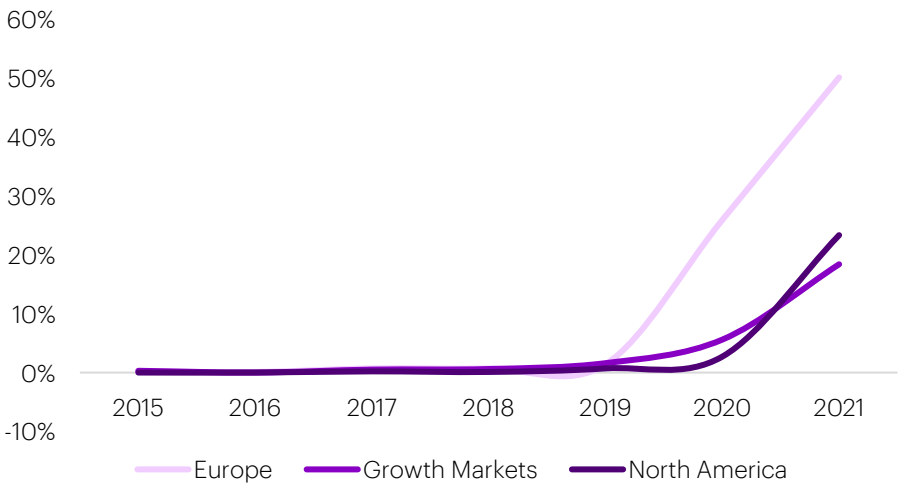


Source: Science-based Target Initiative

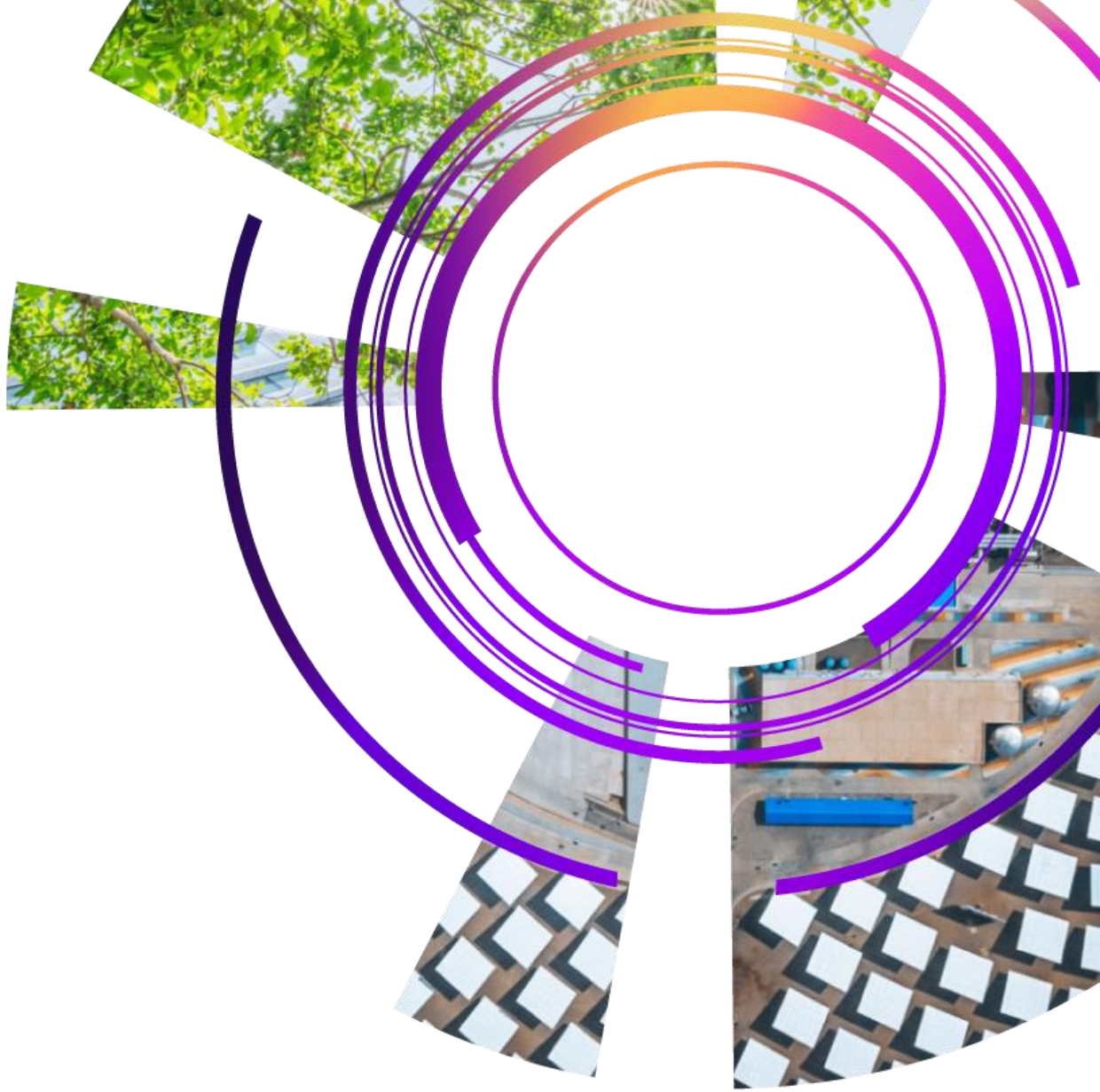
Engaging investors on net zero

As the push towards net zero strengthens, investors are increasingly looking for companies to define a clear strategy for navigating the transition. The topic is discussed in one in two earnings calls of European G2000 companies.

