REUTERS EVENTS™

A report in collaboration with

Deloitte.

Energy Transition Trends Report 2022

Contents

Foreword

This decade is our chance to stand up and play our part in creating a net-zero future.

While there's still much uncertainty around how we will achieve this, we know it is going to take collaboration from leaders across all countries, sectors and societies to make it happen. Companies from the energy and industrials sectors are at the forefront of this change and their investment in technology and innovation will be critical.

This survey of more than 2,800 executives from a broad range of industries shines a light on the biggest challenges and opportunities facing industry leaders over the next 12 months as they plan and execute their decarbonisation strategies.

The overall results indicate there's a positive sentiment among executives that their businesses will achieve net-zero operations by 2050. The outlier is the industrials sector, where a quarter of respondents had doubts over whether this industry would be able to cut emissions to zero by 2050.

Beyond governments, the survey found energy companies are seen as having a high or very high impact on the energy transition by almost 89 percent of respondents, but nearly 81 percent placed emphasis on the financial sector to drive the process.

The question of how we fund a just energy transition is top of mind for executives and strategies on how to couple their environmental, social and governance (ESG) responsibilities with this could lead to some innovative solutions.

I'd be delighted to speak to you about the results and potential impact for your business in more detail.

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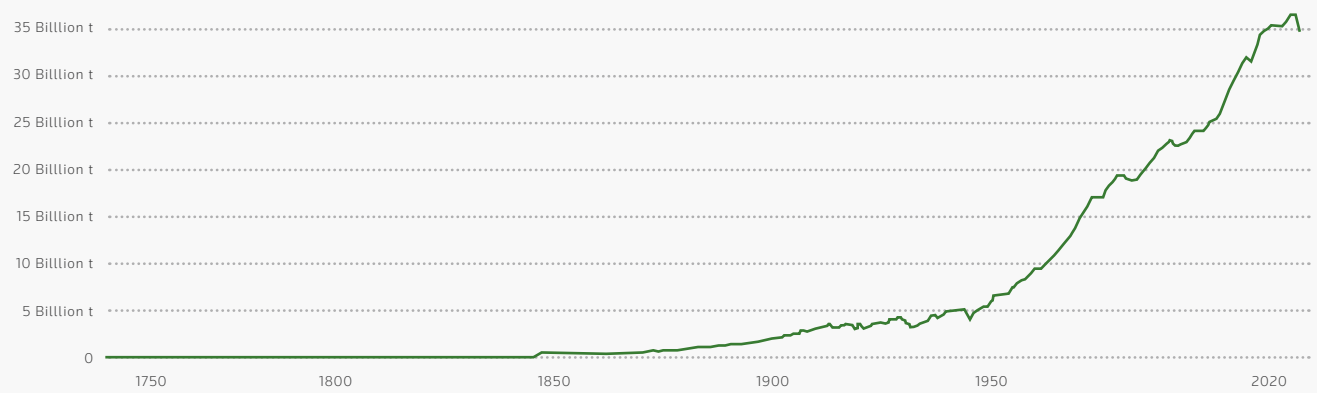
Introduction

The world's energy sector enters 2022 having seen both the best and worst of possible transition outcomes. Despite a clear consensus now that global temperature rises must be kept within 2 degrees—and preferably 1.5—of pre-industrial levels, it took the coronavirus pandemic and resultant restrictions on national and international travel to, albeit temporarily, curtail the world's carbon emissions.

The pandemic also helped demonstrate the value of clean energy sources, which proved more resilient to the supply chain and workforce challenges brought about by COVID-19. By the end of 2021, an economic bounce-back was firing demand for fossil fuels, driving up energy prices around the world and contributing to a watering down of coal phase-out language at the 26th United Nations Climate Change Conference (COP26). At the start of 2022, the scale of commitment towards the energy transition is stronger than ever before, with approximately 21% of the world's largest 2,000 companies now committed to net zero targets[i]. At the same time, the climate challenge facing society continues to grow.

Carbon dioxide (CO2) emissions from the burning of fossil fuels for energy and cement production.



Source: Global Carbon Project.[ii] Note: Land use change is not included.

CO_2 emissions are measured on a production basis, meaning they do not adjust for emissions embedded in traded goods.

Hopes that this positive trend might continue into 2021 were initially borne out as a growing move towards the adoption of ESG policies led many corporations to increase investments in clean energy procurement. But hopes that the world was on a clear path to decarbonisation were short lived. Global demand for coal is expected to reach record highs this year.[iii]

And the consequences of continuing carbon emissions are the starkest they have ever been, with last year seeing the hottest ocean temperatures in history[iv] and warming permafrost even putting Arctic pipelines at risk.[v] At this crucial point in time, Reuters Events and Deloitte have teamed up to carry out a major study into corporate attitudes and initiatives relating to the energy transition.

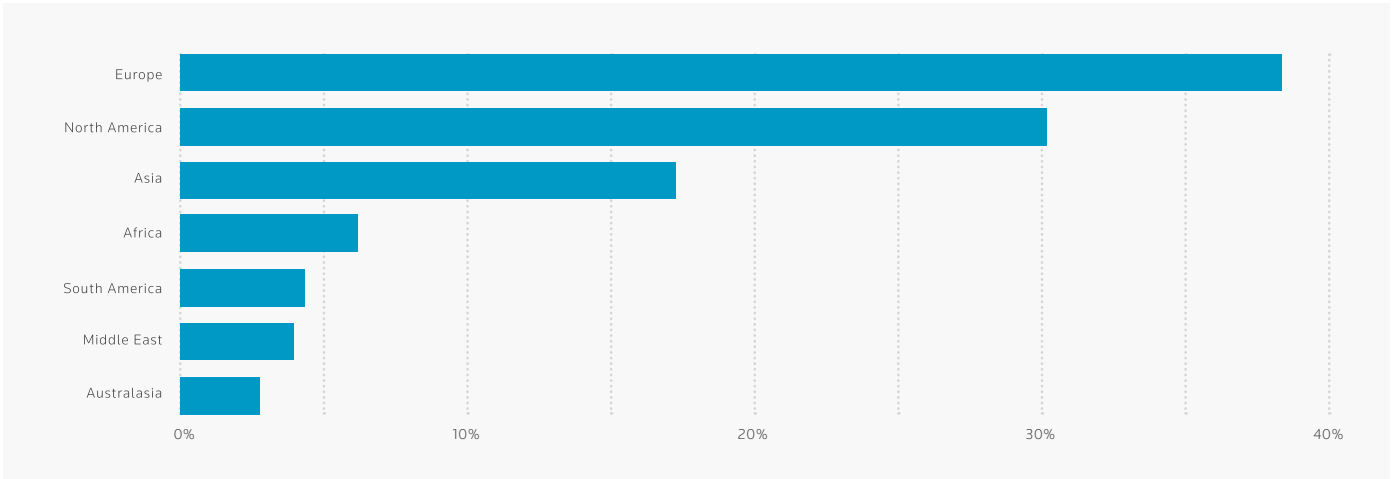
This report covers a broad range of industries and provides insights into our ability to reduce net emissions to zero and keep global warming to within 2 degrees of pre-industrial levels, as stipulated in the 2015 Paris Agreement. It covers five key themes:

1. Delivering Net Zero
2. Governance, Society, and People
3. Markets, Finance, and Investment
4. Clean Technology and Electrification
5. The Industry Transition

Methodology

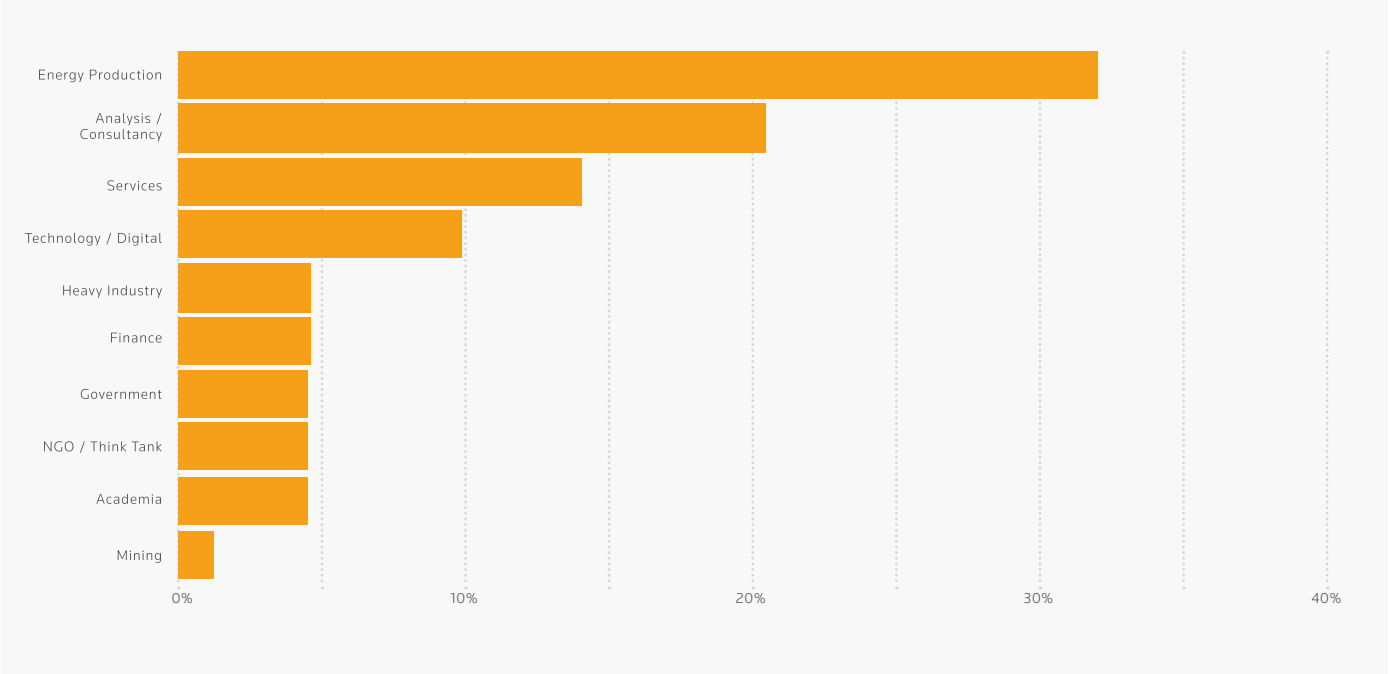
This report is based on research carried out in late 2021, drawing 2,800-plus responses from professionals within the Reuters Events energy transition and Deloitte network communities. The respondents were predominantly from Europe, North America and Asia and were drawn from a range of industries, with a focus on energy production, analysts and consultancy.

