Smaller businesses and the transition to net zero

British Business Bank

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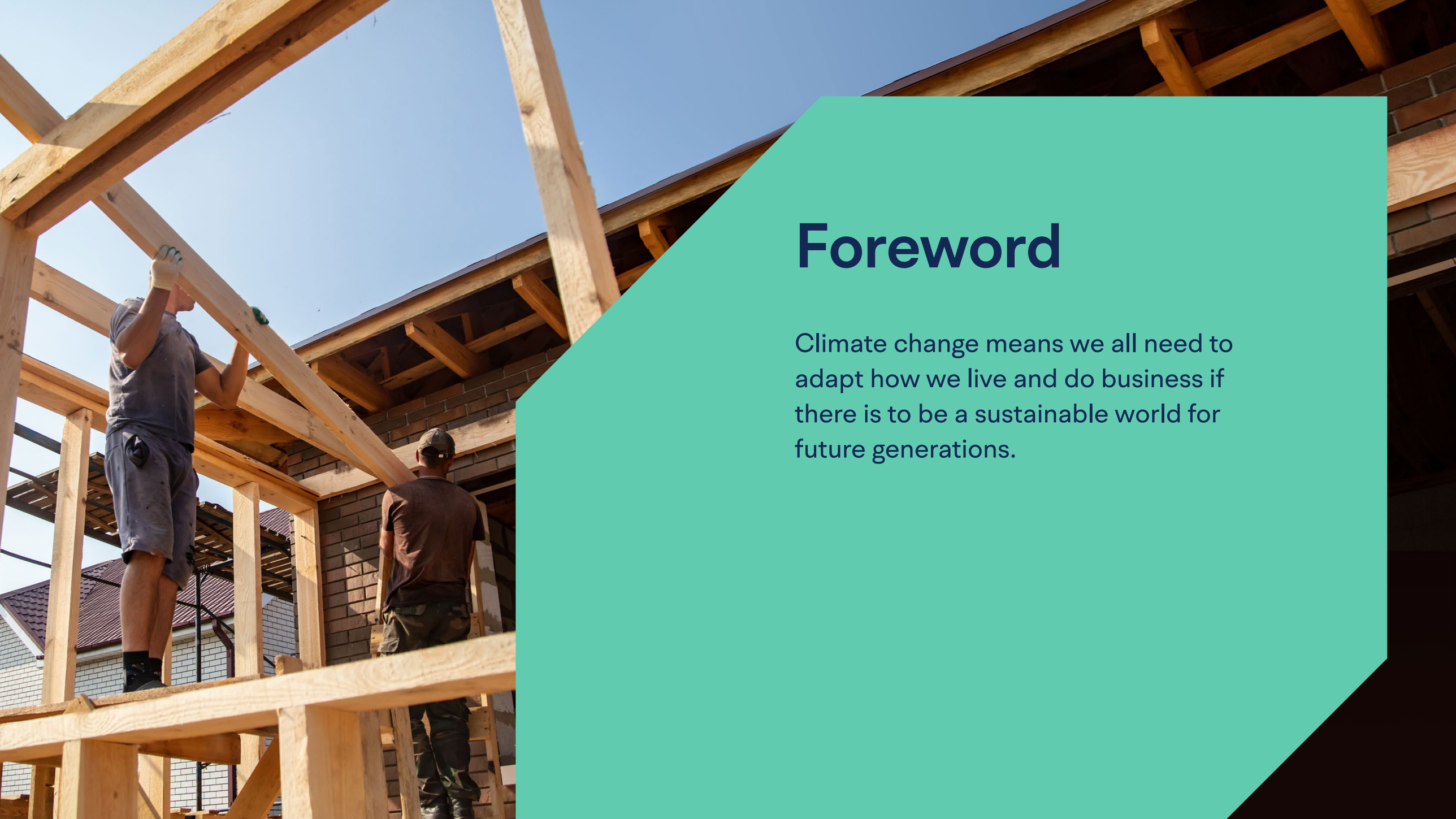
Contents



Foreword

Climate change means we all need to adapt how we live and do business if there is to be a sustainable world for future generations.

At the British Business Bank, we recognise not only the urgency of the immediate situation, but also the long-term systemic nature of the crisis. That is why we are making both a fundamental strategic shift now and a longer-term commitment to achieving future change.

A critical part of this aim is moving towards 'net zero', reflected in the UK's commitment to a legally-binding target of reducing its net greenhouse gas emissions by 100% relative to 1990 levels by 2050.

Since the Bank was formed in 2014, our mission and objectives have focused on improving finance markets for smaller businesses so they are better able to access the finance they need. Most recently this has included major countercyclical interventions to support businesses with finance through the Covid-19 pandemic.

This year marks a new chapter for the Bank. Our revised mission, agreed with the UK Government, has net zero at its heart: **'To drive sustainable growth and prosperity across the UK, and to enable the transition to a net zero economy, by improving access to finance for smaller businesses.'** This is mirrored in our new objective: **'To support the UK's transition to a net zero economy'**.