Share of earnings calls of G2000 companies in which net zero is discussed



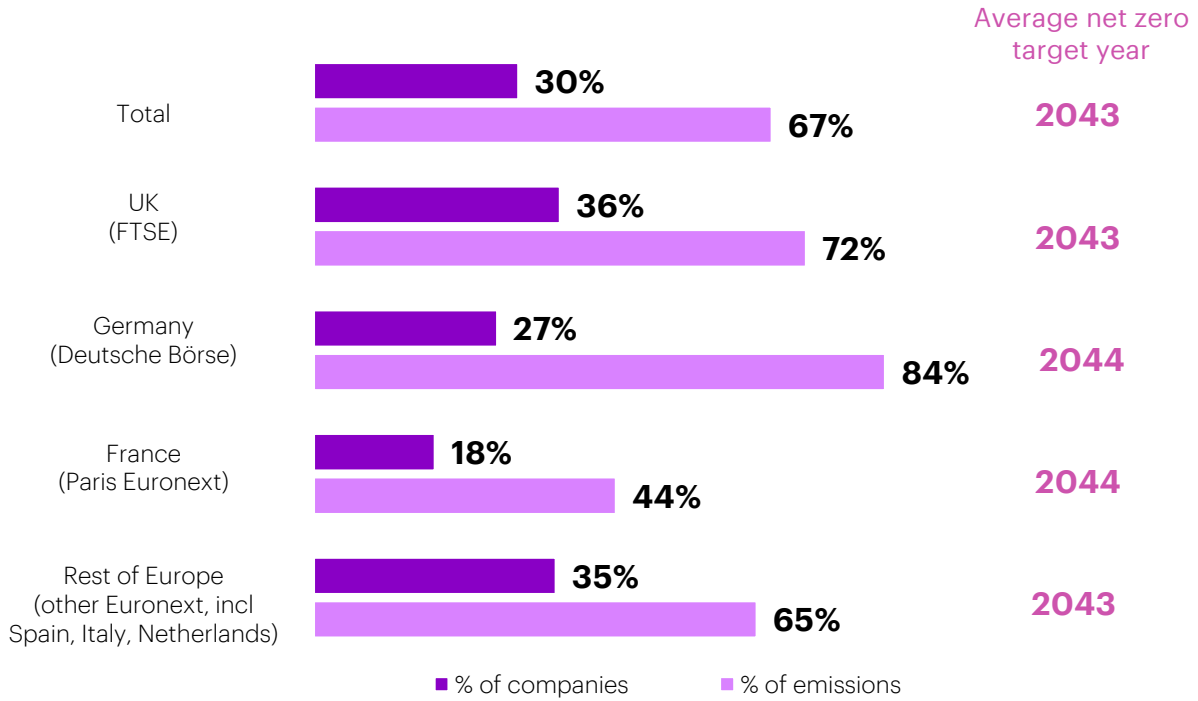
Source: Text analytics of earnings call transcripts of G2000 companies



Almost a third of Europe's largest companies have committed to reaching net zero by 2050 at the latest

These companies are responsible for more than two-thirds of greenhouse gases emitted by the 1000+ largest companies on the European stock exchanges

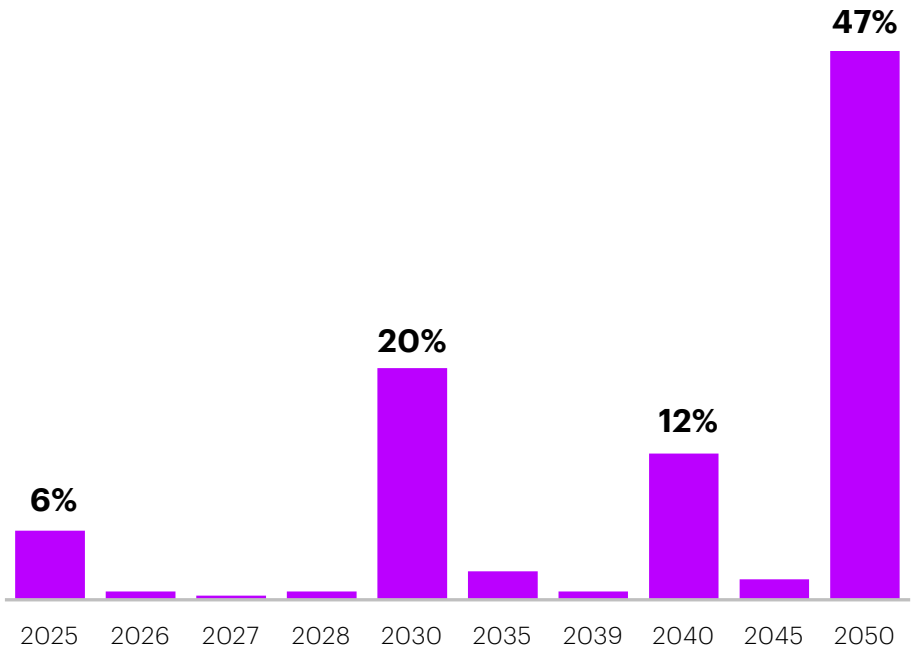
303 of 1022 (30%) companies listed on European stock exchanges have set a net zero target, covering scope 1, 2 & 3 emissions*...



Based on sample of 1,022 companies listed European stock exchanges: 269 on the FTSE, 228 on the Deutsche Börse, 237 on la Bourse de Paris (Euronext Paris) and 288 on other Euronext exchanges; of the 303 companies with a net zero target, 289 have reported emissions data for at least 5 years over the period 2010-2019. These companies were included in our analysis.

*We define net zero to cover scope 1, 2 and 3 emissions. Scope 1 covers direct emissions from owned or controlled sources. Scope 2 covers indirect emissions from the generation of purchased electricity, steam, heating and cooling consumed by the reporting company. Scope 3 includes all other indirect emissions that occur in a company's value chain. net zero operations refers to scope 1 and 2 only.

