

Accelerating the Climate Transition: Long-term thinking for near-term action





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The Sustainability Executives Survey

Since the 2015 Paris Agreement, governments and industries have been struggling to keep track of the ongoing climate emergency, despite significant announcements and investments for national and regional transition targets, initiatives and policies. As of 2022, around 140 countries had announced or were considering net-zero targets¹ and 42% of Fortune 500 companies had net-zero plans in place, up by 11% on the previous year.² But even factoring in these ambitions to reduce future emissions, on current trends, global warming could exceed 1.5 degree Celsius as early as 2040.³ This paper – commissioned by Zurich Insurance Group (“Zurich”) and conducted and written by Horizon Group – explores areas where the transition can be accelerated, and it is based on a survey of sustainability executives.

¹ <https://climateactiontracker.org/countries/>

² https://info.climateimpact.com/hubfs/IfNotNowWhen_FortuneGlobal500_ClimatImpactPartners_2022.pdf

³ <https://www.ipcc.ch/sr15/faq/faq-chapter-1/>



The Sustainability Executives Survey at a glance

The Sustainability Executives Survey gathered responses from 668 sustainability executives on what is driving their current and planned corporate strategies on climate change mitigation and adaptation. The respondents were senior and executive level professionals who have responsibilities related to sustainability within their company. They represent six sectors (agriculture; consumer goods; energy, oil and gas; financial services; heavy manufacturing; and transport) with global coverage across North America (Canada, United States); Latin America (Brazil, Mexico); Europe, the Middle East and Africa (France, Germany, South Africa, Spain, Switzerland, UK, UAE); Asia-Pacific (Australia, China, Indonesia); and South Asia (India).

The survey focused mainly on scope 1 emissions, relating directly to company operations such as plants, vehicles and heating or cooling buildings. Some questions also covered scope 2 emissions, i.e., indirect emissions from the energy the company buys (switching to energy produced by renewables reduces a company’s scope 2 emissions). The survey did not cover scope 3 emissions, those created by suppliers and customers, as they are the most challenging to measure and tackle.

The full methodology is described in the Annex.

Many leading scientists estimate that environmental systems may have already reached critical tipping points. The climate is already changing, and the effects are increasingly evident. Mitigation plans need to be balanced with adaptation measures to protect communities and industry assets and operations from already-occurring risks, such as extreme weather events, sea level rise and changing rainfall patterns. These risks not only disrupt daily life and supply chains but pose a systemic threat to food and water supplies, with social and economic implications globally.

The transition to net-zero is a particularly complex challenge that will require significant investment, innovative solutions and bold initiatives if it is to succeed. Most importantly, it will require companies and governments alike to step up and take concrete action in the short-term if the transition to net-zero is to move forward in the time frame required to meet the Paris commitments. Just as global emissions cannot be addressed by single countries acting alone, an international approach will be required to deliver a *whole economy* transition.

To better understand the practical challenges facing companies as they navigate the path to net-zero, we surveyed over 650 sustainability leaders in companies operating across sectors and around the globe to get insights into how they are approaching the climate transition. What progress has been made thus far, what would help accelerate progress further and where would policy action be most helpful?

The responses to the survey, combined with expert insights and research, shed light on how firms are approaching the transition challenge and point to common opportunities and challenges – areas where concrete action in the short-term will deliver the most benefits. In this paper, we seek to connect these survey insights to the broader debates currently shaping climate policy and to bring in the specific insights that we have as an insurer helping customers – both in the private and public sectors – navigate the transition.

Key insights from the Sustainability Executives Survey

The survey responses provided a wealth of insights as to how a diverse group of companies across geographies and sectors are approaching the climate transition, where they are making progress and where they see challenges:

- **Most companies are already actively setting net-zero targets and developing transition plans** with 70% of those surveyed including those targets in their annual reports. Overall, our survey found that an encouraging 77% of respondents reported having a net-zero plan in place, with companies in Asia-Pacific the most likely to already have one (88%), and the strongest-performing sectors being finance (88%) and energy (85%). The potential impact on revenue and profit is the impetus behind these plans.

- **Boards and Investors play a critical role in advocating for action on transition within companies** with respondents identifying them as more influential than regulators, customers, employees, media or NGOs.
- **Technological advances and public policy were identified as the key external drivers** creating incentives for the net-zero transition, with investment in new technologies also most frequently identified as a key lever for delivery of net-zero transition plans.
- **The most frequently mentioned barriers to transition** were the cost and scale of capital required, absence of technological solutions and regulatory challenges. In terms of mapping and tackling emissions, the absence of clear and credible data was also flagged as a common concern.
- **Respondents indicated a clear focus on resilience and adaptation measures** in parallel to emissions mitigation as they approach the transition. In particular, companies across sectors indicated concern about supply-chain risks as they navigate the transition to net-zero.

The following sections of this paper unpack these survey insights in more detail and link them to some real-world examples of how companies are already making a difference on the path to net-zero. We also offer some recommendations for areas of policy focus where our analysis shows that, across regions, there are three interrelated pinch points that need to be addressed to unlock progress on climate transition:

1. A need for significant increase in investment: Neither the public nor the private sector can bear the costs of the transition to net-zero alone.
2. An innovation pipeline that needs deeper collaboration among business leaders, governments and research institutions, as well as long-term funding for programs that may take years to pay off.
3. Regulatory fragmentation and uncertainty, leading to untapped opportunities for facilitating the transition.



Challenges and opportunities in the climate transition

What are businesses already doing to advance the climate transition? How are they approaching the challenges of mitigating and adapting to climate risks? What can be done to accelerate climate mitigation – greenhouse gas emissions reduction – and overcome these challenges?

This paper seeks to address these questions through insights from the Sustainability Executives Survey, alongside desk research and expert consultations. It confirms that many companies are committed and making progress but need support from public sector stakeholders to channel investment and provide greater policy certainty around climate transition.

All sectors on board for transition

The survey makes clear that businesses in all surveyed regions and sectors are planning and taking action to achieve the transition to a low carbon future. This bodes well for the coming years – even if the current stage and speed of the transition differs significantly by region and sector. For example, according to a study by NewClimate Institute,⁴ emissions will be lower in 2030 than 2005 in most countries in Europe and North America. They will be higher in countries such as China, India and Mexico, though projected to peak in the 2030s or 2040s. Policy and business action in these countries will influence these trajectories to different degrees.

Of course, developing a plan is not the same as delivering on it. But the survey responses highlight engagement around the world. In EMEA and North America, where there have been recent high-profile policy initiatives launched with the aim of kick-starting transition (US Inflation Reduction Act, EU Green Deal), over 70% of businesses surveyed reported having net-zero targets and a transition plan in place. Perhaps more surprisingly, over 85% of APAC respondents report having a plan ready.

In terms of sectors, our survey found that **financial institutions and energy companies are most likely to have net-zero plans in place** (88% and 85% respectively). These sectors will be pivotal to facilitating wider mitigation action and have been the focus of public policy activity. The heavy manufacturing, consumer goods and agriculture sectors are not far behind at just under 80%. The outlier is the transport sector, where only 37% state that they have some plan prepared (see Figure 1).

The energy sector’s transition to net-zero is important not only because it is **responsible for the largest share of global greenhouse gas emissions** (see Figure 2), but also because other sectors (such as transport, food processing and industry) depend on electrification as the basis of their net-zero strategies. This point comes through clearly in the survey results, with companies across sectors reporting that switching their energy mix to renewables is the most common target in their plans.

With the complex interdependencies the transition to net-zero entails, and the challenges in mapping emissions accurately, it is no surprise that the survey indicates a focus on scope 1 – the emissions from a company’s own operations – rather than scope 2 and 3 emissions, covering value chains and use of outputs. Ensuring broad availability of credible, comparable data on the impacts of economic activity on emissions – and, beyond that, biodiversity – will be essential for setting targets and delivering tangible outcomes.

Internationally-coordinated policy action is already making progress. For example, the principles of the Task Force on Climate-related Financial Disclosures (TCFD) have been translated into the International Sustainability Standards Board (ISSB) accounting standards, and similar work is also underway on the Task Force on Nature-related Financial Disclosure (TNFD). However, consistent implementation of requirements at regional and national levels still has a long way to go.