Breakdown of survey respondents by location.



More than 76 percent of the respondents held managerial or higher posts within their organisations, and more than 55 percent were director level or higher. The sample included more than 450 board-level or 'C-suite' respondents. Where appropriate, the study includes specific analyses of the responses from this group, for comparison with those from the sample overall.

Breakdown of survey respondents by 'primary business type'.



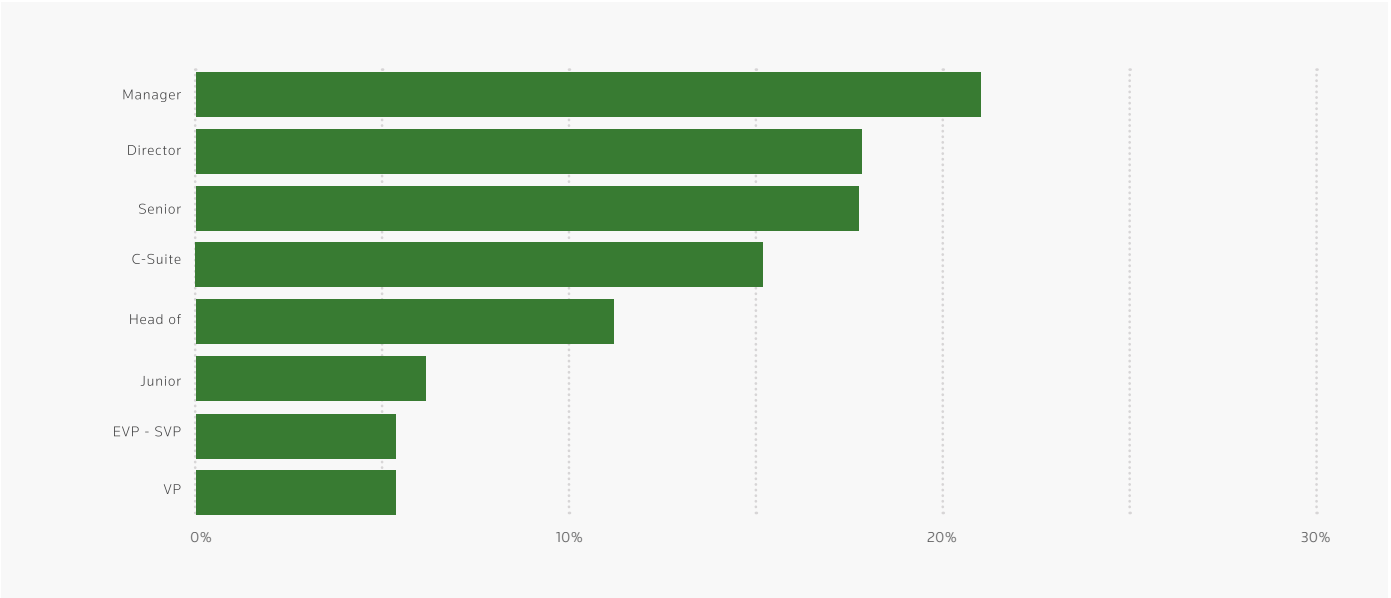
Delivering Net Zero

Key finding: While governments are still expected to provide leadership on net-zero targets, companies are increasingly seizing the initiative in implementing decarbonisation pathways.

A growing scientific consensus around the reality of global warming,[vi] along with clear signs of climate change, such as worsening wildfires, storms, and floods, have helped galvanise actions designed to reduce carbon emissions. The last year, especially, has seen hundreds of companies pledging to become net-zero carbon emitters, with many aiming to achieve the target by 2040[vii], a decade ahead of the Paris Agreement date.

These companies include energy companies such as Fortescue, UrbanX Renewables Group and Zenergi.[viii] The increasing sense of urgency regarding emissions reduction is reflected in our survey findings, with almost 65 percent of respondents saying their organisations were highly committed to the energy transition and/or achieving net-zero emissions.

Answers to the question: What statement best describes the extent to which you believe your organisation's leadership is committed to energy transition/net



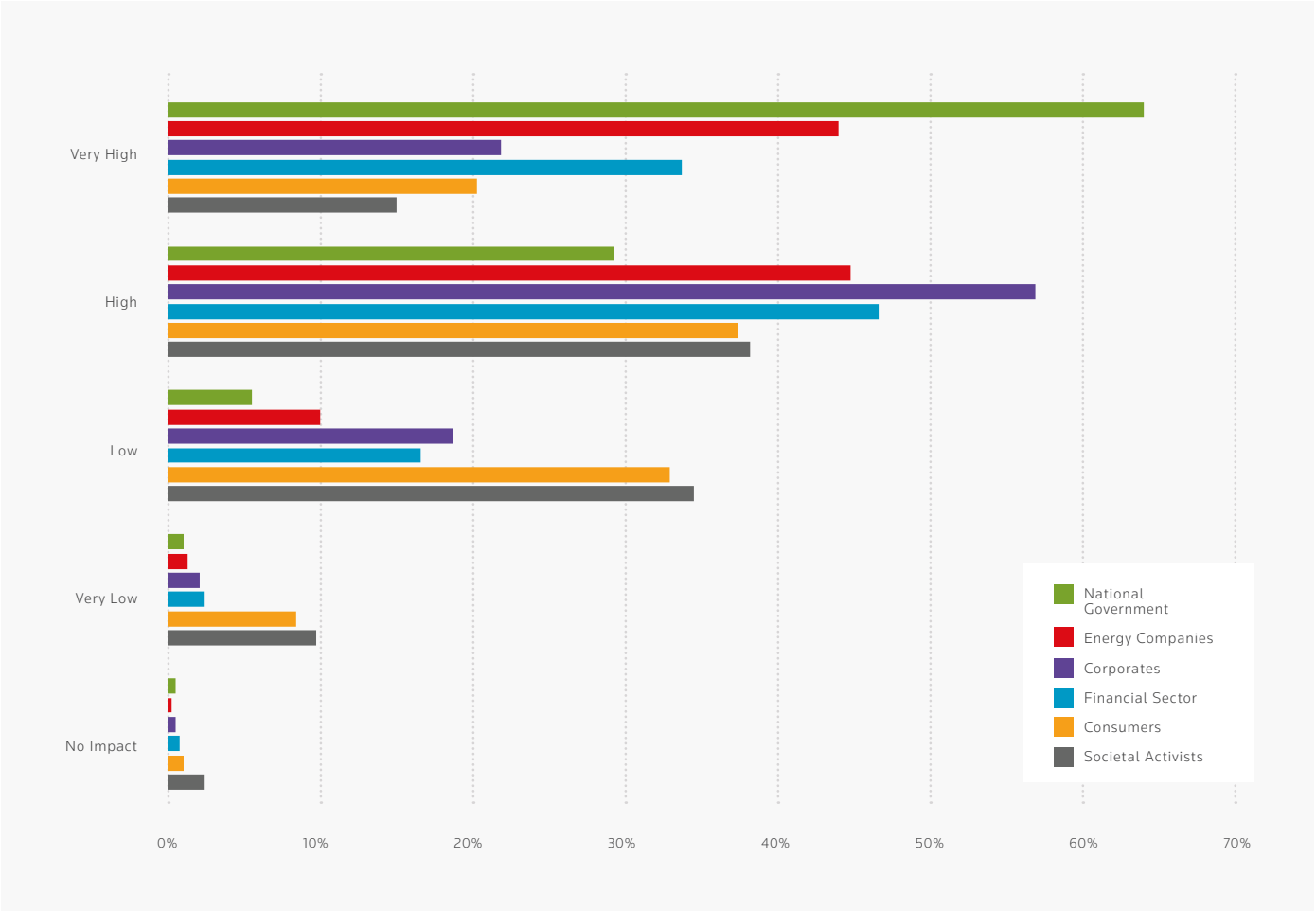
A further 19 percent said these issues were being discussed at corporate level, and only 2 percent claimed their organisations were silent on the energy transition. The implication is that thousands of organisations are now planning and implementing pathways. But company leadership teams do not see themselves as leading this transition.

Company leadership teams do not see themselves as leading this transition.

Of course, an arguably more interesting and alarming finding is that a third of the energy industry respondents do not have a commitment.

Instead, 93 percent of the sample—and a similar percentage of C-suite respondents—believe that national governments will have a high or very high impact on driving the energy transition. Beyond governments, energy companies—of which there were roughly 900 in the survey—were seen as having a high or very high impact on the energy transition by almost 89 percent of respondents. Nearly 81 percent of respondents placed emphasis on the financial sector to drive the process.

Answers to the question: What impact do you think the following actors will have on driving the energy transition forward?



Corporates were seen as having high impact by 56 percent of the sample, and a very high impact by less than 22 percent. The 'very high' ranking is only a little higher than that attributed to consumers, at 20 percent. Further proof of the importance of governments in leading moves to decarbonisation came from a question in the research where almost 92 percent of respondents agreed or strongly agreed that public sector leadership would be crucial for the energy transition.