Smaller businesses have not previously been a prominent part of the public debate on how to reach net zero. But our research, in one of the most in-depth examinations of this part of the market published to date, highlights the crucial role smaller businesses can play in driving the changes required to make a difference.

We estimate that, in aggregate, smaller businesses account for around half of industrial emissions in the UK – the same amount as larger businesses. While individual businesses may have relatively small carbon footprints, their collective footprint is significant, and an overall reduction could provide an equally significant impact. It is our job to help finance markets work well to support smaller businesses through that process.

This report provides a snapshot of progress so far while looking ahead at how far is left to go. It examines the actions smaller businesses have taken already to reduce their greenhouse gas emissions, as well as ones planned and considered, while also exploring the barriers to and enablers of further action.

A key finding is that most UK smaller businesses have at least embarked upon their journey - they have started the transition but are still at an early stage. Their reported barriers to progress vary widely, which is to be expected from a diverse population of nearly six million businesses. While external finance will be the key to help some take net zero actions, the public policy response, alongside private sector activity, will also need to be coherent and wide ranging, from regulatory frameworks to provision of information to boost knowledge and capability.

This research will help shape the Bank's response to climate change and net zero in the years to come. We hope it will also be a useful evidence base for policymakers, finance providers and businesses, as we all work together and rise to the challenge ahead.

Catherine Lewis La Torre
CEO, British Business Bank

Executive summary

This report highlights the essential role that smaller businesses will need to play in delivering UK emissions targets. Five key findings stand out.

1

Smaller businesses account for around half of UK business greenhouse gas emissions

Smaller businesses[a] often have relatively low emission footprints at an individual level, but we estimate that collectively they account for around half (43-53%) of UK business greenhouse gas emissions. When we add households and the public sector to the mix, smaller businesses account for around a third (29-36%) of total UK emissions.

This illustrates the critical role smaller businesses will have in the UK reaching net zero: it will not be possible without a step change in how smaller businesses operate.

2

Most smaller businesses are at an early stage in their transition to net zero

We designed a 'transition journey' framework to assess awareness and engagement, knowledge and capabilities, and physical actions undertaken by smaller businesses. The results indicate that many have started the journey, but most remain at an early stage. Overall, we estimate that over three in four businesses (76%) are yet to implement comprehensive decarbonisation[b] strategies.

On awareness and engagement, nearly 60% of firms report reasonable awareness of key net zero concepts, but around half (53%) are not yet ready to prioritise decarbonisation.

On actions to improve knowledge and capability, there was limited progress so far. This category covers a range of capability-building actions that can be undertaken to prepare for physical actions to follow. Yet 56% report no actions having been taken in this area. Meanwhile, 3% of smaller businesses have both measured their carbon footprint and set targets for reduction.

On physical actions, the vast majority (94%) have taken at least one action. These physical actions tended to be simpler, such as installing a smart meter, rather than more complex, such as use of very-low-emissions vehicles, or installing renewable energy generation. Action on business vehicles, travel and commuting is an example where many more firms had considered action but not yet carried it out.

[a] By smaller businesses, we mean small and medium enterprises (SMEs) with fewer than 250 employees.

[b] In this report, from Chapter 2 onwards, we use terms relating to 'carbon' interchangeably with those relating to 'greenhouse gas emissions'. This is due to framing our questions to SMEs in terms of 'carbon', for ease of understanding.

3

Attitudes vary amongst smaller businesses with some more proactive than others

Our analysis identifies four types, or 'personas', of smaller businesses. **Carbon nimble** (estimated at 38% of the SME population) and **carbon complacent** (34%) firms are more likely to be in the services sector, to be smaller in size and to have lower emissions, but the **carbon nimble** firms typically show high transition maturity and a proactive attitude to emissions reduction, while **carbon complacent** firms are more likely to have a low transition maturity and to not treat emissions as a priority.

Carbon correcting (estimated at 9% of the SME population) and **carbon exposed** (18%) groups of firms are more likely to operate in primary, industry, transport or commerce sectors, to have higher emissions and be larger in size (within the SME spectrum), but **carbon correcting** firms show a higher transition maturity and a more proactive attitude than **carbon exposed** firms.

By considering these distinctive proactive and reactive attitudes to net zero alongside other characteristics, the personas can help the development of targeted policy interventions.

4

The most commonly perceived barriers to action are around cost and feasibility

The barriers preventing action on net zero are multiple, complex and specific to the business, with over twenty types of barriers identified in our research survey. Costs were the most significant barrier referenced by respondents (35%), with upfront costs being the most cited component of this at 21%.

Feasibility (32%) was almost as commonly mentioned by respondents. Lack of control over actions was a key driver of feasibility concerns. This included limitations due to tenancy arrangements or supply chain partners. For actions already taken, the most common driver by far was that it 'made financial sense' (51%), while 'keeping up with regulation' was the least cited. Lack of knowledge is affecting uptake of net zero actions, reflected in the 12% of respondents that explicitly mentioned barriers relating to information.