⁴ https://inis.iaea.org/collection/NCLCollectionStore/_Public/53/029/53029703.pdf

Figure 1. Proportion of companies by sector with a net-zero plan in place in %, 2023

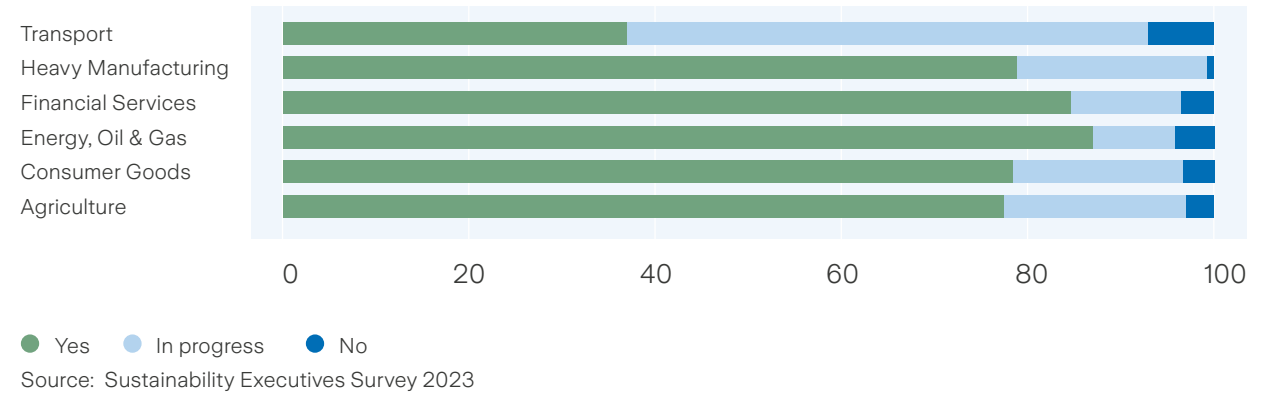
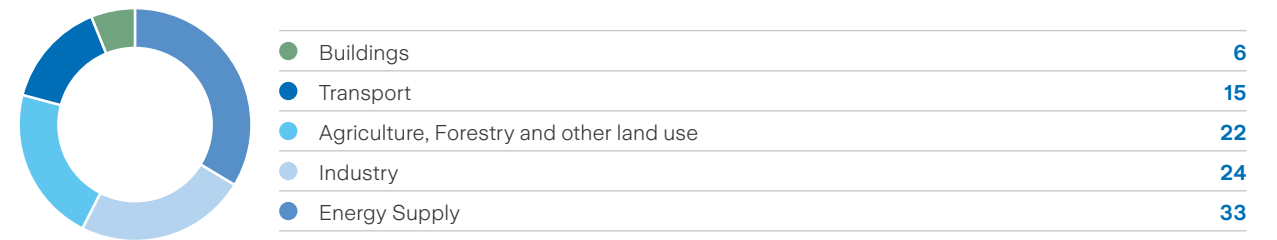


Figure 2. Energy and industry emit over 50% of GHGs and are committed to the climate transition
Net anthropogenic GHG emissions by sector in %, 2022



Source: Horizon calculations based on IPCC (2022)

At the other end of the scale, **net-zero transition planning among transport companies lags behind other sectors**, according to our survey, with only 37% having a plan in place – though **56% of the other companies report they are currently developing a plan**. Transport emissions increased at an annual average rate of 1.7% between 1990 and 2022, equivalent to the growth for industry. The IEA's Net-Zero by 2050 scenario requires the sector to reduce CO2 emissions by more than 3% a year to 2030.

Our survey found that plans in the sector focused mainly on energy efficiency in their buildings, supply chain targets and renewable energy use and fleet electrification. However, transition needs to vary across the sector. While fleet electrification offers solutions for road and rail, for example, shipping and aviation require fuel substitution to sustainable aviation fuel, methane, hydrogen or ammonia. This will necessitate significant investment in new technologies, vessels and aircraft and infrastructure. Currently planned production for sustainable aviation fuel will meet only a small percentage of requirements by 2027.⁵

Given the expected growth in demand for transport, stronger and more forward-looking regulations and targets are needed to promote investment and accelerate change across the sector. The International Maritime Organisation has only recently (July 2023) agreed on targets for 2050, while the EU is scheduling the inclusion of shipping in its Emissions Trading Scheme, starting with vessels above 5,000 gross tonnage.⁶

⁵ www.iea.org/energy-system/transport/aviation

⁶ www.iea.org/energy-system/transport/international-shipping



Risk managers and insurers work together to accelerate sustainability strategies

Risk managers and their insurers have a common role in identifying, assessing, quantifying and managing sustainability risks while helping organizations structure their ESG frameworks.

An insurer understands that managing sustainability risk differs from traditional risk management in that it considers societal aspects of the risk, various time horizons and the potential impacts of climate change. And, while insurance has long been considered the last bulwark against a loss, there are actually other lines of defense that need to be in place before risk transfer is structured.

Johnson Matthey PLC's collaboration with Zurich Insurance Company Ltd illustrates how the two have worked closely to support the chemical company's sustainability approach.

Johnson Matthey's sustainability strategy was developed back in 2007 and augmented in 2021 with a comprehensive list of goals that addressed how the business would deliver products and services that helped customers decarbonize, how it would decarbonize its own operations and what efforts were needed to properly protect people.

While risk managers have a responsibility to identify the risks related to all of an organization's facilities, suppliers and various assets, Zurich Resilience Solutions approached Johnson Matthey's climate-related exposures with the aim of assessing the evolution of risks and incorporating their analysis into the company's sustainability and ESG frameworks. That work included, among other aspects, a societal component of examining local infrastructure, by, for example, uncovering vulnerabilities in power supplies or other utilities that could have an impact on the community and by considering some of the health and safety impacts of climate change.

One of the many important elements that insurers bring to managing risks such as those faced by Johnson Matthey is the ability to not just assess risk, but to quantify it. The tools insurers have routinely used to assess their own exposures have been adapted to provide measurements for customers that reveal the potential impact of climate and other sustainability risks well into the future. The results are a useful component to help organizations develop ESG investment strategies and quantify the potential benefits.

Source: <https://www.zurich.com/commercial-insurance/sustainability-and-insights/commercial-insurance-risk-insights/risk-managers-step-up-to-craft-sustainability-strategies>

Net-zero progress

The survey feedback made clear that progress in implementation of net-zero transition plans varies across solutions being deployed (see Figure 3). Responses suggested that progress on delivery of transition targets was most likely to be on track or ahead of schedule on the delivery of energy efficiency in plant – e.g., upgrading machinery, processes and technology – followed by fleet electrification and renewables use. Progress was likely to be slower than planned when it comes to delivery of energy efficiency for buildings, fuel substitution and for carbon capture technologies.

Digging into the feedback that respondents provided on their proposed pathways to net-zero further highlights the importance of changes to energy inputs and achieving energy efficiency to the success of the transition (Figure 4).

The ambition to switch to renewables will require a range of conditions to be in place for it to be realized. While installation of dedicated renewable supply (solar, wind, hydro or geothermal) may be an option for some plants, in general the switch to renewables will be dependent on expanded electrification, which will again require coordinated policy action if it is to be achieved (see [Overcoming constraints to electrification](#)). **There could be potential for rapid progress in renewables if the right conditions are put in place.** For example, replicating support models for renewables to promote early movers in other technologies, and deploying fiscal policies or carbon pricing to encourage investment in developing and scaling new technologies and business models.