Somewhat worryingly, almost 71 percent of the sample (and nearly 76 percent of C-suite respondents) also said the public sector is failing to drive the transition at the rate required. Nevertheless, government actions do appear to be influencing corporate plans, with more than 56 percent of respondents saying the outcome of COP26 would have a direct impact on business strategy within the next five years. The exact nature of that impact remains unclear. On the issue of what types of emissions should be covered by decarbonisation plans, there is a wide range of views. Over a third of the sample said energy and industrial sectors should take primary responsibility for their Scope 1 emissions, which are those arising directly from owned or controlled sources such as power plants.

Answers to the question: To what extent do you agree with these statements?

Question	Strongly Agree	Agree	Unsure	Disagree	Strongly disagree
Strong public sector leadership is crucial to achieving a successful energy transition	64%	28%	5%	2%	1%
The public sector is failing to drive the energy transition at the rate needed	28%	44%	19%	9%	1%
The outcomes from COP26 will directly impact on my business strategy within the next five years	19%	38%	31%	10%	3%

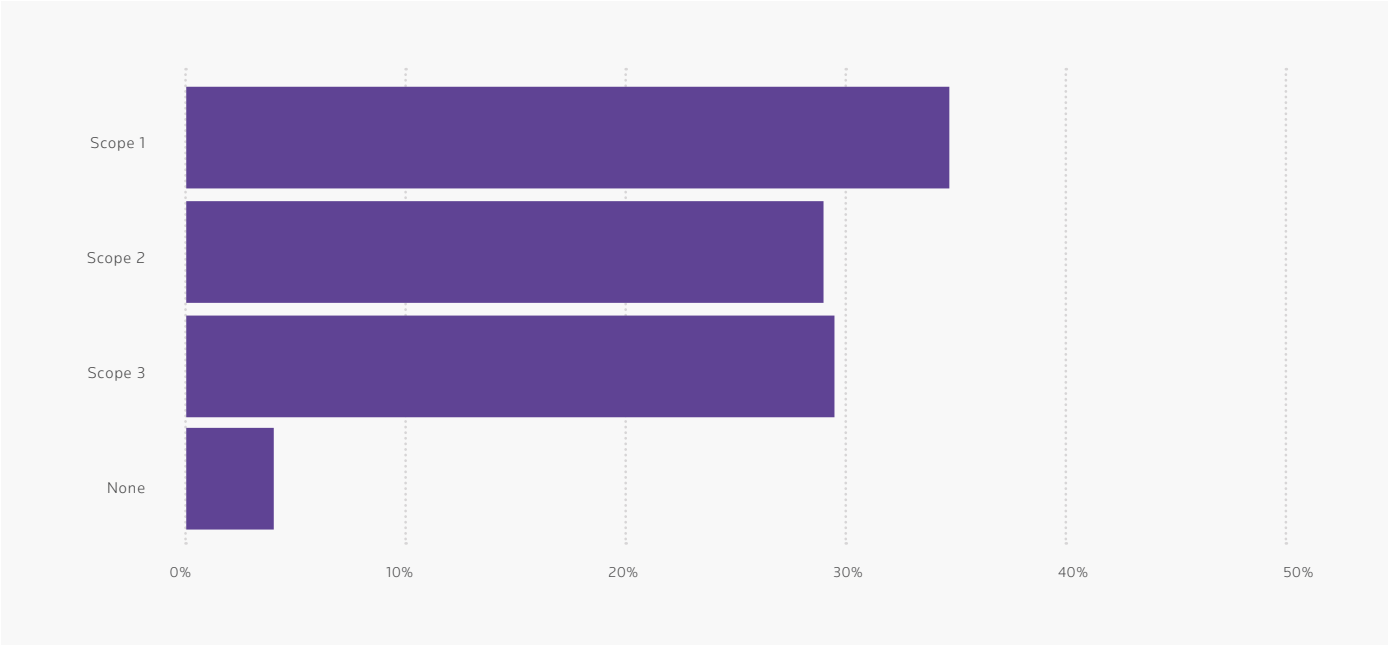
Just under another third believed responsibility should cover Scope 1 and Scope 2 emissions, which come from energy that is purchased as part of business operations. And roughly another third thought companies should also be responsible for all other indirect emissions that occur in a company's value chain, known as Scope 3 greenhouse gases.

Regardless of Scope, there is growing confidence that companies may be able to deliver on net-zero strategies.

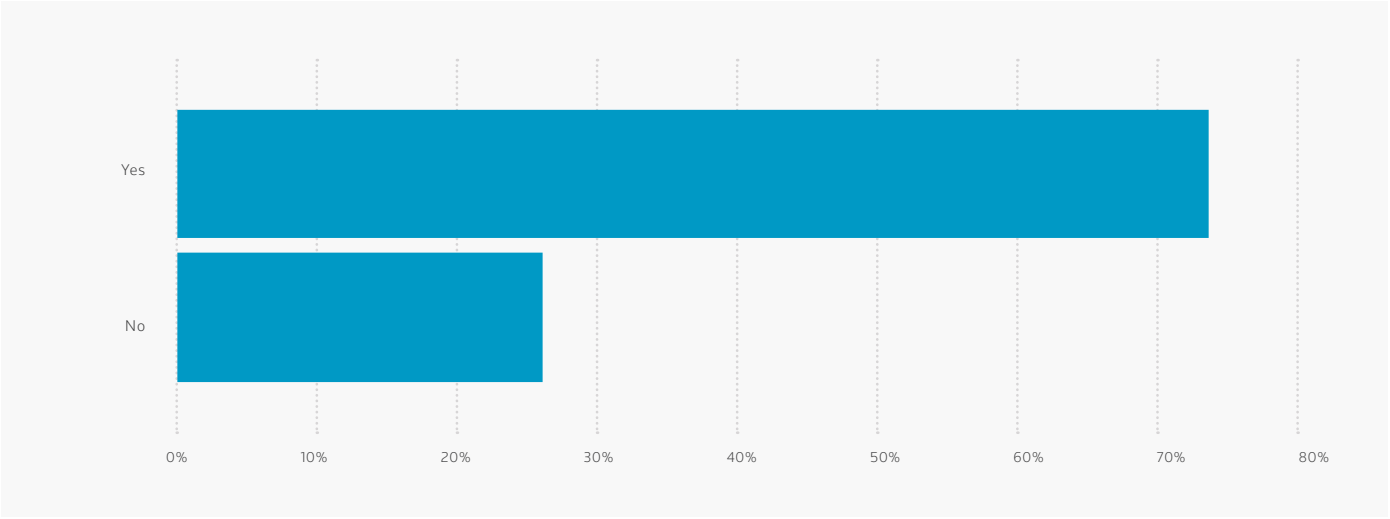
It is unclear if this disparity of views reflects differing levels of ambition or is a consequence of the range of decarbonisation challenges facing different industries, since some companies will likely find it easier than others to eliminate Scope 2 and Scope 3 emissions. Regardless of Scope, there is growing confidence that companies may be able to deliver on net-zero strategies.

Almost 74 percent of the overall sample, and nearly 81 percent of C-suite respondents, said the necessary actions were being put in place in their organisations. There is reasonable confidence among survey respondents in being able to achieve net-zero status well ahead of 2050. More than 10 percent of respondents said their companies had already cut net emissions to zero. Among companies that are putting the right actions in place, a further 20 percent were expecting to be net zero by 2025.

Emissions Scopes that energy and industrial sectors should take primary responsibility for.

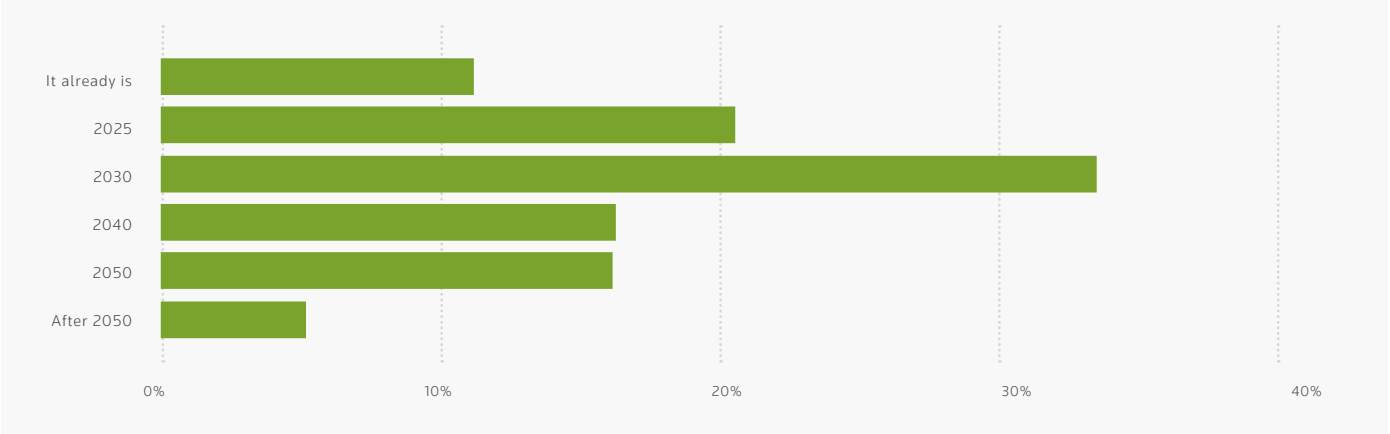


Answers to the question: Are you confident that your company is putting the necessary actions in place to deliver its net zero strategy?



Of those respondents that feel their companies are putting the necessary actions in place, almost 65 percent believe their organisation should be net zero by 2030, the sample optimistically predicts. Less than 5 percent believed the process would last beyond 2050.

When companies that are putting the necessary actions in place expect to become net-zero.