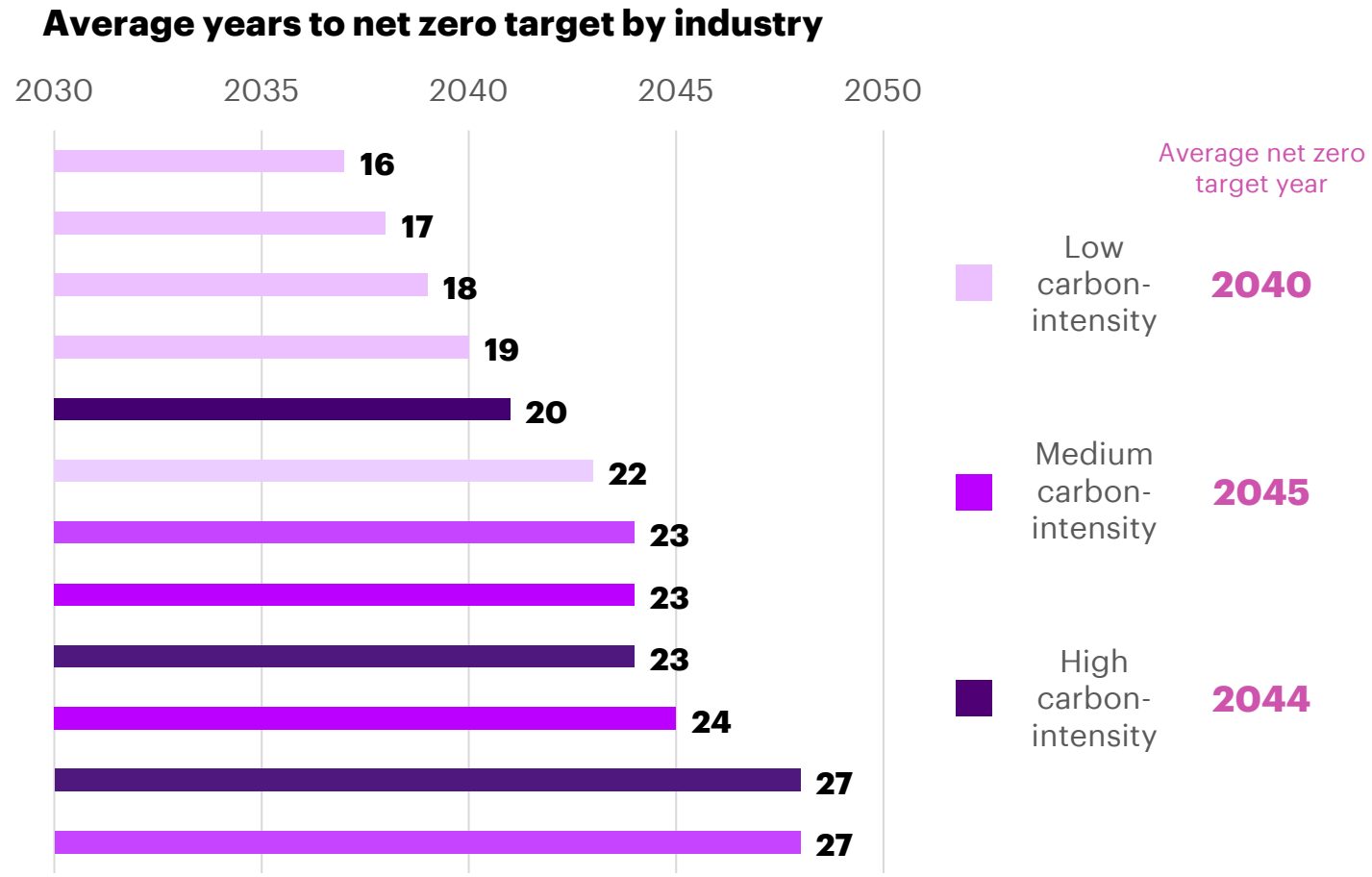
...with almost half aiming for net zero in 2050



Many carbon-intensive companies have net zero targets close to 2050, while many in services sectors aim for around 2035

The targets set by carbon-intensive businesses in particular reflect commitment to transformative change

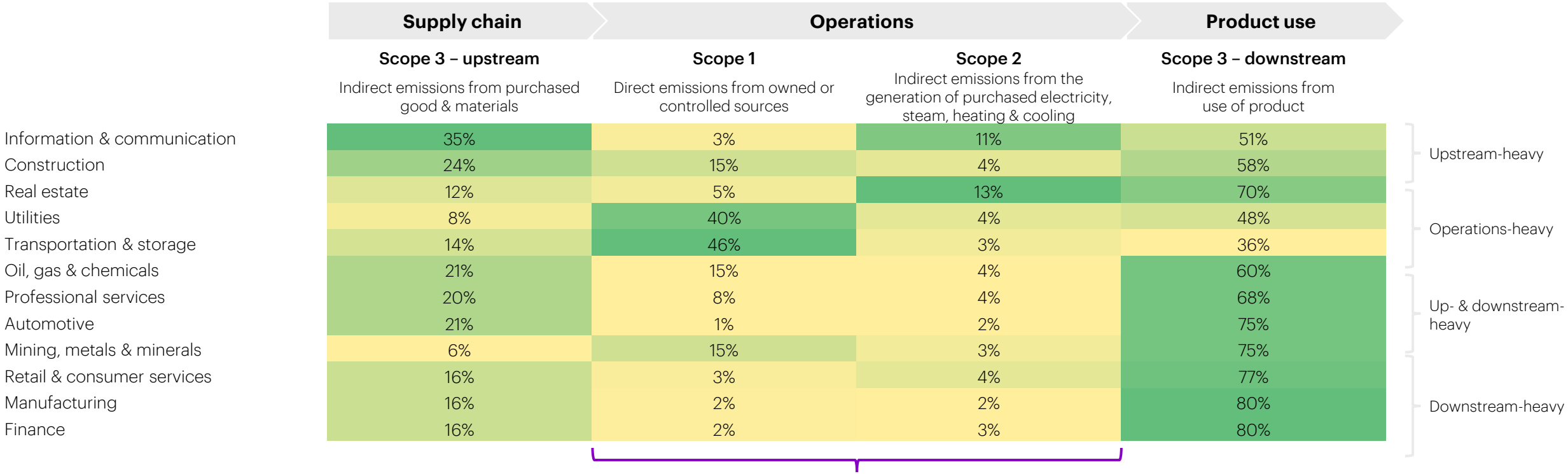
	% of companies with net zero target	Av. net zero target year (scope 1, 2, 3)
Information & communication	29%	2037
Professional services	15%	2038
Real estate	33%	2039
Retail & consumer services	22%	2040
Oil, gas & chemicals	35%	2041
Finance	38%	2043
Manufacturing	24%	2044
Construction	24%	2044
Utilities	48%	2044
Transportation & storage	36%	2045
Mining, metals & minerals	37%	2048
Automotive	42%	2048



Based on sample of 1,022 companies listed on European stock exchanges: 269 on the FTSE, 228 on the Deutsche Börse, 237 on la Bourse de Paris (Euronext Paris) and 288 on other Euronext exchanges; with a total of 303 companies that had set a net zero target.