Figure 3: Tracking companies' progress against their plans in %, 2023

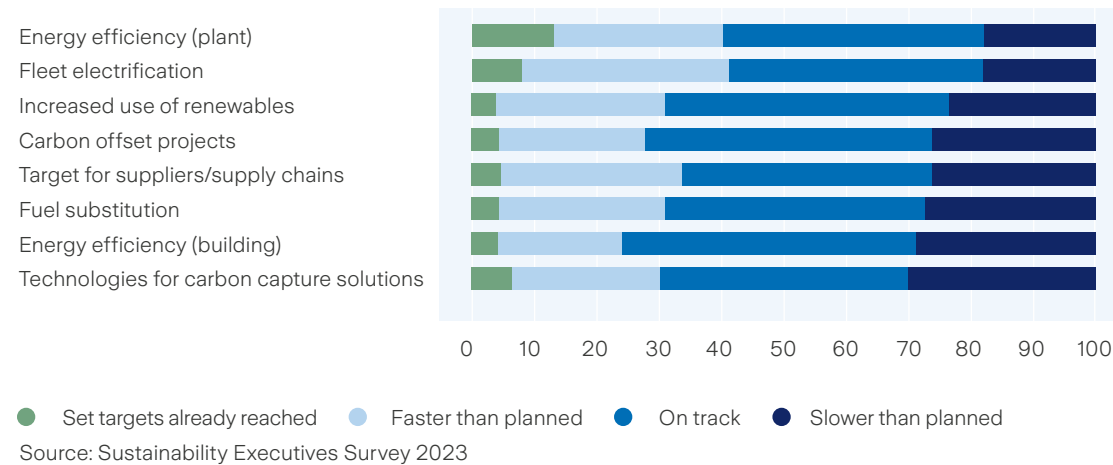
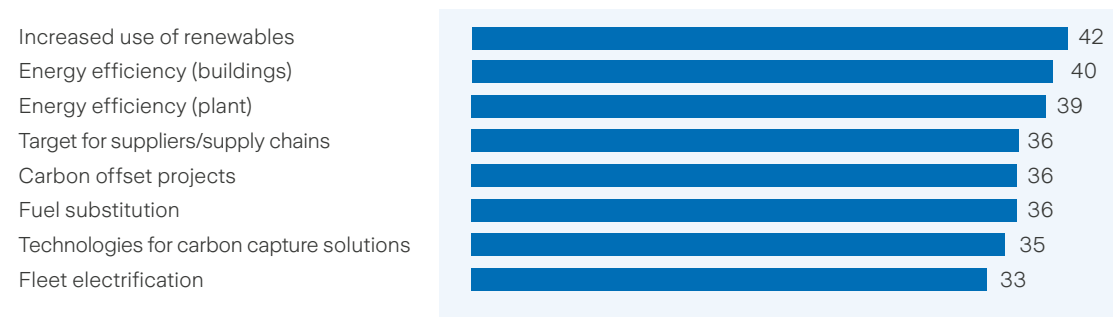


Figure 4: Pathways to transition, share of respondents in %, 2023



Another positive element of the survey feedback is the **planned progress in the net-zero transition in heavy manufacturing** components of the industry sector, which accounts for the second highest share of global emissions (24%).⁷ However, mitigation of emissions in sub-sectors – such as steel and cement – will not be straight forward. Further progress is required in new technologies for low carbon processes to be viable at scale and competitive in price. Significant investment will be required, and the deployment of carbon capture, utilization and storage (CCUS) may need to be considered in order to achieve significant reductions in emissions⁸ within the timescales required to limit warming to 1.5 degree Celsius.

Alongside increased use of renewables, the most common targets include improving the energy efficiency of plants and buildings, and **fuel substitution – identified by the IPCC as an important element of the net-zero strategy in industry.** Key industry players such as BASF are working on replacing fossil fuels with renewable electricity (see [Chemical company on the move](#)).

Demand management – efficiency and reduction in the demand for electricity (absolute, and at particular points in time) – will also be important tools.

⁷ https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_SPM.pdf

⁸ <https://plattsinfo.spglobal.com/rs/325-KYL-599/images/10%20Cleantech%20Trends%20in%202023%20Whitepaper.pdf>



Overcoming constraints to electrification

The electrification of a range of systems and technologies, from transport to heating, is core to the energy transition. A mix of policies and collaboration on infrastructure investment, innovation and support for new technologies and models is needed to overcome barriers. Priorities include:

Electricity generation and grid capacity: Despite the rise of smart grids to optimize usage and loads, most countries – especially less-developed ones – will have to invest heavily in generation, storage, transmission and grid capacity. Under the IEA's Net-Zero Emissions by 2050 scenario, the length of power transmission lines increases by around 185% and distribution lines by almost 165% globally from 2021 to 2050, with 85% of the additions occurring in emerging economies.⁹ As building capacity can be a lengthy process, policies to speed up planning times and permits could help.

Proactive demand management: The growth of more variable sources of power, such as wind and solar, requires policies and incentives to improve efficiency and shift demand in ways that balance grids.¹⁰

Battery cost and performance: Energy density and charging speeds are improving, but still do not support heavy or long-distance transport – and battery prices rose by 10% in 2022, as supply of critical minerals could not keep up with increasing demand.¹¹

Access to critical inputs: High-performance grids and batteries depend on critical minerals that are vulnerable to price and supply volatility. 90% of lithium

comes from just three countries, while 70% of the world's cobalt comes from the Democratic Republic of Congo. Diversifying supply and innovating to find substitutes will be key.

EV charging infrastructure: The development of charging infrastructure requires coordination and investment from governments, utilities, vehicle manufacturers and energy companies. Europe will need at least 3.4 million public stations by 2030 – an almost tenfold increase – to meet even conservative demand estimates, at a projected cost of EUR 240 billion.¹²

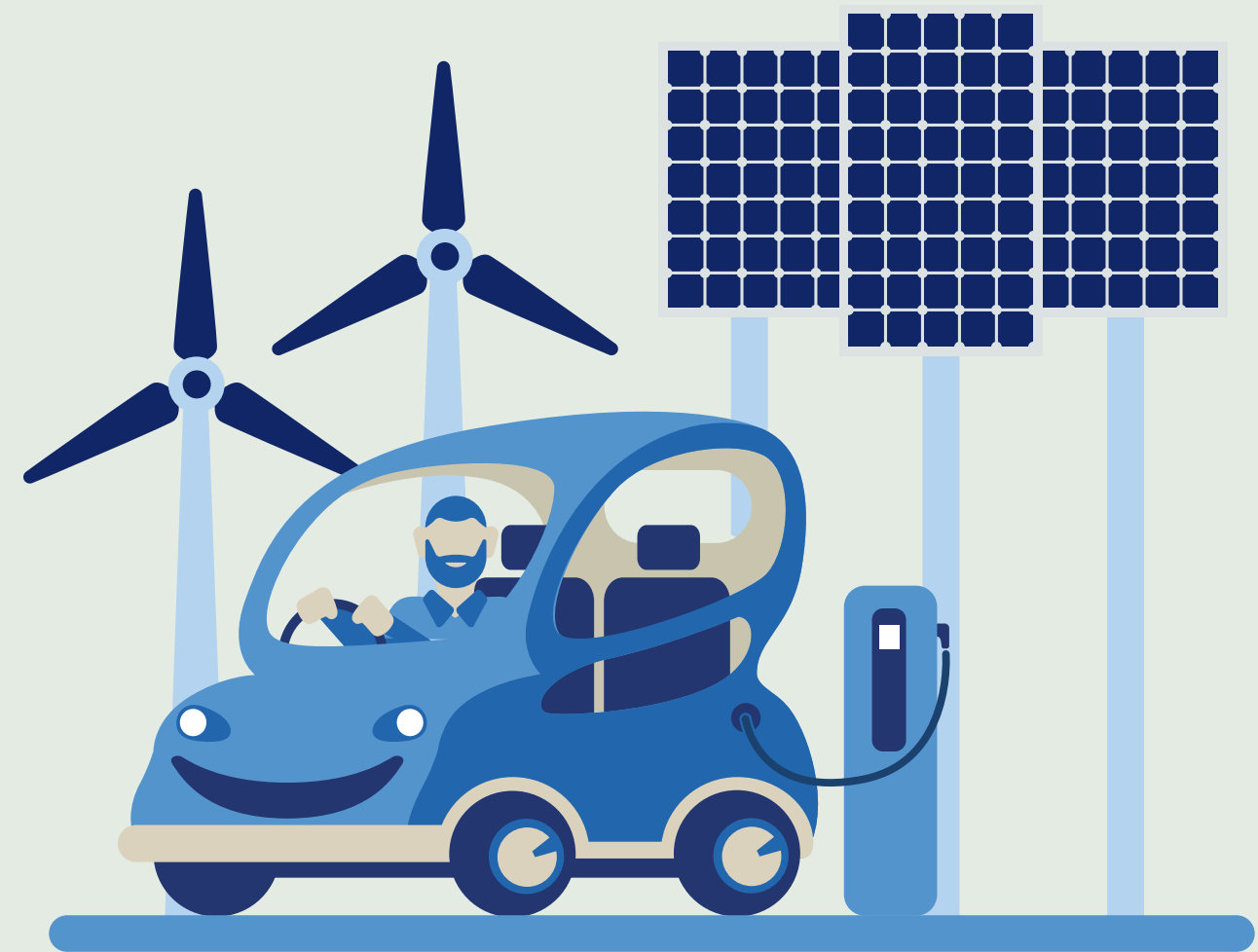
Alternative fuels for hard-to-electrify sectors: Certain industries are challenging to electrify with current technologies, such as air travel, shipping or steel manufacturing. They may require the development of alternative fuels, such as sustainable aviation fuel, green hydrogen or ammonia.