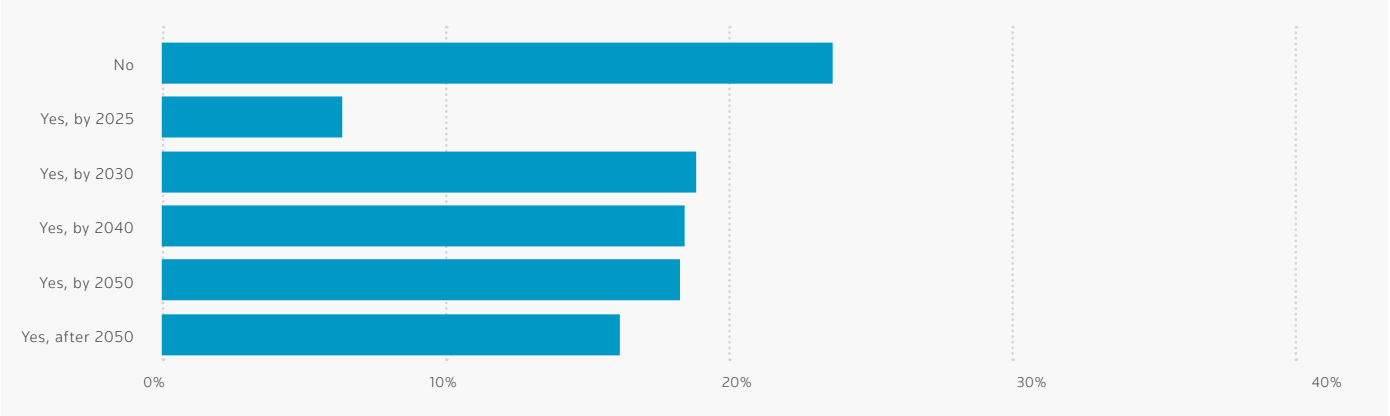


C-suite respondents were even more optimistic, with more than 86 percent predicting net-zero status by 2030 and less than 3 percent expecting to still be pursuing the target after 2050—an unusually bright outlook. Almost a quarter of C-suite respondents said their companies were already carbon neutral, which clashes with wider industry data suggesting only about a fifth of large companies have even got as far as setting a net-zero target[ix]. It is unclear why there was such a large discrepancy on this figure between the C-suite and the larger sample, unless the former had tended to come from companies with more aggressive carbon reduction initiatives. Only 6 percent of the survey respondents thought their companies would ultimately fail to achieve net-zero status. Among C-suite respondents, the level was just over 4 percent.

Energy trends prediction: net zero

Companies now face significant legislative and stakeholder pressure to demonstrate pathways to net-zero emissions. By 2025, a net-zero commitment and/or pathway will be a standard piece of governance for medium-to-large businesses with an international customer base.

Whether (and when) net-zero emissions could be achieved among companies that are not acting on carbon.

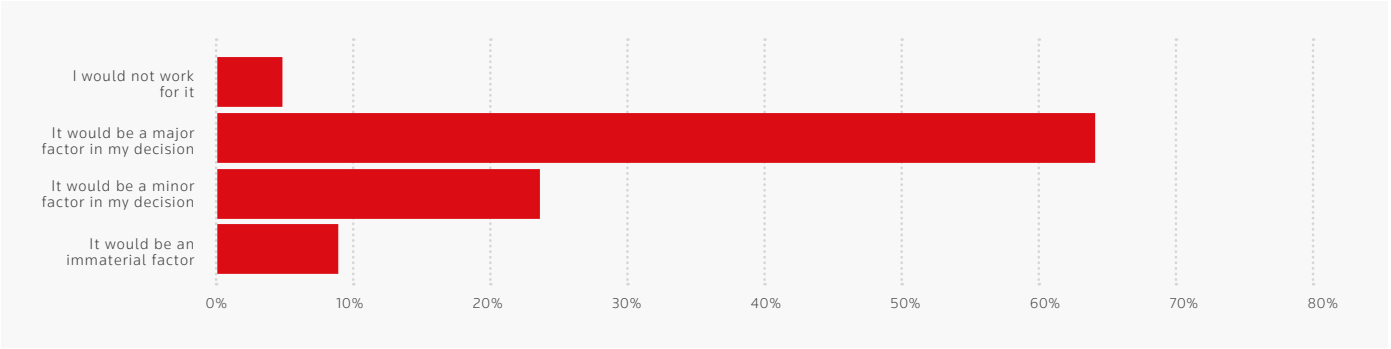


Governance, Society, People

Key finding: The ability to deliver on net-zero pledges is increasingly a factor in helping companies to attract human talent.

The growing importance of net-zero pathways within corporate governance frameworks is underscored by the fact that more than 64 percent of respondents said energy transition commitments would be 'a major factor' in whether they would work for a company. In contrast, little over 8 percent said a commitment to the energy transition would be immaterial in choosing an employer. Only 4 percent of respondents said they would not work for a business committed to the energy transition.

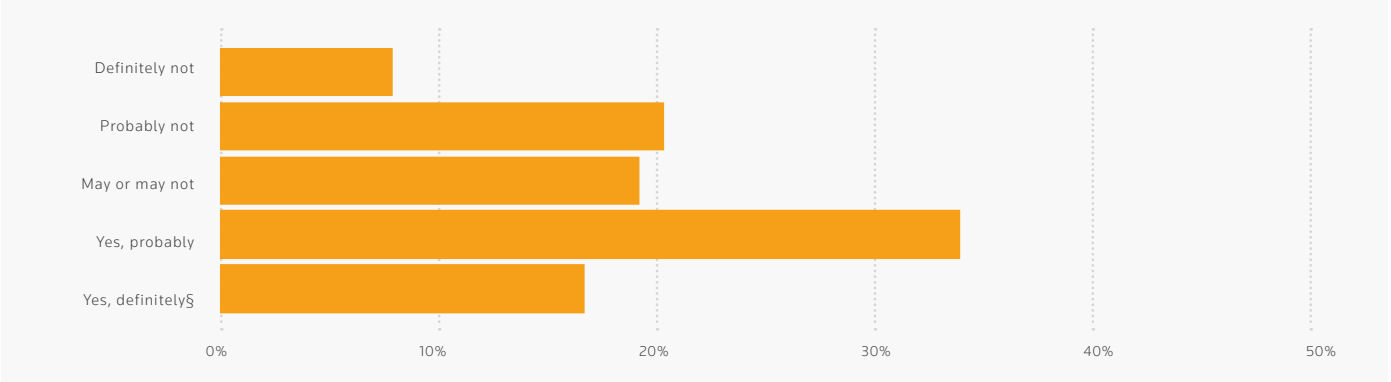
Importance of energy transition commitment for selecting an employer.



Employee attitudes towards the energy transition are important because reducing global emissions is a task that is expected to generate significant levels of employment. According to the International Renewable Energy Agency, the energy transition could create 42 million jobs globally by 2050, up from 11.5 million in 2019.[x]

The number of jobs in energy efficiency and flexibility is also set to soar, to almost 36 million in 2050 from under 17 million today. Attracting the people needed for a low-carbon future could be a challenge for a significant minority of companies, according to our research: almost 28 percent of those polled said the energy and industrial sectors probably or definitely lacked skills for the transition. Nevertheless, 53 percent saying the energy and industrial sectors probably or definitely had a workforce capable of delivering the transition, a finding which perhaps highlights misplaced optimism over the state of the job market. The focus therefore for many companies may be to equip their existing workforce with the skills needed to help navigate the path to net zero.

Answers to the question: Do you think the energy and industrials sectors have the skills and workforce capable of delivering the energy transition?



Upskilling for the energy transition can be seen both as a threat and an opportunity. The threat is that a failure to secure skills could derail progress towards net-zero emissions. Yet while jobs may be lost in some sectors, the energy transition could create employment opportunities in communities around the world.

One clear example of this is in the United States, where developing an offshore wind industry is viewed as a priority not only for its contribution to climate change mitigation but also because it could employ an estimated 44,000 workers by 2030.[xii]

Energy trends prediction: governance, society, people

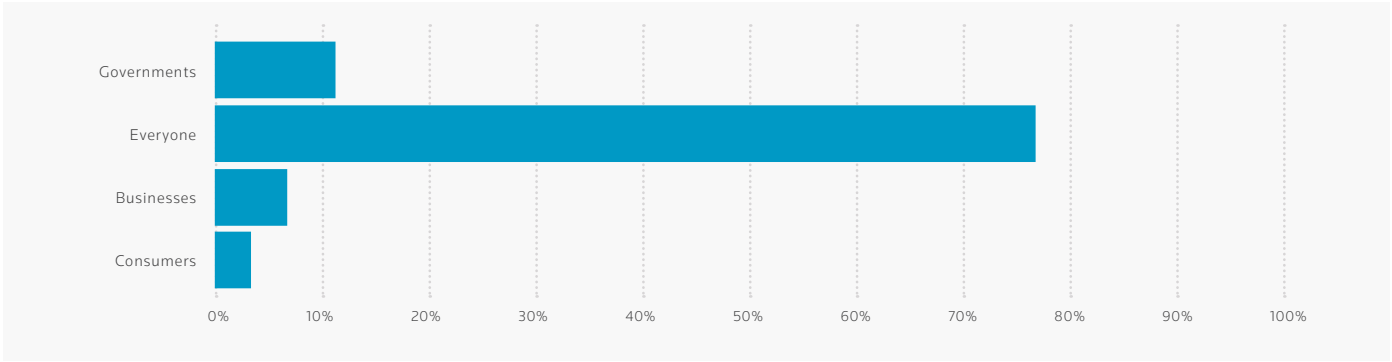
Policymakers already view the energy transition as a potential engine for employment and this trend will likely grow, helping to build support for renewables. At the same time, skills shortages are likely to become more apparent.

Markets, Finance and Investment

Key finding: We will all end up paying for the energy transition, and most companies have already started allocating resources to the task. But high costs and regulatory uncertainty remain barriers to investment.