Each industry has unique challenges and opportunities for cutting emissions, reflecting the distribution of their footprint

For many companies, the journey to net zero starts with reducing emissions in their own operations that are directly in their own control (scope 1 & 2)



Based on reported emissions for 2019 of a sample of 1,022 companies listed on European stock exchanges: 269 on the FTSE, 228 on the Deutsche Börse, 237 on la Bourse de Paris (Euronext Paris) and 288 on other Euronext exchanges

On current trends, just one in twenty European listed companies are on track to achieve their net zero targets in their operations

On current trends 5% of companies in our sample will be able to achieve net zero in their own operations (scope 1 & 2) at or before their own target year, and 9% by 2050 at the latest, if they continue the pace of emissions reduction that they have achieved since 2010

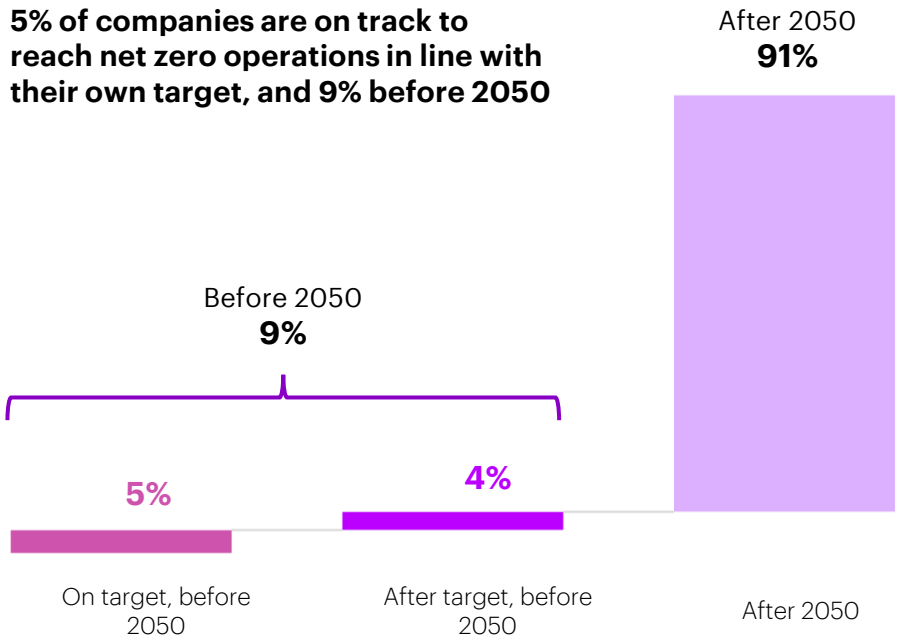
On current trends, 5% of companies in our sample will be able to achieve net zero in their own operations

A small group, 5% of our sample, started early and have achieved steady year-on-year emissions reductions of typically 7% or more annually or more since 2010, as the result of a concerted and systematic effort, which has put them on track to reach zero emissions in operations in line with their own target year. Another 4% would miss their own target year, on current trends, but still achieve net zero operations before mid-century.

Most are in services industries (Financial, Real Estate, Hospitality), but they also include companies in energy-intensive industries.

Those in the utilities industry stand out among the companies on track to reach their goals, given the carbon intensity of the industry.

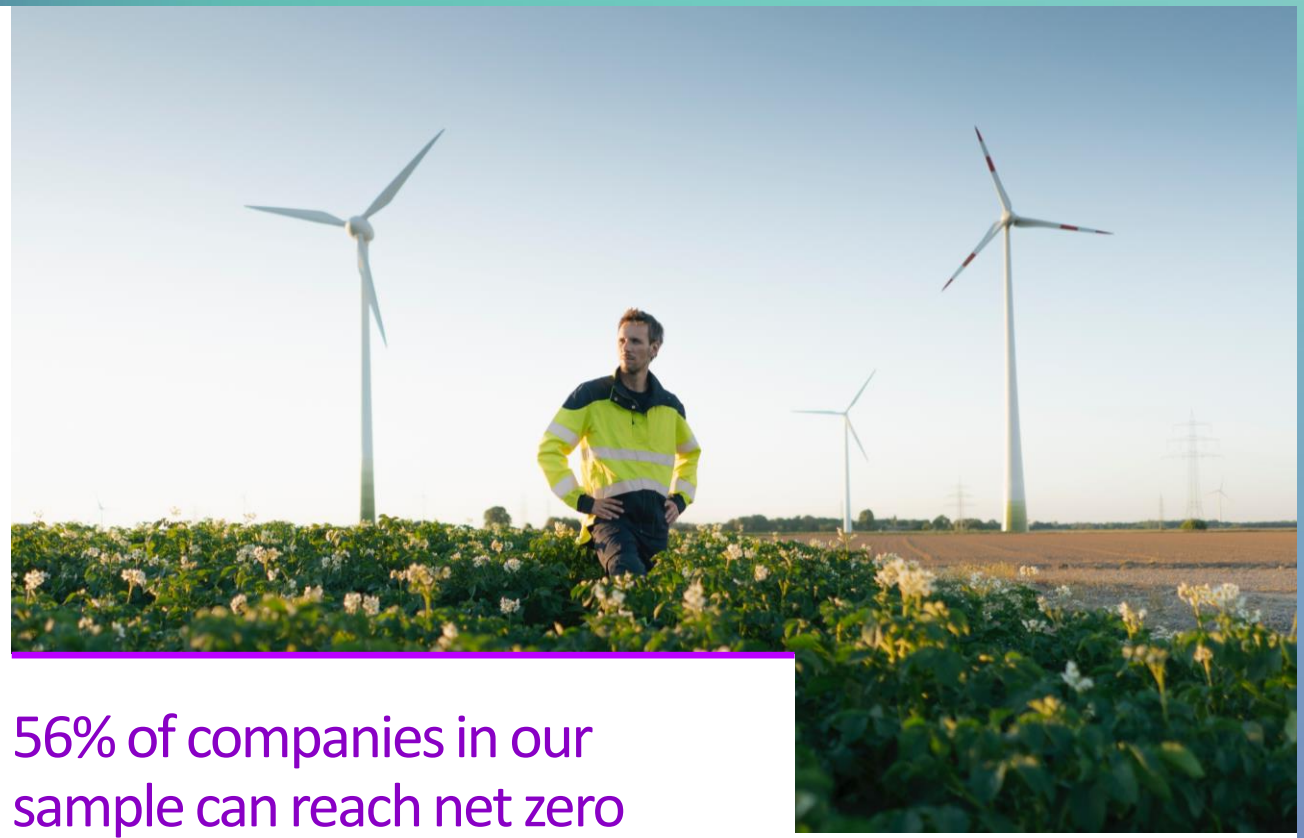
5% of companies are on track to reach net zero operations in line with their own target, and 9% before 2050



Analysis based on sample of 289 companies with net zero target listed and at least 5 years of reported emissions data in the period 2010-2019 on the FTSE, Deutsche Börse, la Bourse de Paris and Euronext. The projections cover scope 1 & 2 emissions, excluding scope 3 to avoid double counting. For more detail on the scenarios and modelling assumptions, please refer to About the Research on page 12.