⁹ IEA October 2021, Net Zero by 2050: A roadmap for the global Energy industry https://iea.blob.core.windows.net/assets/deebef5d-0c34-4539-9d0c-10b13d840027/NetZeroBy2050-ARoadmapfortheGlobalEnergySector_CORR.pdf

¹⁰ www.iea.org/energy-system/energy-efficiency-and-demand/demand-response

¹¹ IEA, 2023, Energy Technology Perspective 2023 <https://iea.blob.core.windows.net/assets/a86b480e-2b03-4e25-bae1-da1395e0b620/EnergyTechnologyPerspectives2023.pdf>

¹² McKinsey, November 2022, Europe's EV opportunity—and the charging infrastructure needed to meet it. www.mckinsey.com/industries/automotive-and-assembly/our-insights/europes-ev-opportunity-and-the-charging-infrastructure-needed-to-meet-it



Drivers to accelerate transition

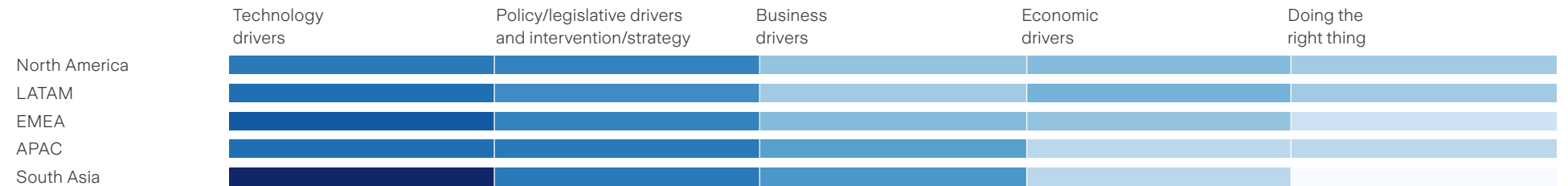
The survey results reveal **technology and policy as the most influential external drivers**, while internally progress is driven mainly by senior management and investors. But the survey also reveals that all industries need more support and acknowledgment from policymakers on the cost and scale of the transition, including support in communicating this to citizens.

The private sector can shoulder only some of the transition costs. Bolder government policies and increased public investment are required to shift support from the old energy economy to the new transition economy. Removing fossil fuel subsidies and introducing well-designed carbon pricing mechanisms could deliver the physical and financial infrastructure and backing companies need to scale up electrification, innovate new fuel, battery and storage technologies and make CCUS a widespread solution.

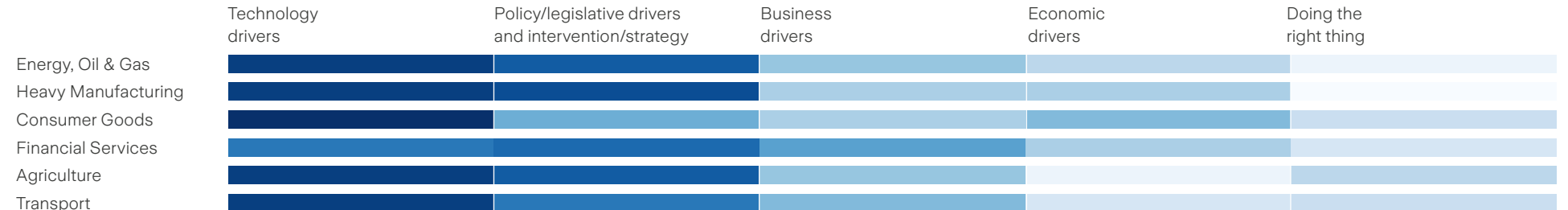
Both technology and policy are consistently important drivers across sectors and geographies (see Figure 5). Scalable and readily applicable innovations to support the transition to net-zero are needed. These can be developed and deployed only if a supportive broader industry ecosystem is in place that comprises key industry players, research institutions and public-private collaboration in research and funding. Technology needs to go hand-in-hand with strengthening core climate policies, including carbon pricing and standards. For example, government support for research and innovation is essential to develop low-carbon substitutes to which carbon pricing can incentivize companies to switch.

Figure 5: Drivers of corporate net-zero action 2023

Net-zero transition external drivers (ranking by region)



Net-zero transition external drivers (ranking by sector)



Lowest ranked 0 0 Highest ranked

Source: Sustainability Executives Survey 2023



Designing carbon pricing instruments that work for all

When well-designed and aligned, carbon pricing instruments – such as carbon taxes or emissions trading schemes (ETS) – can incentivize emissions reduction while avoiding negative impacts such as loss of competitiveness.

A recent report¹³ from the United Nations Environmental Programme (UNEP) and the Net Zero Asset Owner Alliance (NZAOA), which represents investors with a combined USD10.6 trillion of assets under management, offers a set of principles for policymakers. They include:

Ensuring appropriate coverage and ambition by setting carbon prices that are legally binding and in line with science-based evidence and expanding existing systems to create more reliable long-term price signals.

Delivering a just transition by designing carbon-pricing instruments to reduce or compensate the impact on sectors or communities disproportionately affected, for example by providing funds for re-skilling initiatives or adjusting income taxes.

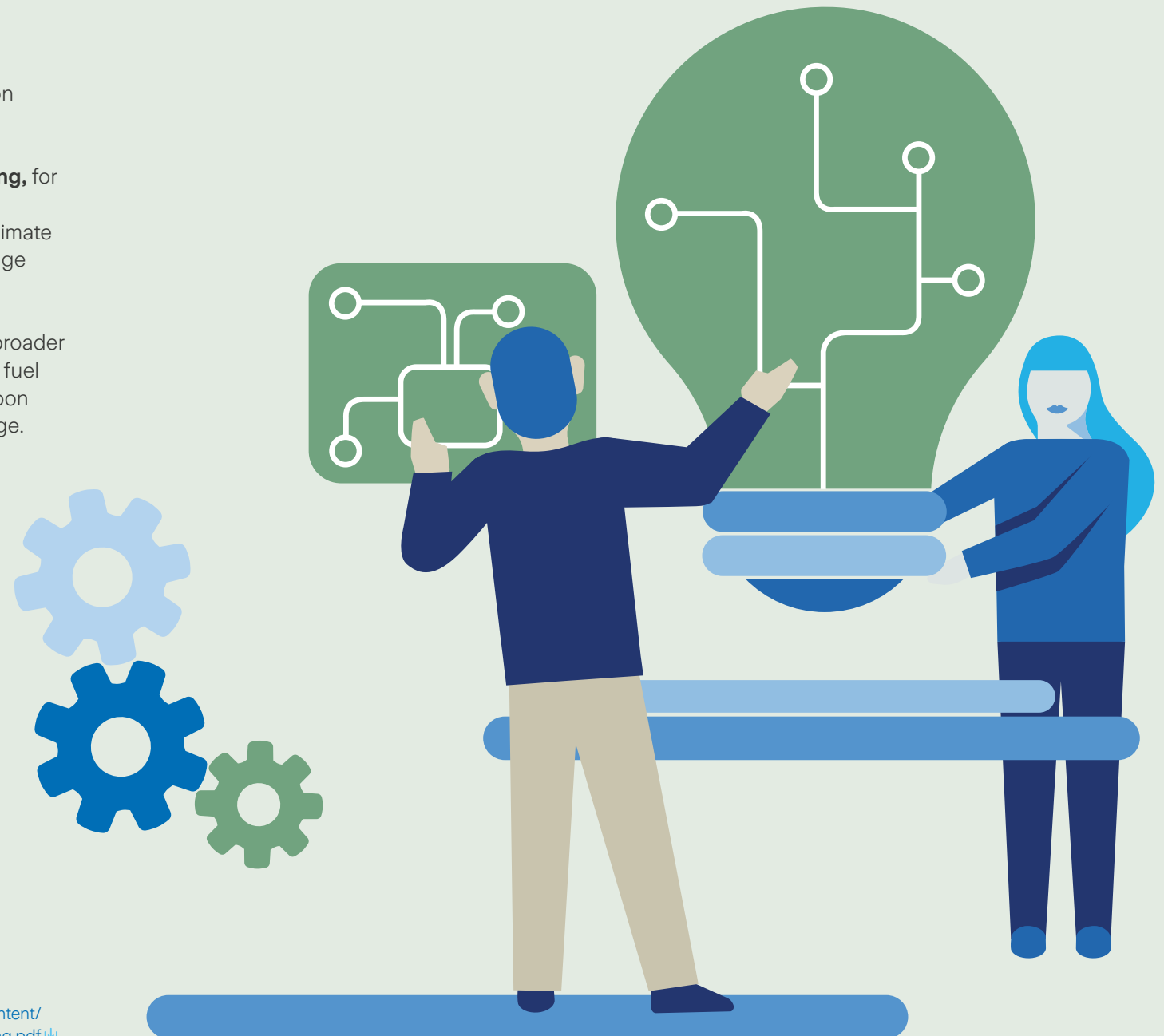
Providing predictable price signals by announcing scheduled pricing increases well in advance to create certainty and including market stability measures such as price floors or ceilings in ETS to minimize volatility.