Who should bear the cost of a just transition to a more sustainable energy system? Our poll revealed broad agreement on this point, with almost 80 percent of the sample saying costs should be shared by everyone rather than being shouldered by governments, businesses, or consumers.

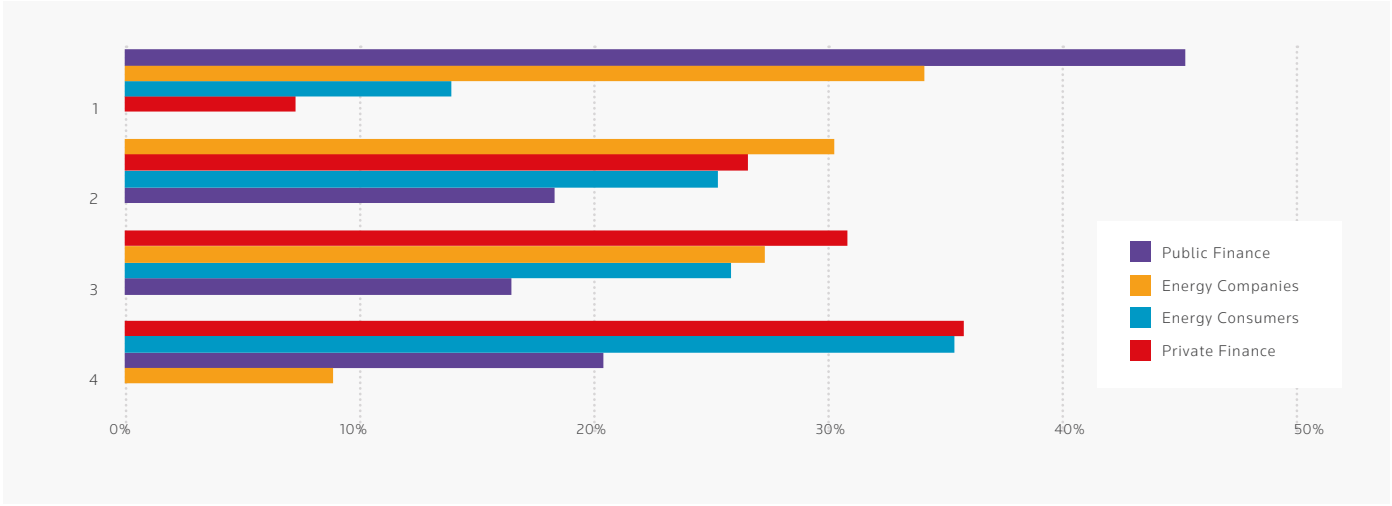
Answers to the question: Who should bear the cost of just transition?



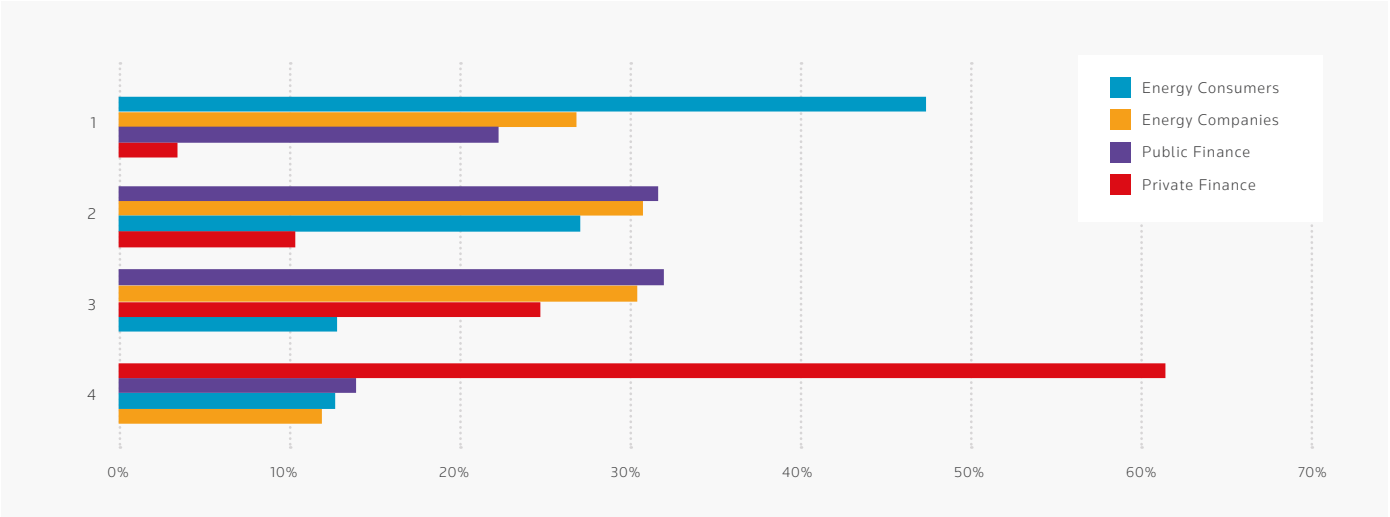
When asked to pick a particular group of actors that should bear the primary cost of the transition, energy companies emerged ahead of consumers and private or public finance, although the latter was seen as having an important secondary role. Energy consumers and private finance were both seen as having a lesser level of responsibility in paying for the transition.

However, when respondents were asked not who should pay for the transition but who will pay for it, an interesting finding emerged. Consumers were seen as being the most likely to end up footing the bill for the transition, by a large margin, while private finance was seen as being far less likely to pay.

Ranking of who should bear the primary cost of the energy transition: 1 equals first choice, 4 equals last choice.



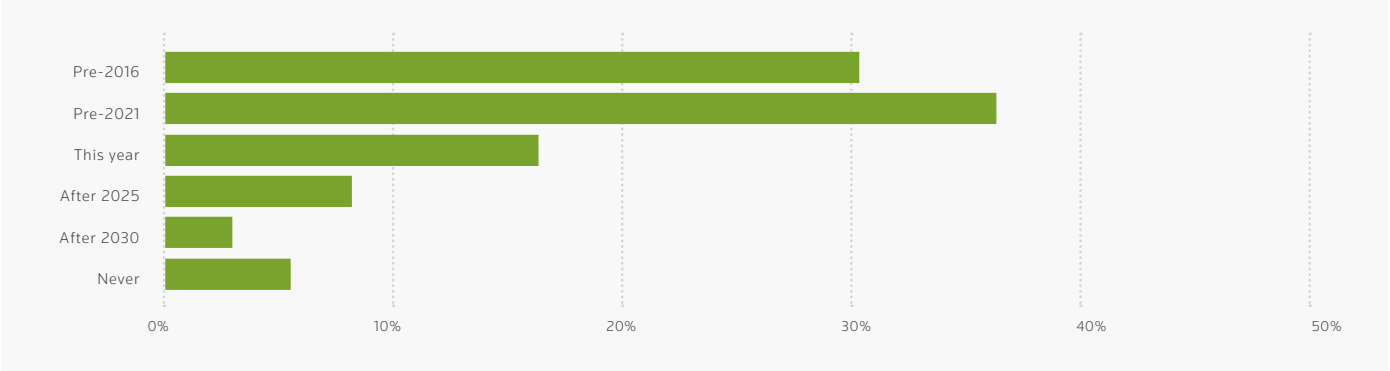
Ranking of who will bear the primary cost of the energy transition: 1 equals first choice and 4 equals last choice.



This seems to run counter to prevalent energy transition thinking, which foresees a big role for private finance. The International Energy Agency, for example, estimates its net-zero scenario could attract more than $2.7 trillion of private finance, compared to $1.2 trillion of public funding.[xiii]

At a corporate level, meanwhile, it emerged that most companies in the poll had already begun allocating financial resources towards clean energy and sustainability, with almost 31 percent having started this process more than five years ago. A further 36 percent had started investing in the last five years and 16 percent started spending this year. Only around 5 percent expected not to ever invest in sustainability.

Answers to the question: When will/did your company begin allocating more financial resources towards clean energy/sustainability strategies?



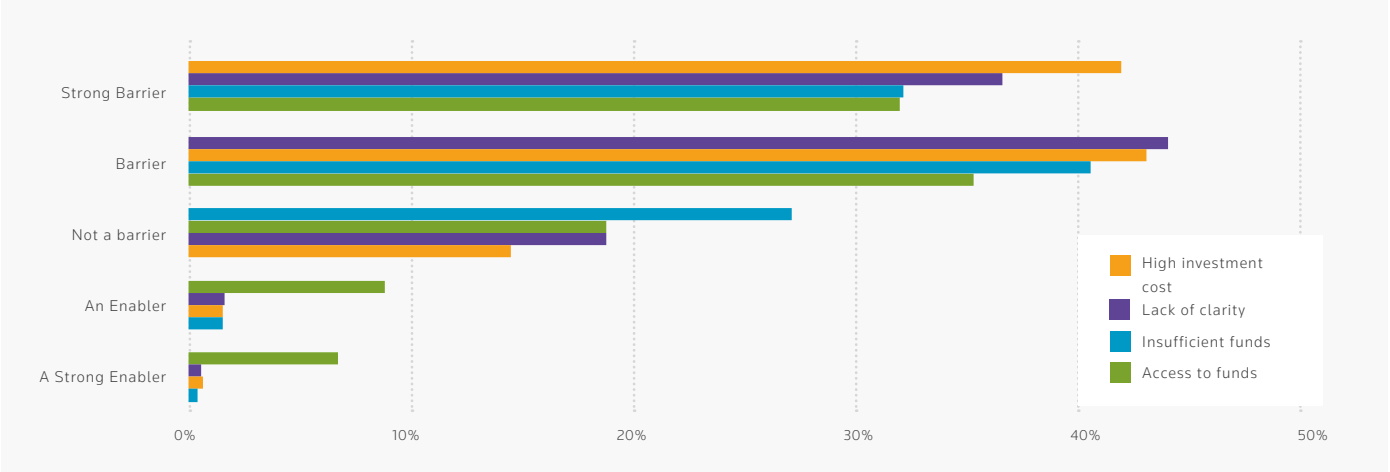
Investing in the energy transition is challenging predominantly because of the costs involved, according to the survey. Cost was cited as a barrier to investment by more than 83 percent of respondents, with almost 79 percent also mentioning lack of clarity.