Most companies will need to take more radical action

Companies that have achieved modest emissions reductions since 2010 can achieve net zero operations before 2050 if they double the pace of emissions reductions by 2030 and triple it by 2040; others will need to do even more

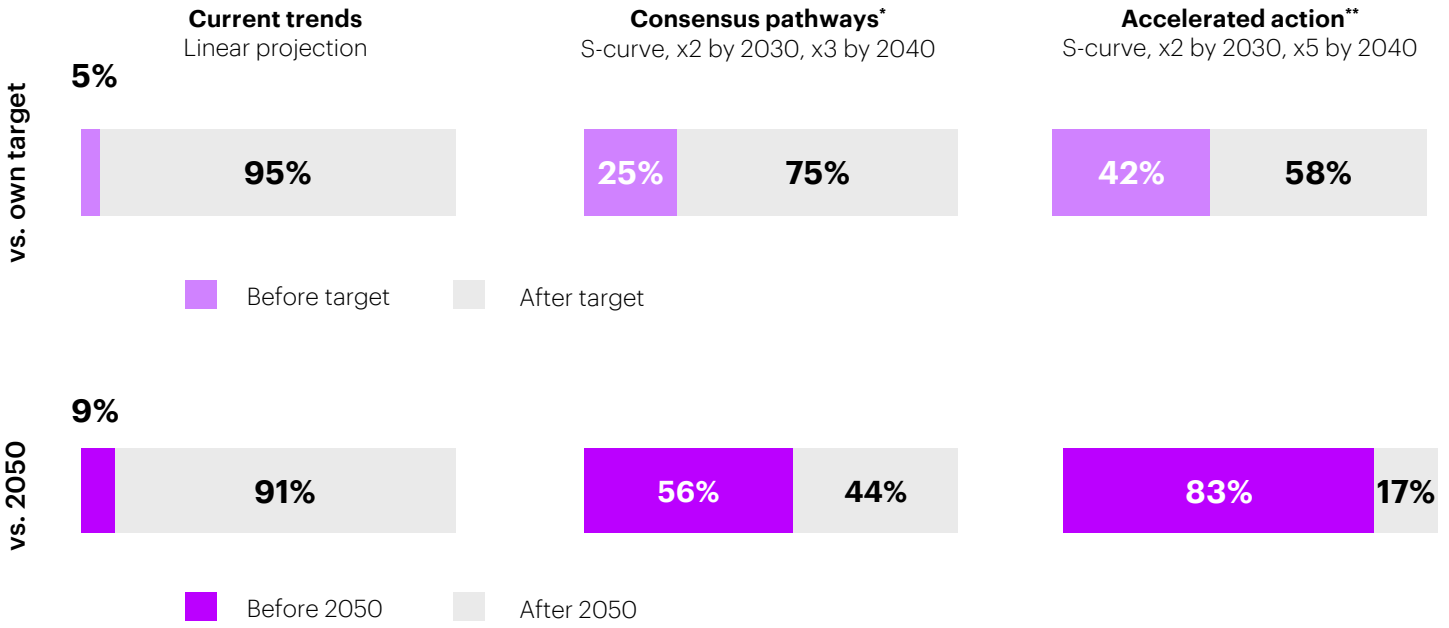


56% of companies in our sample can reach net zero operations if they double the pace of emissions reduction by 2030 and triple it by 2040

On sector-specific emissions reduction pathways, based on consensus expert knowledge about the best available technology for reducing emissions, 25% of companies in our sample would meet their own net zero target year and more than half would reach net zero operations before 2050.

Even with accelerated action—doubling the pace of emissions reduction by 2030 and then doubling it again by 2040 —just 42% of companies in our sample would reach net zero operations in line with their own targets, and 83% before 2050.

Share of companies projected to reach net zero operations in the specified timeframe