Minimizing competitive distortions by designing carbon-pricing policies to avoid “leakage” and supporting emissions-intensive firms that are exposed

to international competition, e.g., through carbon border adjustment mechanisms (CBAMs).

Promoting international cooperation on pricing, for example by linking existing ETSs, promoting knowledge transfers or forming international “climate clubs” in which members cooperate to encourage robust carbon pricing.

Effective carbon pricing needs to be part of a broader policy toolset that also includes reducing fossil fuel subsidies and promoting innovation in low-carbon substitutes and access to capital and knowledge.



¹³ UNEP PRI (June 2022) Position Paper on Governmental Carbon Policy https://www.unepfi.org/wordpress/wp-content/uploads/2022/06/NZAOA_Governmental-Carbon-Pricing.pdf

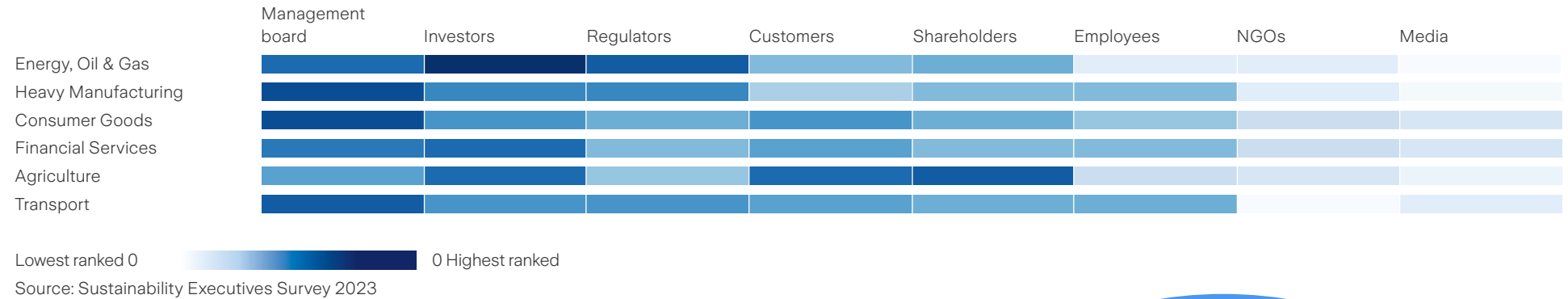
When asked about the key advocates for the climate transition, respondents highlighted the importance of management **boards, investors and regulators** to focus on climate transition (see Figure 6). This would seem to support the logic underpinning many ESG policy approaches around the globe, which have focused on ensuring board accountability for managing climate risks and which have also targeted investors as important drivers of change within investee companies. For our survey selection, these dynamics appear to be working. This in turn links to the **increasing importance of high-quality information on how companies are addressing climate-related risks and opportunities to maintain investors' trust.**¹⁴

While the direct influence of media and NGOs ranked lower in responses, they will clearly play a role in shaping boards and investors decisions.

The relatively strong role of shareholders and investors indicates the **importance of corporate governance frameworks** that incentivize both companies and investors to address climate challenges.

Figure 6: C-Suite, Investors and Regulators driving net-zero plans

Stakeholders advocating most strongly for net-zero action (ranking by sector)



¹⁴ <https://oecdonthellevel.com/2022/06/20/climate-change-what-role-for-good-corporate-governance/>





Transition challenges

At the same time as highlighting areas where positive momentum is already building in transition and solutions are emerging (albeit with a long way still to go), the survey also highlighted a number of key challenges.

The most important barrier to developing a net-zero plan – named by 50% of companies overall – is **costs and scale of capital expenditure** (see Figure 7). This is closely followed by three related roadblocks: **lack of feasible technological solutions; regulatory challenges; and difficulties in measuring and monitoring impact**. Overcoming these structural challenges will require businesses and the public sector to work together on reimagining and redesigning existing systems through mutually reinforcing measures such as:

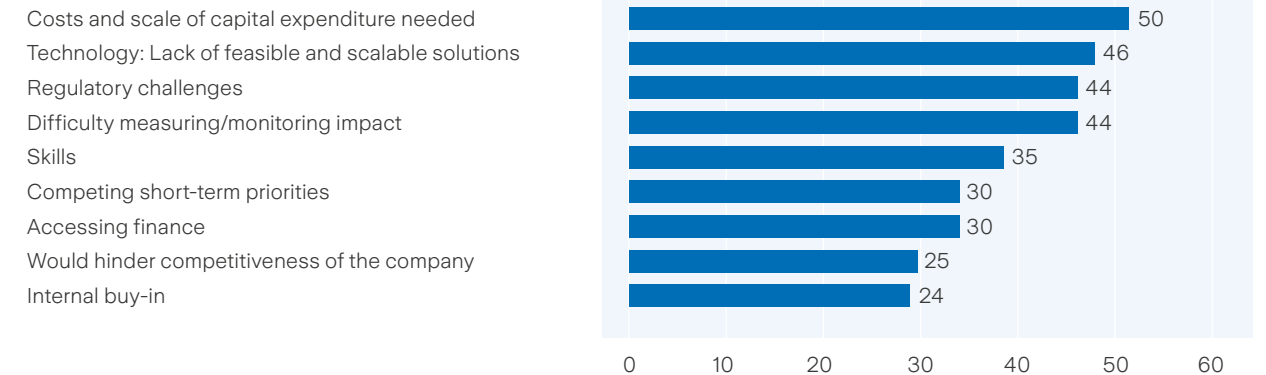
1) Financing and investment: Achieving the net-zero transition by 2050 will require an unprecedented reallocation of capital – an estimated \$275 trillion of investment in physical assets.¹⁵ Neither the public nor the private sector can deliver this scale of investment alone. Governments can reduce financing costs and promote public and private funding through enhanced investment frameworks or blended finance. Aligning on carbon pricing or ETS can send strong price signals that drive investment.