This could be viewed as good news, since the cost of renewables is on a long-term downward trend, many industrials can already save money while cutting emissions[xiv] and clarity around investments is improving in line with increased regulation. Conversely, access to funds does not appear to be much of a problem.

Energy trends prediction: markets, finance and investment

It is unclear to what extent the results of this survey reflect the impact of stimulus plans with a focus on sustainability, but there seems little doubt the investment climate for renewable energy will continue to be favourable for the foreseeable future.

Answers to the question: To what extent are the following factors a barrier to investing in the energy transition?

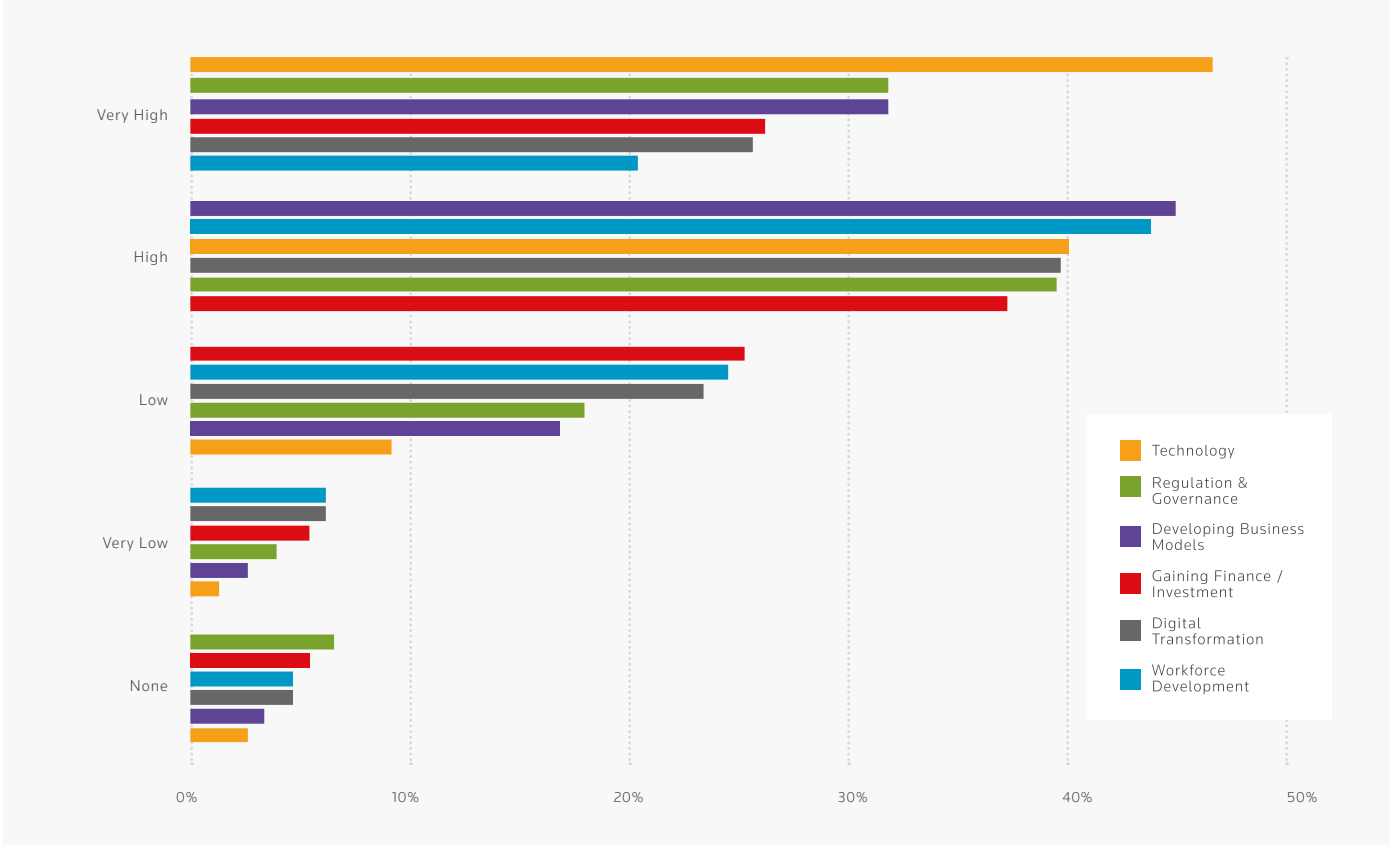


Clean Technology and Electrification

Key finding: Technology is key to decarbonisation and electrification is the biggest technology enabler for emissions reduction, but government support is still needed to electrify the industrial sector.

Companies face a range of challenges in pursuing an energy transition agenda, but from our poll the biggest of these appears to be technology. Almost 88 percent of the sample said technology was a high or very high priority for the transition, compared to 78 percent citing developing business models and 72 percent mentioning regulation and governance.

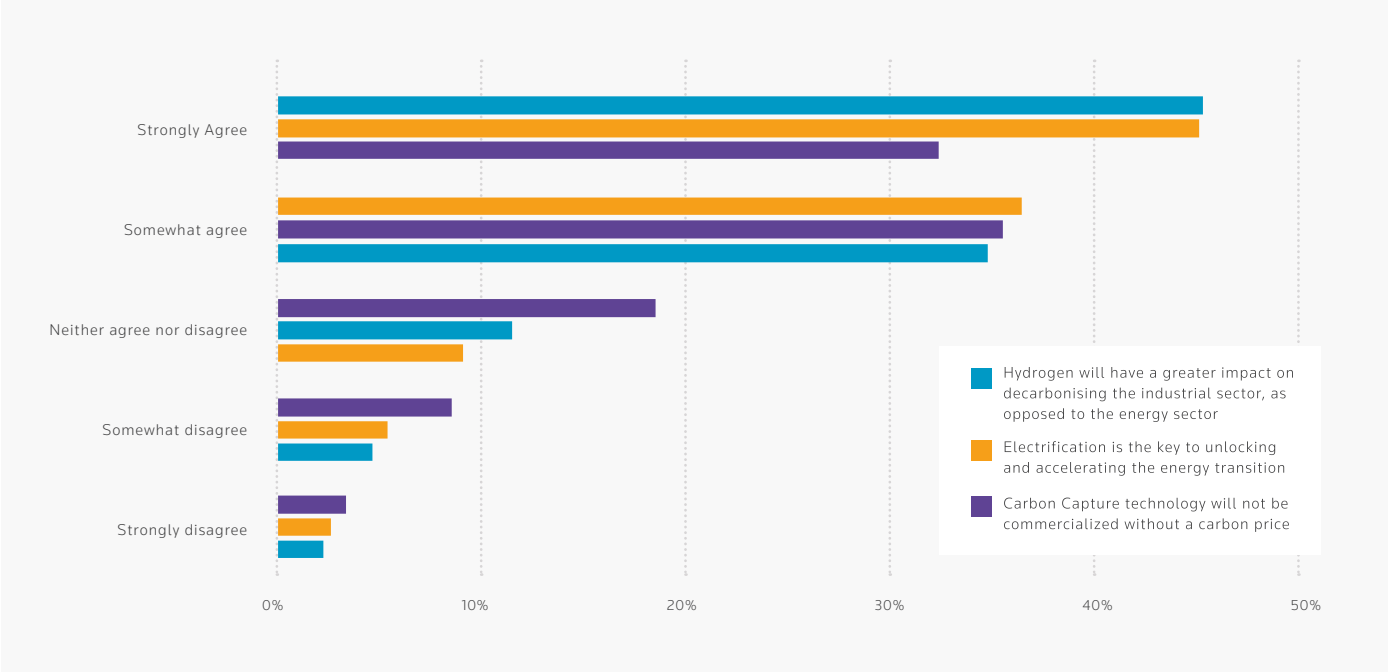
Answers to the question: To what extent are you actively seeking solutions for the following challenges?



On technology choices, there was broad agreement on the idea that electrification would be the key to unlocking and accelerating the energy transition. There was also a consensus that carbon capture technology, which features prominently in most recent net-zero pathways, would not be commercially viable without a price on carbon, something still lacking in many major energy markets.

In addition, more than 69 percent of respondents strongly or somewhat agreed with the idea that hydrogen would have a greater impact on decarbonising industrial sectors than on the energy industry. This echoes perceived sentiment from industry experts who have expressed concern that low-carbon hydrogen should only be used to reduce emissions in applications where electrification is extremely hard.[xv]

Agreement with various statements relating to technology in the energy transition.