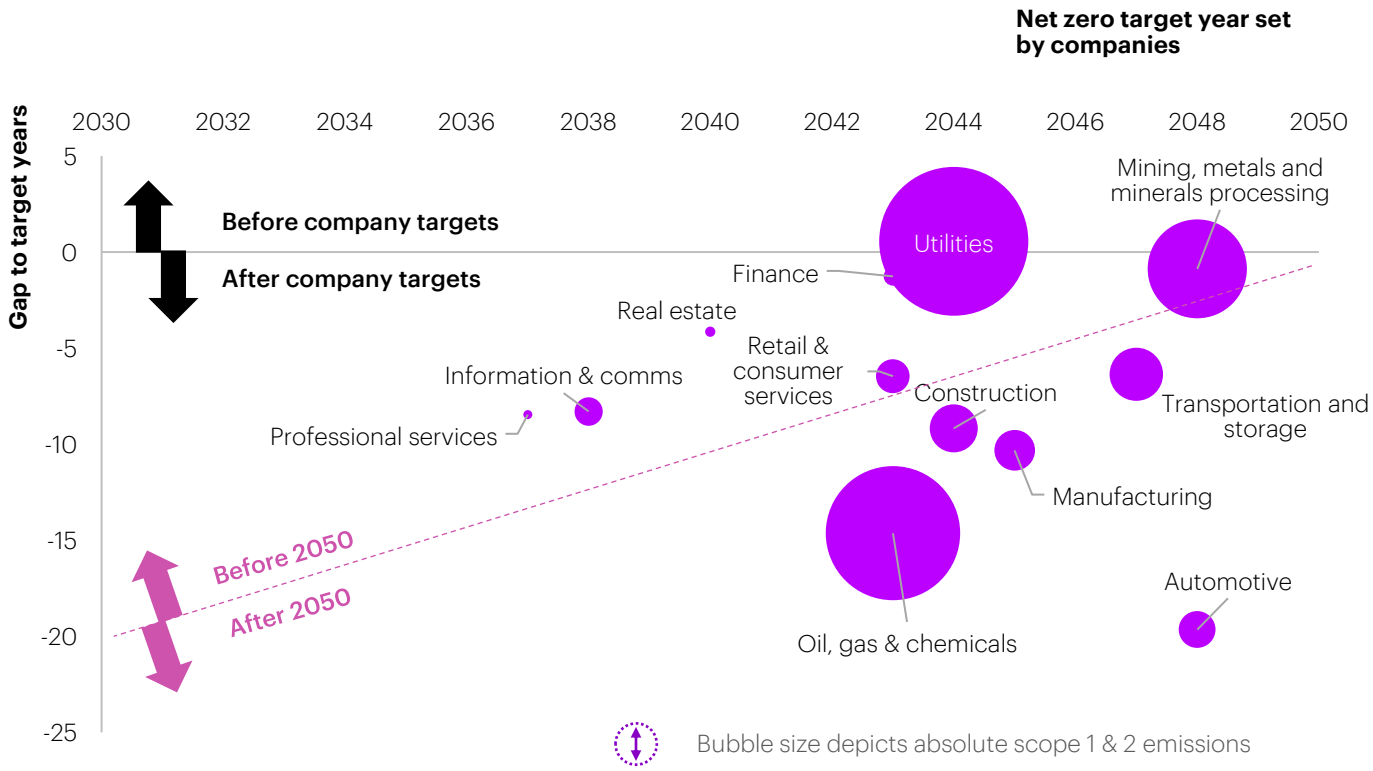
*Consensus emissions reduction pathways, such as the ones developed by the Transition Pathway Initiative, set sector-specific emissions reduction trajectories that reflect consensus expert knowledge about the best available technology for reducing emissions and industry-specific challenges.
**The Accelerated Action scenario reflects the pace of emissions reduction of mitigation pathways compatible with 1.5°C, as developed by the IPPC.

Analysis based on a sample of 289 companies with a net zero target listed and at least five years of reported emissions data in the period 2010-2019 on the FTSE, Deutsche Börse, la Bourse de Paris and Euronext. The projections cover scope 1 & 2 emissions, excluding scope 3 to avoid double counting. For more detail on the scenarios and modelling assumptions, please refer to About the Research on page 12.

Doubling the pace of emissions reduction in a decade would put seven industries on track for net zero operations by 2050

However, on sector-specific emissions reduction pathways, five sectors, representing 42% of emissions, still would not reach net zero in their own operations by mid-century

Net zero target year and gap between target and projected net zero year
Emissions scope 1 & 2, Consensus pathways scenario



Analysis based on a sample of 289 companies with a net zero target listed and at least five years of reported emissions data in the period 2010-2019 on the FTSE, Deutsche Börse, la Bourse de Paris and Euronext. The projections cover scope 1 & 2 emissions, excluding scope 3 to avoid double counting. For more detail on the scenarios and modelling assumptions, please refer to About the Research on page 12.

Joint action on value chain emissions can get everyone all to the right side of 2050

The growing commitment of European businesses to address emissions in their value chain (scope 3) will be a critical step to get more companies and industries to reach net zero before 2050.

Greater and faster strides in reducing emissions can be made when working together, along value chains and across industries. For example, collaboration between steel producers and petrochemical companies in scaling green hydrogen production for low-carbon steel manufacturing will help automotive companies accelerate the pace of emissions reduction. And the investment of the automotive sector in increasing the availability and affordability of electric vehicles will help fleet electrification and decarbonisation in the transport sector and beyond.

In short, the race to zero is a team pursuit

Reinvention must become the norm if the European business community at large is to reach net zero by 2050

Execution at the speed required will demand a step-change in technology development and innovation, supported by cross-industry collaboration and convergence, and conducive regulation

Every company and industry has its unique starting point, solution set, business opportunities and challenges in the race to net zero...

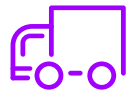
Selected industries

Construction
New materials, circularity and certified inputs

Automotive
Zero-emission vehicles, multi-modal solutions

Chemicals
Process efficiency, electrification, green hydrogen

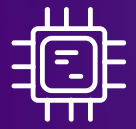
Retail
Store retrofits, green last-mile, circular business models



Transportation
Sustainable fuels, fleet electrification, shared logistics

Finance
Portfolio rotation, ESG data integration, client advisory

...while technology & innovation and collaboration will be important common ingredients of successful strategies for reducing emissions across the value chain



Technology & innovation

In some industries the solution set is relatively clear and available; in others existing technologies will not be sufficient to deliver net zero. New technologies (digital or otherwise) will need to be invented and/or scaled, and processes and business models will need to be reshaped.

Collaboration & convergence

Collaboration both within and across industry boundaries will be needed. Industry convergence will bind technologies and processes from previously distinct players, and collaborative ecosystems will create platforms for their accelerated application.