2) Technological solutions: The scaling up of existing technologies, such as renewables, is expected to drive emissions reductions to 2030.¹⁶ Accelerating the development and roll-out of new technologies will be

key for subsequent decades. Shortening concept-to-market times demands policies to support innovation, using a mix of mandates, subsidies and tax breaks, as for renewables. Policies should support R&D, skills and training and technology hubs and ecosystems. International coalitions should promote knowledge transfer and innovation missions, such as on fusion technology.¹⁷

3) Measuring and monitoring impact: Though progress is being made, there remains insufficient alignment around the high quality, science-based data that companies need to inform their decision-making. Analytical tools and skills are lacking in many sectors and governments. Establishing international

Figure 7: Main challenges for business in their climate transition in %, 2023



Source: Sustainability Executives Survey 2023

frameworks and definitions that support harmonized and compatible measures will improve target setting and tracking at corporate and country level.

¹⁵ McKinsey, Institute of International Finance, January 2023, Financing the Net Zero transition: from planning to practice www.mckinsey.com/~media/mckinsey/business%20functions/risk/our%20insights/financing%20the%20net%20zero%20transition%20from%20planning%20to%20practice/financing-the-net-zero-transition-from-planning-to-practice.pdf

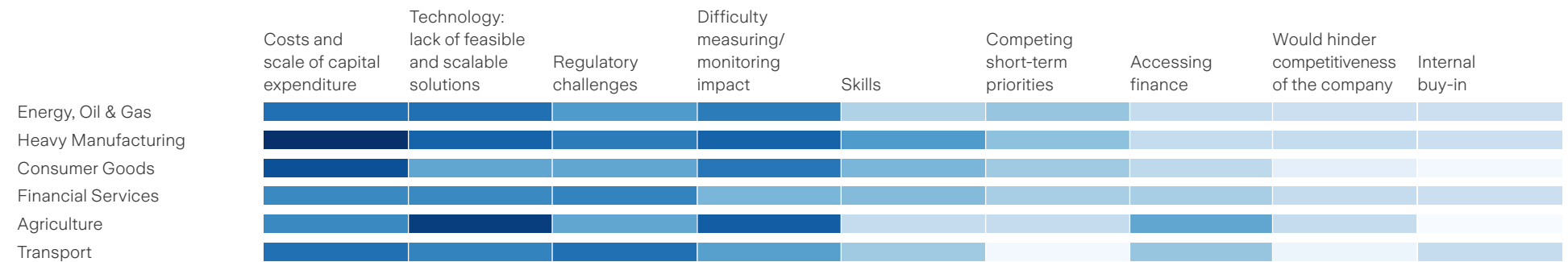
¹⁶ www3.weforum.org/docs/WEF_Financing_the_Transition_to_a_Net_Zero_Future_2021.pdf

¹⁷ <https://www.iea.org/energy-system/decarbonisation-enablers/innovation>

4) Cost and scale of capital expenditure is an especially important barrier in heavy manufacturing (mentioned by 58% of companies in the sector), energy (48%) and transport (48%), as shown by Figure 8. Even when mature, low-carbon technology options exist, policies are needed to support large-scale investment. Without them, industries face high economic barriers to replacing an existing plant – perhaps not yet amortized – with a new plant, which can take many years to commission. Various methods of effective carbon pricing can again create the right investment incentives.

Figure 8: Net-zero planning challenges by sector

Challenges in developing net-zero transition plan (% of companies in the sector)



Source: Sustainability Executives Survey 2023



Chemical company on the move:

Chemical producer BASF is aiming to achieve net-zero emissions by 2050 by innovating ways to switch toward powering its operations with electricity produced from renewable sources. The company is investing in new generation facilities. Hollandse Kust Zuid, for example, is on course to be the world’s largest wind farm and will supply power to BASF’s Antwerp Verbund plant, the largest chemical production site in Belgium. Reflecting the importance of its move toward renewable energy, in January 2022 BASF gathered its activities in the area under the corporate umbrella of Renewable Energy GmbH. The company will provide BASF with renewable energy and energy trading activities in Europe, and global consulting.¹⁸

¹⁸ based on: <https://www.basf.com/global/en/who-we-are/sustainability/we-produce-safely-and-efficiently/energy-and-climate-protection/carbon-management/incrvnewable-energies.html>



We need really new technologies to lower greenhouse gas emissions drastically, and the second thing we need is lots of clean energy.

Dr. Patrick Fiedler
Senior Vice President, BASF SE

Source: <https://www.zurich.com/zurich-talks/future-planet>

The role of insurance – delivering a resilient transition

In addition to identifying the challenges to deliver on transition plans, the survey highlighted that – alongside mitigating emissions to deliver net-zero – companies are also concerned about increased risks arising from climate change. Whether driven by concern about more physical risks associated with even a 1.5 degree Celsius increase in global temperatures, or risks arising from the transition to a net-zero economy, companies are focused on ensuring resilience.

Without effective risk management and resilience measures, climate change risks impacting businesses’ bottom lines with consequences for their capacity to keep on track with delivery of transition targets. Respondents highlight supply chain disruptions as the biggest climate-related threat to their operations, prioritized by 20% of respondents – followed by reputational risk (16% overall, and top in the energy and agriculture sectors), compliance risk (16%) and transition risk (14%).

Given the potential business risks arising from climate change, it is not surprising that the impact on revenue and profit is the main driver of adaptation measures. Respondents from the heavy manufacturing (39%) and energy, oil & gas (35%) sectors were most likely to link their adaptation measures to minimizing impact on the bottom line. Other priorities for companies include protecting communities (25%) and protecting their own reputation (22%) and their workforce (20%).

Survey responses also made clear the appetite for risk assessment and management expertise to help navigate both transition and physical climate risks, with over 50% identifying these as key areas where they looked for support (see Figure 9). Nearly 50% of respondents also highlighted the need for new products and services from insurers to help them manage climate risks.

The survey found 85% of companies that are planning adaptation measures intend to implement their plans within the next five years. Heavy manufacturing companies reported the fastest adaptation timeline, closely followed by the transport, consumer goods and energy sectors. The slowest timeline is in agriculture, which raises concerns about food insecurity. These findings suggest that supporting agriculture businesses to adapt should be among the top priorities for policymakers, especially in vulnerable regions.

Continued on page 19

Figure 9: Business seeks insurers’ risk assessment and management expertise in %, 2023



Source: Sustainability Executives Survey 2023





Maersk strengthens the climate resilience of its ports to future proof global supply chains

Ports are among the most exposed sites in the world to current and future climate risks. Typically located along open coasts or in low-lying estuaries and deltas, ports are vulnerable to windstorms, flooding and storm surge.

Climate resilience is a key focus area for A.P. Moller-Maersk (“Maersk”), one of the world’s largest container-shipping companies. They’ve asked Zurich’s climate resilience team to identify what the current natural hazard levels are, how climate change will influence those in the future and how they can increase their site resilience over the next 30 years. Their operations, including the Maasvlakte II flagship terminal, is one of the greatest examples of automation within the port industry and can be interrupted by fog and snow, while heatwaves can restrict working conditions with the potential of shutting down global supply chains.

It’s no wonder that Maersk – with more than 67 port terminals, 300 inland facilities and 600 container ships – identified climate change, both physical and transition risks, as the biggest threat to its business in its recent enterprise risk management exercise.

Source: <https://www.zurich.com/en/commercial-insurance/sustainability-and-insights/commercial-insurance-risk-insights/zurich-supports-maersk-to-strengthen-the-climate-resilience-of-its-ports>

Highly specialized risk engineers from one of ZRS’s specialist units, Climate Resilience, were tasked to undertake on-site climate assessments at five critical port terminals in Rotterdam, Netherlands; Port Said on the Suez Canal in Egypt; Aqaba, Jordan; Port Elizabeth, New Jersey; and Los Angeles, California. These site visits are supported by a team of CCRS climate data experts who use the latest climate science, data and modeling techniques to develop mitigation solutions tailored to each port.

Having the necessary scientific and technical risk engineering capabilities, combined with risk assessment and impact analysis expertise will ensure businesses have recommendations that are both practical and operational and will help them mitigate vulnerabilities and increase climate resiliency on supply chains.



The average cost of physical damage and business interruption due to climate change hazards is expected to increase by 130 percent by 2050, compared to a 2020 baseline.