If electrifying the industrial sector is the key to decarbonisation, then the process of electrification itself will depend on three major pillars, according to the survey results:

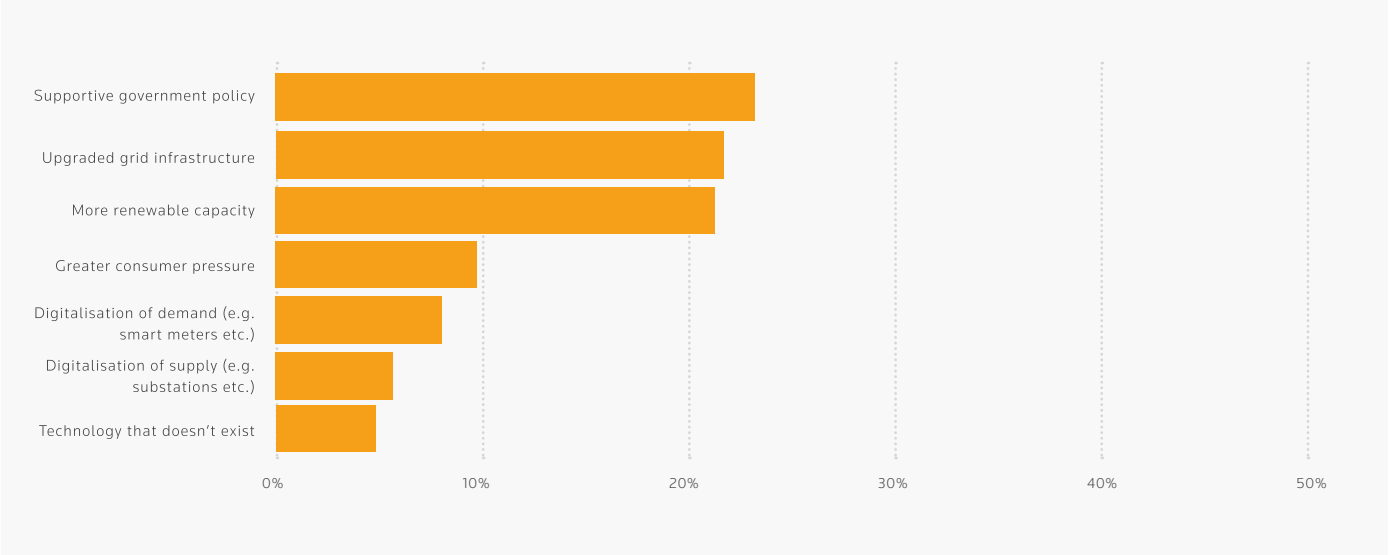
1. A supportive government policy, cited by almost 22 percent of the sample.
2. Upgraded grid infrastructure, mentioned by 21 percent.
3. More renewable capacity, listed by 20 percent.

Fortunately, less than 5 percent of the sample said the key to electrifying the industrial sector would depend on technology that does not currently exist. The three technologies that were deemed as likely to have the most impact on the speed of the energy transition before 2030 were solar (listed as the most important by 25 percent of the sample), wind (listed by 15 percent) and carbon capture and storage (CCS, 14 percent). The high scores for solar and wind are to have been expected given the maturity, scalability and cost-effectiveness of these technologies. However, it is surprising that CCS was ranked ahead of storage or hydrogen (both listed first by less than 9 percent of respondents), which are seen as indispensable for grid integration of renewables and decarbonisation of hard-to-abate sectors, respectively.

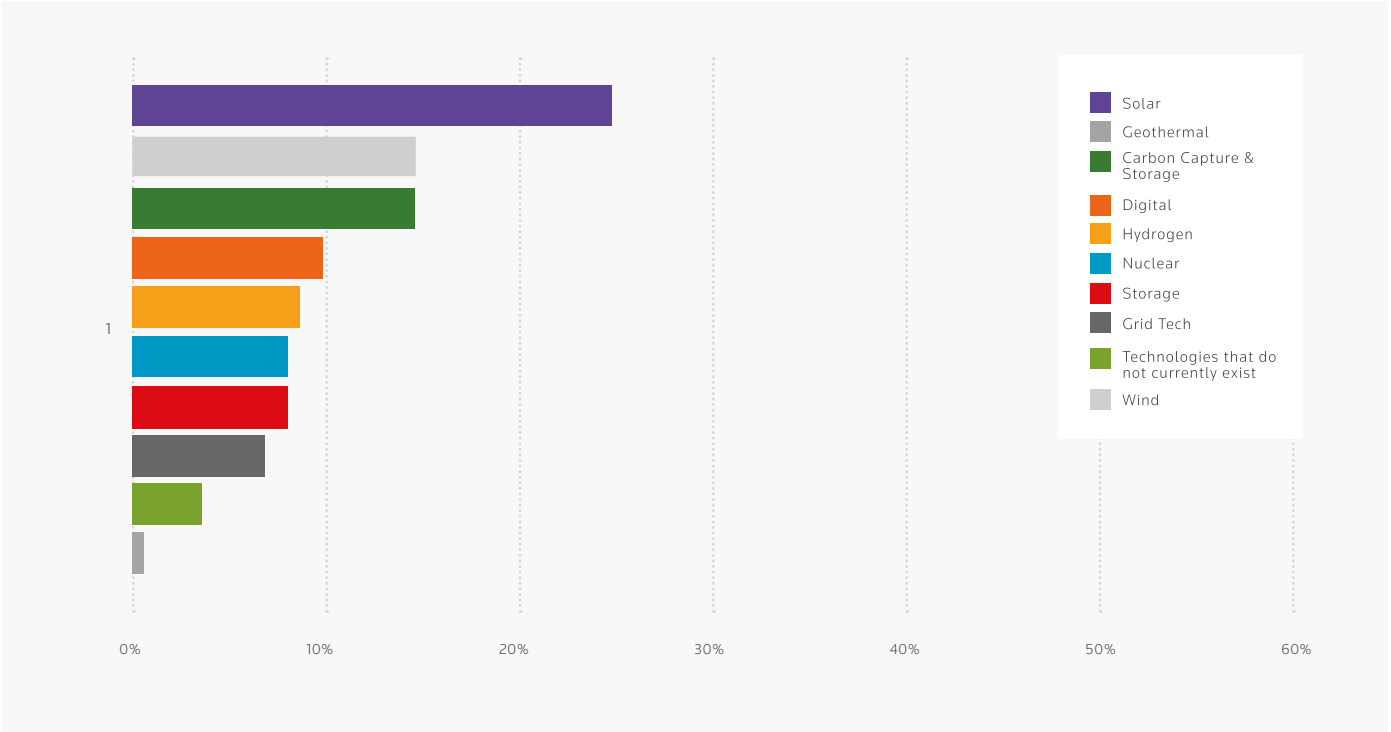
Energy trends prediction: clean technology and electrification

While breakthrough technology will always make headlines, respondents believe the real advances in the energy transition will come from development of wind, solar and energy storage.

Requirements for electrification of the energy sector.



Technologies ranked in order of the impact they could have on the speed of the energy transition before 2030.

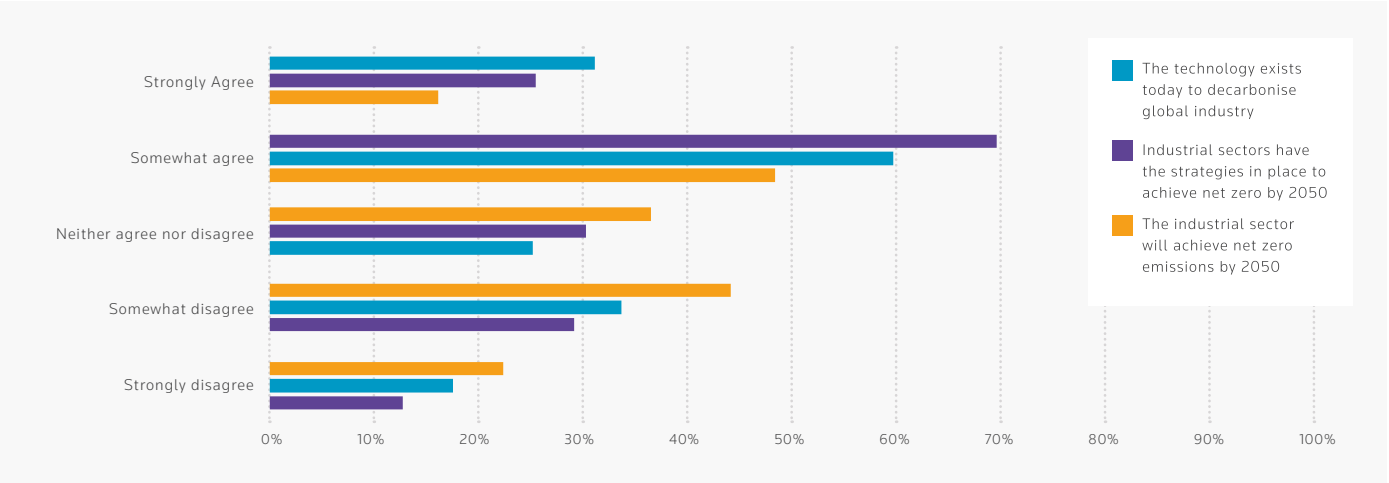


The Industry Transition

Key finding: While the transport sector is on its way to decarbonisation, there is still uncertainty over when and how other hard-to-abate industries could achieve net-zero emissions.

Experts believe a combination of wind, solar and energy storage could help decarbonise up to 90 percent of electricity generation. For other industries, however, the process is not so straightforward—to the extent that around a quarter of the respondents had doubts over whether the industrial sector would be able to cut emissions to zero by 2050.

Agreement with industrial sector decarbonisation statements.