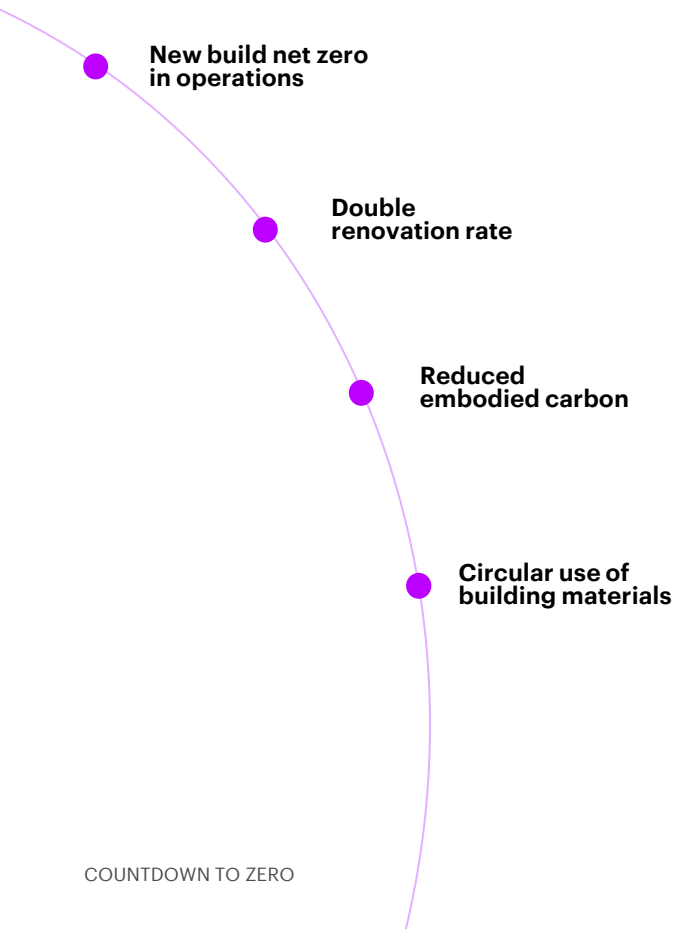
Regulation & stakeholder pressure

Governments of countries representing two-thirds of the global economy have signed up to net zero before 2050. They are following with policies and regulation for shifting economic activity to zero-carbon practices, combining incentives and regulatory measures.

Industry focus: Construction

Technology, together with innovation and collaboration, will be critical to achieve the speed and scale required

Stepping stones to net zero



What will be needed

Technology & innovation, collaboration & convergence

- Alternative building materials, including new, low-carbon or CO2-absorbing concretes and a reappreciation of wood
- Better use of pre-fabrication–ideally with zero-emission vehicles to transport pieces, potentially combined with 3D modelling and printing
- Virtual twins to improve material choices and manufacturing approaches, and to allow pre-construction simulation of energy consumption, as well as post-construction energy monitoring
- Better lifecycle monitoring through improvements in Internet of Things (IoT), sensors, analytics, and Artificial Intelligence (AI)

Dassault Systemes

Dassault Systemes created a digital twin of Singapore to simulate climate and traffic, and has partnered with Bouygues to expand digital approaches within the industry.

Skanska

Skanska is experimenting with AI to reduce emissions from construction equipment: It wants all machines on a construction project to be connected and to communicate to find optimal ways of working.

Industry focus: Automotive

Technology, together with innovation and collaboration, will be critical to achieve the speed and scale required

Stepping stones to net zero

Accelerated adoption of electric vehicles and charging infrastructure

Net-zero product design, manufacturing and supply chains

Improved battery technology & lifecycle management

Alternative fuels for heavy-duty vehicles

What will be needed

Technology & innovation, collaboration & convergence

- Continued investment in expanding the availability and accessibility of EVs
- Data platforms to enhance the electric driving experience and ensure interoperability of charging
- Greater innovation to bring down battery costs, and exploration of new battery types to anticipate material scarcity
- Value-chain partnerships with suppliers and recycling companies to collect, recycle and reuse end-of-life batteries
- New business models for multi-modal mobility services
- Improvements in hydrogen technology for heavier modes of transportation and long-distance freight

Faurecia & Michelin

In 2019, Faurecia and Michelin joined forces to create SYMBIO, a joint venture that develops, produces and markets hydrogen fuel cell systems for light vehicles, utility vehicles, trucks and other applications.

Volkswagen

Volkswagen and the Greek government have joined forces to create a ground-breaking sustainable mobility system on the island of Astypalea, creating a model for decarbonization in Europe.

Industry focus: Chemicals

Technology, together with innovation and collaboration, will be critical to achieve the speed and scale required

Stepping stones to net zero

- **Switch to renewable electricity Power purchase agreements (PPAs)**
- **Electrification of low-medium temperature process heat**
- **Alternative fuels for high-temperature process heat**
- **Circular business models, including renewable feedstock**

What will be needed

Technology & innovation, collaboration & convergence

- Rapid growth of renewable electricity production to power the increased demand from industry and enable production of green hydrogen at scale
- Further development and cost reduction of electrolyzer technology
- Digital twin technology to model and optimize chemical processes and products throughout the lifecycle
- Advanced asset management combining sensors and AI for continuous improvement in efficiency
- Continued investment in improving and piloting CCS technology to address hard-to-abate emissions after 2030
- Partnerships to shape the ecosystem networks for hydrogen infrastructure and circular business models

Air Liquide

Air Liquide is building the largest electrolyser connected to existing hydrogen infrastructure. Planned to come online in 2023, it will supply green hydrogen to industries and zero-emission mobility in the Rhine-Ruhr region of Germany.

DOW & Siemens

DOW and Siemens have partnered to develop digital twin solutions for process industries, integrating AR and IoT devices with hardware to let users see how they can design, monitor and maintain their assets and processes more effectively and efficiently.

Win the race to net zero with bold action and no delay

Immediate action, guided by carbon intelligence and scaled through value chain collaboration and convergence, will enable the European business community to realize net zero by 2050.

1

Commit to a science-based target.

Targets work: Companies in our sample with a net zero target reduced their scope 1 & 2 emissions by 10% between 2010 and 2019, while those without targets increased emissions.

2

Embed carbon intelligence to manage your carbon budget.

Like any budget, this needs to be managed, in step and with the same rigor as financial budgets. Understanding and contextualizing data is essential for companies to take command of their digital manufacturing transformations, to make progress toward net zero.

3

Leverage your influence to mobilize your industry and value chain.

Large companies can drive greenhouse gas emissions reductions far greater than their own footprint through concerted action on their scope 3 emissions—engaging suppliers, making changes in product design and adopting circular business models.

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About the research

This analysis takes stock of corporate net zero targets in Europe. It shows how many of Europe's largest stock-listed companies have announced net zero targets, in which year these companies aim to achieve net zero, and how they are positioned to meet these targets considering their track record of reducing GHG emissions in the past 10 years.

We first collected data about the net zero targets of Europe's largest listed companies, looking at 1022 companies in total (269 on the FTSE, 228 on the Deutsche Börse, 237 on la Bourse de Paris (Euronext Paris) and 288 on other Euronext exchanges), working with Retail Economics. We found 303 that had announced a net zero target covering scope 1, 2 and 3 emissions. We grouped these companies by industry, using the level-1 NACE classification, with some adjustments to accommodate for small sample sizes in some sectors (for details, please refer to page 24).