Lars Henneberg

VP, Head of Risk Management at A.P. Moller-Maersk





A role for insurance in transition

Insurers' risk-modeling methodologies encompass a wide range of risks that are relevant to climate adaptation, including legal, financial, regulatory and policy risks. The sector's expertise can serve business and government not only by highlighting the risks of failing to decarbonize, but also by facilitating action to meet climate targets:

1. Innovating to support transition

The switch to a net-zero economy will require changes across sectors and to a very wide range of business processes. From the deployment of new technologies, to a shift to energy efficient buildings and the roll out of electric vehicle fleets, new products and services will be required from insurers to facilitate the shift.

2. Sharing expertise in risk management

Low-frequency, high-severity climate-related risks are harder to assess than the high-frequency, low-severity risks businesses usually deal with. The insurance industry is specialized in the end-to-end risk management process from identification, to assessment, quantification, and monitoring of risks, and from analysis of large volumes of data and communication of results to development of physical and operational risk adaptation measures.¹⁹

3. Signaling risks and incentivizing risk reduction

The insurance sector can signal risk levels through its conditions of coverage for policy holders, including the pricing of premiums (as premiums reflect risk, insurance tends to be less affordable for higher-risk entities). By providing expert risk analysis, insurers can

support companies and households in understanding steps they can take to reduce their climate exposure through adaptation measures. Governments can contribute to reducing risks and improving the affordability of insurance by supporting adaptation through subsidies or tax breaks, e.g., for improved storm protection, flood proofing or firebreak management.²⁰

4. Informing adaptation

By sharing its risk analysis data in aggregated form with governments, investors, lenders and business, the insurance sector can support strategies for adaptation in areas such as building codes, planning and development.²¹ The insurance industry – through direct collaboration with academic institutions and public activities – also plays an important role in sensitizing the public to climate change risks and increasing awareness. This is an important step in creating the climate for driving change in behavior.

¹⁹ University of Cambridge Institute for Sustainability Leadership (CISL) (2021). Risk sharing in the Climate Emergency: Financial regulation for a resilient, net-zero, just transition www.cisl.cam.ac.uk/files/risk_sharing_in_the_climate_emergency_04_10.pdf

²⁰ Jarzabkowski, P., K. Chalkias, D. Clarke, E. Iyahan, D. Stadtmueller & A. Zwick. 2019. "Insurance for climate adaptation: Opportunities and limitations." Rotterdam and Washington, DC. <https://insdevforum.org/wp-content/uploads/2020/08/Insurance-for-Climate-Adaptation-Opportunities-and-Limitations.pdf>

²¹ University of Cambridge Institute for Sustainability Leadership (CISL) (2021). Risk sharing in the Climate Emergency: Financial regulation for a resilient, net-zero, just transition www.cisl.cam.ac.uk/files/risk_sharing_in_the_climate_emergency_04_10.pdf



Acting responsibly means embedding climate resilience

Adapting to climate change is a journey, and the first step to is to understand how businesses could be impacted. By combining business data with climate data and expertise, global climate experts like Zurich Resilience Solutions [\(ZRS\)](#) can help businesses, like Maersk and IMI plc [\(IMI\)](#), understand how and where they are most exposed to climate change.

The ZRS team develops data-driven and science-based insights to develop and implement risk management strategies. Its services cover a range of risk areas, from supply chain, cyber risks, sustainability and climate change.

ZRS helps customers around the world to sustain their future by reducing the frequency and severity of their climate-related events and preparing them for growing regulatory and stakeholder demands.



ZRS has the necessary scientific and technical risk engineering capabilities, combined with risk assessment and impact analysis expertise.

Peter Gede

Climate & Loss Prevention Manager,
A.P. Moller-Maersk



Working with Zurich, we have performed a review of the physical risks our largest sites face due to climate change, allowing us to better plan for the future.

IMI plc

Engineering



Adaptation and resilience for the V20: deploying insurance-based tools and know-how

The countries most exposed to climate change have suffered climate-related losses of USD 525 billion since 2000 – and 98% of the 1.5 billion people living in those countries have no financial protection.²³ The Global Shield against Climate Risks was launched at the COP27 conference in Sharm El-Sheikh, Egypt, in 2022 by the G7 and V20, a group of those of highly vulnerable countries.

The Global Shield initiative aims to provide V20 countries with pre-arranged financial support, designed to be quickly available after events such as floods, droughts, storms and wildfires. The insurance industry will work with vulnerable countries to close protection gaps using know-how and instruments, including livestock and crop insurance, property insurance, business interruption insurance and risk-sharing networks.²⁴

Through the Insurance Development Forum, a public-private partnership to further the use of insurance and risk management in protecting communities and businesses against climate risks, insurers are also partnering with V20 governments to establish the Global Risk Modeling Alliance (GRMA). This program will provide open-source technology, data and technical assistance to help countries develop better risk analytics and risk financing solutions.²⁵

These solutions in turn can inform investment decisions, like, for example, how to deploy money from the COP27 Loss and Damage agreement. By strengthening their physical climate risk management and adaptation capacity, governments can build the trust and confidence needed to attract further investment in adaptation and risk financing solutions.

Continued from page 15

Without effective adaptation, exposure to climate risks could make the investments needed for the net-zero transition more costly – or even unviable in certain sites. At the level of national infrastructure, where power plants and pipelines are exposed to climate risks, for example, investing in renewables can be both a mitigation and adaptation solution. Renewables should an extreme weather event damage the grid. However, particularly in emerging markets, data to assess the risks are often scarce and fiscal support for such investments is lacking.

Governments and businesses in many countries could benefit from more effective modeling of risks, such as floods. Better data and modeling increases confidence in risk assessments and quantification, thus supporting better risk monitoring and management. This in turn informs insurance premiums and risk transfer strategies and strengthens financial resilience by providing greater certainty for investors.²²

²² <http://www.insdevforum.org/wp-content/uploads/2023/05/Flood-Risk-Modeling-to-Support-Risk-Transfer-Report.pdf>

²³ <https://sdg.iisd.org/news/v20-g7-launch-initiative-to-address-climate-risks-in-vulnerable-countries/>

²⁴ www.v-20.org/v20-and-g7-jointly-launch-global-shield-against-climate-risks-at-cop27#:~:text=Sharm%20El-Sheikh%2C%2014%20November,deployed%20in%20times%20of%20climate

²⁵ <https://www.insdevforum.org/press-release-cop26-idf-and-v20-announce-partnership-in-risk-understanding-to-build-global-resilience-to-climate-risk-idf-announces-other-multi-partner-resilience-actions/>

Figure 10: Planned adaptation timeline by sector and region in %, 2023



Source: Sustainability Executives Survey 2023

Conclusions and recommendations

The Sustainability Executives Survey indicates that companies across sectors and around the globe are committed to net-zero and are already pushing ahead with the delivery of transition plans in the short-term. But there is no room for complacency, as greenhouse gas emissions continue to run ahead of a net-zero trajectory. Action on transition needs to be accelerated and both the public and private sector have a role to play in delivering that change of pace.

Companies, both large and small, need to invest in technologies to switch to renewables; to electrify fleets and operations; to update plant and buildings for energy efficiency; and to support data capture and measurement. More investment support and incentives are needed to bear those costs. Developing and scaling up low- and negative-emission technologies will be crucial to achieving climate targets, but both will require strong policy support. Experience suggests a combination of financial incentives and government mandates will be the most effective for scaling these technologies. These scalable and rapidly applicable innovations require collaboration across industry players, with research institutions, as well as public-private collaboration in research and funding.

Policymakers can support businesses' climate transition by making systemic, economy-wide interventions, such as carbon-pricing mechanisms, that can harness the power of capital markets and incentivize innovation and decarbonization at scale. The discussion so far suggests three priorities for action for governments:

1. Creating policy certainty

Policy certainty in both the short- and long-term is critical to the viability of the business transition to net-zero. Investment in the transition takes place against a background of changing supply and demand, new technologies, operating constraints and risks.