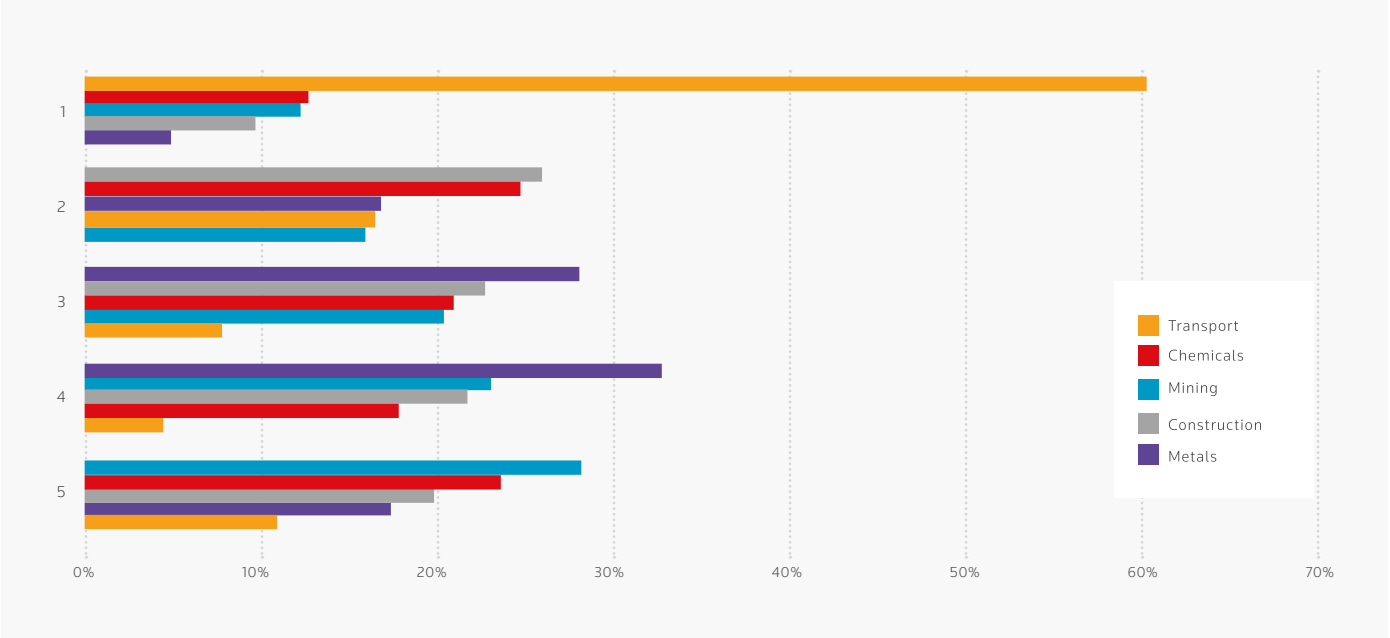


This contrasts with the optimism around reaching net zero seen previously in the survey. An even higher proportion of the sample—39 percent—somewhat or strongly disagreed with the notion that industrial sectors have the strategies in place to achieve net zero by 2050.

And just over half (54 percent) believe industrial decarbonisation can happen with today's technologies.

It is important to note, however, that progress towards net zero varies significantly according to the industry concerned. Thus, transport is widely seen as making strong progress towards reducing emissions. This is followed by construction, chemicals, metals and mining.

Industries ranked in order of progress made in efforts to decarbonise so far.



The uncertainties facing industrial decarbonisation are evident from the options listed by respondents to achieve net-zero emissions across various types of transportation. For aviation, for example, more than 45 percent of respondents said biofuels would be key, but almost 30 percent listed hydrogen and 12 percent cited fossil fuels.

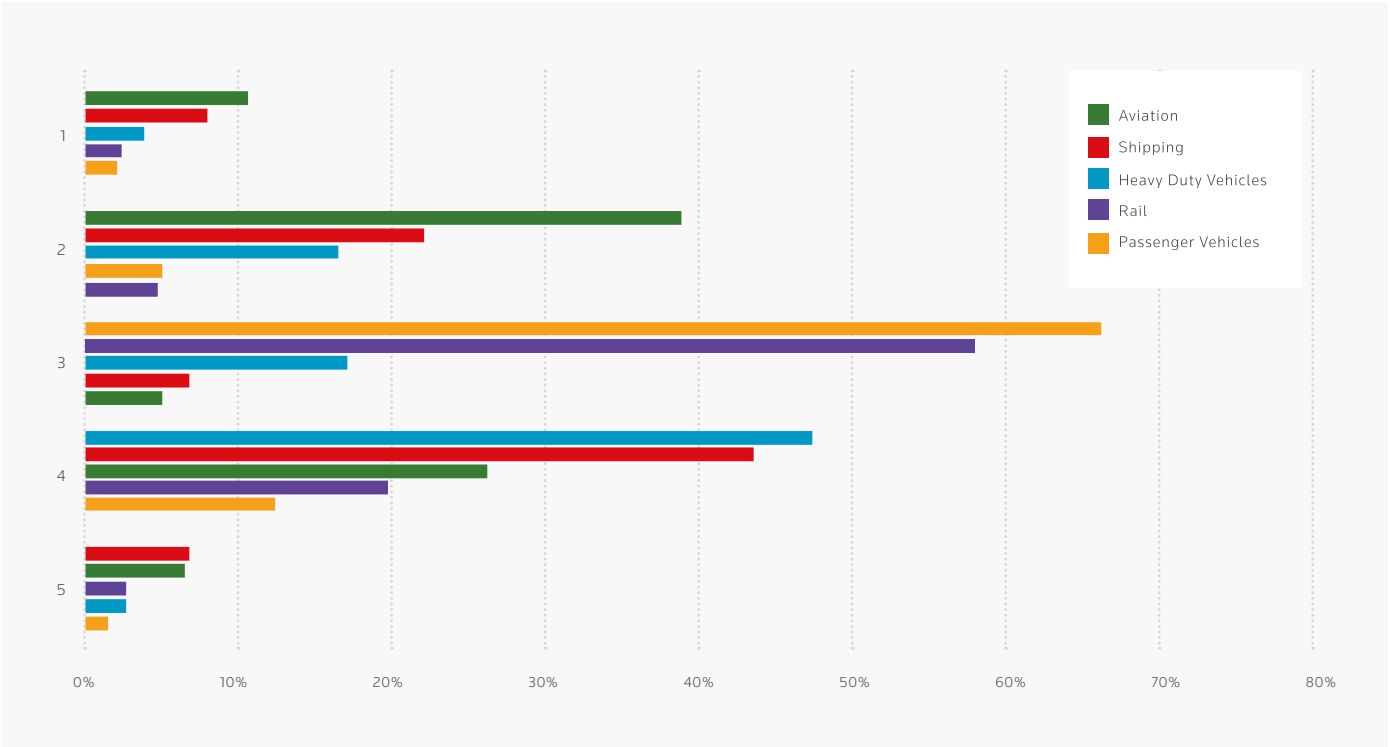
Shipping also has a split of opinion, with almost 51 percent of respondents viewing clean hydrogen as a key decarbonisation technology (potentially as a precursor to low-carbon ammonia or synthetic fuels) and 25 percent listing biofuels. Electricity was overwhelmingly seen as key for passenger vehicles and rail.

Similarly, the survey revealed a range of options for decarbonising steelmaking, with almost 20 percent seeing hydrogen as key and 10 percent citing electrification. Almost 21 percent said more recycling would be needed and more than 32 percent felt more technology innovation would be needed.

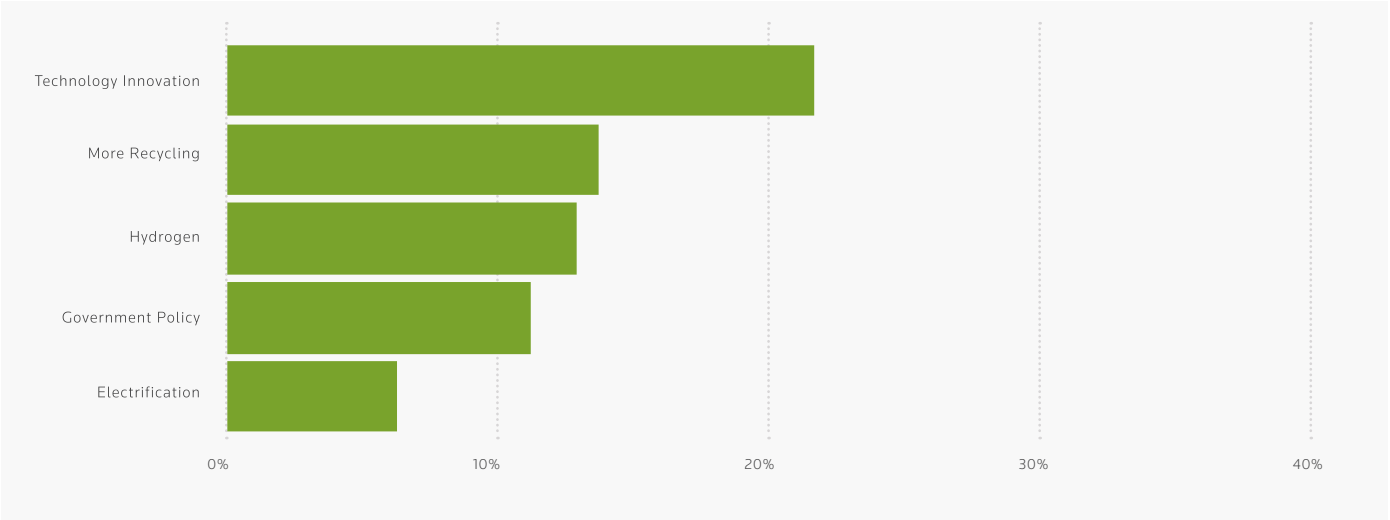
Energy trends prediction: the industry transition

Moves to decarbonise many industrial sectors have only recently begun in earnest, so it is to be expected that there are diverging perspectives on the optimum pathways. We expect there to be rapid progress on clarifying these points before 2025.

Technologies most suited to achieving net zero in different forms of transportation.



Keys for decarbonising the metals industry.



Outlook and conclusions

This research reveals optimism over the energy, industrial and associated business sectors' ability to cut net emissions to zero by 2050, although uncertainty remains over some pathways and timescales, most notably in industrial sectors where decarbonisation has just begun. Many of the findings of the survey conform to accepted wisdom, such as the idea that electrification will be key to economy-wide decarbonisation and wind and solar will be the key generation technologies that will help decarbonise.

At the same time, however, it was surprising that respondents attributed a relatively minor role to private finance in helping to enable the energy transition. It is unclear why this was the case, although it could be an artefact of how the question was phrased.

The survey also revealed that access to finance is a relatively minor challenge compared to others in adopting net-zero pathways. While the global climate outlook remains uncertain in 2022, the trend towards a low-carbon future has clearly been set. Leaders must now harness this momentum and deliver at speed.

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