Secondly, we analyzed the emissions from 2010 to 2019 of companies in our sample. We focused on the absolute scope 1 & 2 emissions (excluding scope 3 to avoid double counting) and calculated the compound annual reduction rate (CARR) of emissions over the 10-year interval, adjusting for missing data and excluding effects of structural changes to the business (e.g., divestments and acquisitions). We eliminated from the sample companies that did not report on emissions for a minimum of 5 years during the 2010-2019 period. This resulted in a dataset of 289 companies.

Thirdly, we built projections of potential emissions reduction pathways for each company in our dataset, and estimated in which future 5-year time interval the company is likely to reach net zero. We chose the projections to take the shape of an "S-curve", in line with existing expert scenarios for emissions reduction by industry (for full explanation, please refer to page 26).

We then aggregated the company-level projections to industry and country level to assess the time period over which companies in the industry and country are likely to achieve net zero.

Finally, we compared the net zero target years with the time interval resulting from the emissions pathway analysis and evaluated commonalities and differences across industries and countries.

Industry classification

We grouped the companies by industry, using the level-1 NACE classification, making the following some adjustments to accommodate for small sample sizes in some sectors

	NACE industry	Adjustment
A	Agriculture, Forestry and Fishing	Exclude
B	Mining and Quarrying	Merge with ‘metals & minerals processing
C	Manufacturing	Split into: - Oil, gas & chemicals (C19, C20, C21, C22) - Metals & minerals processing (C23, C24) - Automotive (C29, C30) - Other manufacturing (rest)
D	Electricity, Gas, Steam and Air Conditioning Supply	Merge with 'Water supply…' into Utilities
E	Water Supply; Sewerage, Waste Management and Remediation Activities	Merge with 'Electricity…' into Utilities
F	Construction	
G	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	Merge with ‘Accommodation and Food Service Activities’ and ‘Arts, Entertainment and Recreation’ into ‘Retail & consumer services’
H	Transportation and Storage	
I	Accommodation and Food Service Activities	Merge with ‘Wholesale and Retail Trade’ and ‘Arts, Entertainment and Recreation’ into ‘Retail & consumer services’
J	Information and Communication	
K	Financial and Insurance Activities	
L	Real Estate Activities	
M	Professional, Scientific and Technical Activities	Merge with 'Administrative and Support Services' into Professional Services
N	Administrative and Support Service Activities	Merge with 'Professional, Scientific…' into Professional Services
O	Public Administration and Defence; Compulsory Social Security	Exclude
P	Education	Exclude
Q	Human Health and Social Work Activities	Exclude
R	Arts, Entertainment and Recreation	Merge with ‘Wholesale and Retail Trade’ and ‘Accommodation and Food Service Activities’ into ‘Retail & consumer services’
S	Other Service Activities	Exclude
T	Activities of Households as Employers; Undifferentiated Goods and Services Producing Activities of Households for Own Use	Exclude
U	Activities of Extraterritorial Organisations and Bodies	Exclude

Methodology for the projections to net zero

We built projections of potential emissions reduction pathways for each company in our data set, and estimated in which future five year time interval the company is likely to reach zero emissions. We chose the projections to take the shape of an "S-curve", in line with existing expert scenarios for emissions reduction by industry.

As a first step, we determined a company's starting point for the projection. This was informed by their absolute emissions in 2019 and its Compound Annual Reduction Rate (CARR) from 2010 to 2019.

- Companies that have already achieved fast emissions reduction in the past decade were placed further ahead on the S-curve to see a deceleration in their emissions reduction rate over time, as the remaining options for emissions reduction become harder to realize. For these companies, the projection used the historical CARR of the company.
- Companies that had achieved little or no emissions reduction in the past decade were placed further back on the S-curve, meaning that in the projection they first catch up with the typical emissions reduction rate that industry peers had achieved in the past, and then gradually accelerate the pace of emissions reduction. For these companies, we create the projection using the median CARR of the companies in the same industry that had reduced emissions between 2010-2019.*

Secondly, we created the S-shape of the curve by using a matrix of multipliers for each period, which define the speed of emissions reduction over time. These multiplier varied by scenario. The Consensus Pathways scenario reflects the emissions reduction trajectories of the Transition Pathway Initiative, which in turn reflect consensus expert knowledge about the best available technology for reducing emissions and industry-specific challenges. The Accelerated Action scenario reflects the pace of emissions reduction of mitigation pathways compatible with 1.5°C, as developed by the Intergovernmental Panel on Climate Change (IPPC).

As the projections are based on reduction rates and therefore approach zero asymptotically, we considered that a company achieved the target once they reduced by at least 95% of the absolute emissions in 2019.

CARR Multipliers Matrix

Consensus Pathways Scenario

Company CARR	Starting CARR used for projection	2020-2024	2025-2029	2030-2034	2035-2039	2040-2044	2045-2049
< -12.5%	Company CARR	1.8	2.1	1.2	1	1	1
-12.5% to -7.5%	Company CARR	1.8	1.8	2.1	1.2	1	1
-7.5% to -5%	Company CARR	1	2.1	3.2	3.2	3.3	3
-5% to -2.5%	Company CARR	1	2.1	3.2	3.2	3.3	3
-2.5% to 0%	Industry median	1	2.1	3.2	3.2	3.3	3
0% to 2.5%	Industry median	1	2.1	3.2	3.2	3.3	3
2.5% to 5%	Industry median	1	1	2.1	3.2	3.2	3.3
>5%	Industry median	0.5	1	1	2.1	3.2	3.2

Accelerated Action Scenario

< -12.5%c	Company CARR	1.8	2.1	1.2	1	1	1
-12.5% to -7.5%	Company CARR	1.8	2.1	2.1	1.2	1	1
-7.5% to -5%	Company CARR	1.8	2.1	3.2	3.2	3.3	3
-5% to -2.5%	Company CARR	1.8	2.1	3.2	4	5	5
-2.5% to 0%	Industry median	1.8	2.1	3.2	4	5	5
0% to 2.5%	Industry median	1	2.1	3.2	4	5	5
2.5% to 5%	Industry median	1	2.1	3.2	4	5	5
>5%	Industry median	1	2.1	3.2	4	5	5

*Industry median CARR was calculated based on the subset of companies in the industry that reduced emissions during the period

**The Current Trends Scenario corresponding to the projection of the Starting CARR consists of having the same CARR across all periods or similar to a Matrix full 1's.

About Accenture

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