Recommendations

- **Set clear standards and methodologies.** Independent, non-conflicted, non-market-participating experts should take the lead, particularly in ensuring the quality of data and reporting, carbon markets and critical financing mechanisms for innovation and infrastructure.
- **Promote cross-border and cross-industry collaboration and regulatory alignment.** Aligning the approach among all key stakeholders is vital. Deploying pro-transition regulations as barriers to trade and competition will slow progress for all.
- **Set clear timelines for regulatory change to enable more robust business action.** Business and governments need to act fast, but major capital investments have lengthy discount periods, and poor strategic choices will impact growth and efficacy.
- **Address complex and lengthy regulatory requirements for renewable technologies** that have the potential to slow down adoption by business and simplify regulatory processes for net-zero adaptation in areas such as building codes.

2. Unlocking finance and creating economic incentives

To facilitate investment in mitigation and adaptation, governments and multilateral lenders can catalyze private financing by taking a share of risk, “crowding in” private investment by providing additionality. Such models can accelerate the adoption of low-carbon technologies.

Blended finance where public and/or philanthropic funds are used to mobilize private investment into critical projects is an effective tool to drive climate action in emerging markets (EMs) when appropriate pricing and effective risk mitigation approaches are built into the instruments to attract the right level of private sector participation. In developed markets (DMs), creating fiscal incentives and cohesive policies such as the Carbon Border Adjustment Mechanism (CBAM) or the US Inflation Reduction Act can unlock the finance needed to transition to net-zero.

Recommendations

- **Carbon pricing:** Implicit subsidies for fossil fuels must be eliminated and the true value of low carbon solutions reflected in the cost of finance. The expansion of local and regional cap-and-trade schemes, scaling voluntary markets and the development of “carbon single markets” between jurisdictions would provide momentum for transition in the absence of a global framework.
- **Enable development finance institutions to invest and develop innovative financial instruments** in a wider range of blended finance products. For example, specialized funds or impact bonds – to

create more investable projects and attract greater private investment in sectors such as adaptation, renewable energy and social infrastructure.

- **Mobilize domestic resources to complement blended finance initiatives** by designing policies and mechanisms to attract local private sector investment, promoting financial inclusion and strengthening domestic capital markets to support sustainable development projects. This also calls for enhanced collaboration among stakeholders and public-private collaboration.

3. Turbo charging innovation

Our survey showed that technology is considered a key driver of progress toward net-zero, across sectors and geographies. Technological innovation is advancing at pace, but affordable and readily-applicable options, available at scale, are still lacking. Speeding up this pipeline needs the coordination of efforts across all areas of society, including businesses, governments, academia and research institutions and civil society.

Recommendations

- **Increase research and development investment:** Governments and businesses should invest more in developing low-carbon technologies, renewable energy solutions, carbon capture and storage (CCS) technologies and sustainable practices.

- **Foster collaboration and partnerships:** Encourage collaboration between businesses, research institutions and governments to share knowledge, resources and expertise. Public-private partnerships can accelerate the scaling up of climate-friendly technologies.
- **Support start-ups and SMEs:** Provide funding, grants and incentives for innovative companies that are developing and commercializing green technologies and sustainable products.
- **Encourage technology transfer:** Facilitate the transfer of climate-friendly technologies from developed to developing countries, helping them leapfrog to more sustainable practices.
- **Provide long-term policy certainty:** Businesses need stable and predictable policy environments to make long-term investment decisions. Governments should provide clear and consistent signals about their commitment to net-zero goals.

Annexes

Methodology

This report is based on in-depth **interviews with industry experts** (see Acknowledgments), a **review of literature** (see footnotes) and the **Sustainability Executives Survey** (see Figure M1), carried out online in April and May 2023. The survey targeted senior sustainability professionals in companies with annual revenue of over USD 100 million in North America (Canada, US); Latin America (Brazil, Mexico); Europe, Middle East and Africa (France, Germany, South Africa, Spain, Switzerland, UK, UAE); South Asia (India); and Asia and the Pacific (Australia, China, Indonesia).

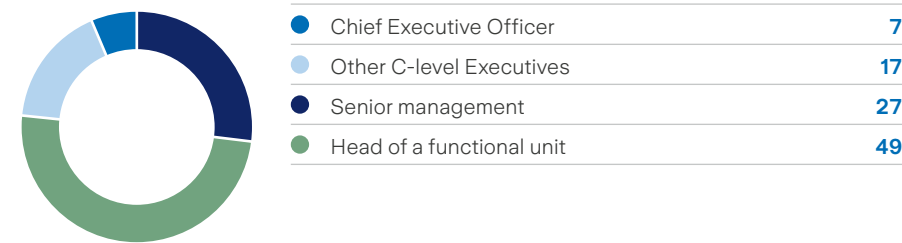
Between 30 and 80 responses were collected by country, depending on country size. Regional averages were calculated as unweighted averages of average responses per country.

The survey gauged responses from 668 businesses in six selected sectors: agriculture; consumer goods; energy, oil & gas; financial services; heavy manufacturing; and transport (see sector definitions below).²⁶

²⁶ Finance and banking and insurance and re-insurance were merged into one sector: Financial Services.

Figure M1: Sustainability Executives Survey by respondents' positions and company size

Respondents by position, in %



Respondents by company size (annual revenue)



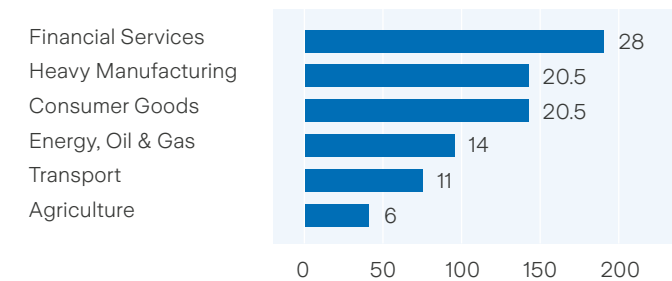
Source: Authors' calculations

Figure M2: Sustainability Executives Survey by respondents' country

Country	Number of responses
Australia	30
Canada	51
India	50
Indonesia	30
South Africa	31
Switzerland	50
UAE	30
UK	50
USA	82
Brazil	31
Mexico	30
Spain	50
China	51
Germany	51
France	51
Grand Total	668

Source: Authors' calculations

Figure M3: Sustainability Executives Survey by respondents' sector, in %



Annexes

Glossary²⁷

Adaptation: A company's efforts to adjust to changing or expected climate and its effects in order to reduce risks or exploit beneficial opportunities.

Carbon capture solutions: Technologies and processes designed to capture carbon dioxide emissions from various sources, such as power plants, industrial facilities and even directly from the atmosphere.

Carbon offset projects: Initiatives or activities implemented to counterbalance or compensate for greenhouse gas emissions by reducing or removing an equivalent amount of carbon dioxide gases from the atmosphere. These projects typically involve investing in renewable energy projects, reforestation and afforestation efforts, energy efficiency programs or other sustainable practices that help offset the environmental impact of carbon-emitting activities.

Mitigation: A company's intervention to reduce emissions or enhance the sinks of greenhouse gases in order to reduce a company's contributions to climate change effects.

Net-zero: The balance between the amount of greenhouse gases that are emitted with the amount that are removed from the atmosphere.

Renewable energy (Renewables): Energy resources that are virtually inexhaustible in duration but limited in the amount of energy that is available per unit of time. Renewable energy resources include biomass, hydro, geothermal, solar, wind, ocean thermal, wave action and tidal action.

Fuel substitution: A switch from fossil to alternative fuels, for transportation applications or industrial processes. Alternative fuels include electricity, natural gas, biofuels and hydrogen.

Sector definitions

Consumer Goods: Manufacturers of a mix of durable and non-durable goods (such as food products, beverages, clothing, shoes, furniture, household appliances, electronic gadgets, etc.).

Energy, Oil & Gas: Companies with their core operations in exploration, production, refinement, distribution and sale of oil, natural gas and other energy products.

Financial Services & Insurance: Companies that provide various financial and investment products and services to businesses, institutions and individuals, including insurance.

Heavy Manufacturing: Producers of large and complex products such as machinery, construction materials, building components, infrastructure systems and vehicle parts, such as aircraft and others.

Transport: Includes transport (road, rail, water and air) and logistics companies but also courier and express delivery services, freight transportation arrangements, support activities for air, rail and road transportations.

Agriculture: Includes food and fiber producers, poultry, fisheries, seed producers, forestry companies and other related services.



²⁷ Adapted from the IPCC and EIA glossary.

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