Overall, SMEs identified information, tax, external finance (including grants) and clearer standards and regulations as helpful policy levers to encourage more action by at least half of the respondents. The anomaly was training on low-carbon solutions, which most businesses perceived as less effective in encouraging more action.

5

Access to finance is part of the solution to drive more action

Notably, 11% of UK smaller businesses have already accessed external finance to support net zero actions. Twenty-two per cent say they are prepared to do so in the next five years, which, in context, is roughly half the share of firms that say they would be happy to borrow in order to grow (37%).[1] This suggests that more firms are ready to act if they can find the right product and action to take.

Supplementing this research on demand for finance, the British Business Bank's UK Network undertook separate qualitative research with business finance intermediaries in June and July 2021. Respondents wanted to help their clients with net zero projects, but six in ten felt that the current ecosystem does not assist SMEs in identifying and understanding net zero projects. Significantly, 39% of intermediaries also believed that there is an inadequate supply of finance dedicated to net zero in their region or nation.

Next steps

Tackling climate change is the great challenge of our age and the British Business Bank will step up to play its part. We will use these findings to help shape our plans to support smaller businesses transition to net zero, and we will set out our next steps shortly.

Introduction

In producing this research report the Bank is aiming to provide an improved evidence base to inform future action regarding smaller businesses and net zero, whether undertaken by businesses themselves, policymakers, researchers, or private/public sector bodies.

This report is built on three data sources.

First, primary data from a nationally representative UK-wide survey consisting of 1,200 telephone interviews with smaller business owners and senior managers, completed on behalf of the Bank by Ipsos MORI during August and September 2021.

Second, publicly available data on industrial greenhouse gas emissions and business population statistics to estimate the share of UK emissions currently attributable to smaller businesses.

Third, the Bank's UK Network carried out research with 159 business finance intermediaries in June and July 2021.

The issues that are discussed in this report, and our survey-based methodology, were chosen to help address existing evidence gaps. We have drawn on input from the Organisation for Economic Co-operation and Development (OECD) and Enterprise Research Centre (ERC), amongst others, and a research consortium led by Energy Systems Catapult provided helpful guidance in developing our approach. Analysis was concluded by mid-September 2021.* As such, any public data sources used are dated up to this period.

The main body of the report is structured as follows:

Chapter 1, Smaller business emissions in context:
Outlines the global and national priorities on climate change and net zero, and provides estimates of UK SME-driven greenhouse gas emissions based on secondary data.

Chapter 2, Current maturity on the net zero transition journey:
Presents an assessment of overall progress, using our newly devised 'transition journey' framework. We also define four personas based on segmentation of the SME population, reflecting different business profiles and net zero approaches.

Chapter 3, From awareness to action:
Considers, in more detail, self-reported actions by SMEs towards net zero, whether taken, planned and/or considered, alongside findings on awareness, engagement and impact.

Chapter 4, Unlocking ambition: drivers, barriers and enablers:
Looks at the factors highlighted by SMEs as influencing their actions towards net zero.

Chapter 5, Financing action:
Considers SMEs' approaches to funding net zero actions so far and in the future.

As this is the Bank's first published research in this area, and given the identified data gaps,[2] we focused on obtaining data to help set the broad context, from which further analysis can then be taken forward. We welcome engagement and feedback from stakeholders in discussing how best to build upon this work.

* This report was updated on 16 November 2021 to further clarify the assumptions underlying some of the estimates provided.

Chapter 1

Smaller business emissions in context

- Climate change is a fundamental global challenge, with local consequences
- The UK is legally committed to reaching net zero by 2050
- Smaller businesses will play a key role in achieving this: they account for around half of total emissions from UK businesses, highlighting their potential collective influence

From global challenge to local urgency

The UK is a signatory to the UN's Framework Convention on Climate Change (UNFCC), most recently updated in the 2015 Paris Agreement. This committed the 196 adopting parties to limit global warming to well below 2.0°C and pursue efforts to limit the rise to 1.5°C against pre-industrial levels.

Since then, as the UN's Intergovernmental Panel on Climate Change (IPCC) highlighted in its latest assessment report in August 2021, the outlook has worsened.[3] The global surface temperature will increase until at least mid-century under all emissions scenarios considered, bringing with it a series of destructive consequences, such as extreme weather events.[4] The central estimate of the 1.5°C target being reached or crossed is now in the early 2030s, around 10 years earlier than the mid-point of the previous estimate.[5]

On the other hand, the IPCC report does show that a window of opportunity remains, and the worst can be averted: if the world takes ambitious action to curb emissions in the 2020s, we can still limit warming to 1.5°C by the end of the century. This scenario, called 'SSP1-1.9' in Figure 1.1, includes a potential overshoot of 1.6°C between 2041 and 2060, after which warming then drops below 1.5°C by 2100. Crucially, it is modelled on the assumption that greenhouse gas emissions decline to net zero by 2050.

> "Climate change is an existential threat to humanity.[6]"

This is the context for the UK government implementing a legally-binding net zero target by mid-century, and further announcing in December 2020 that the UK would be committing to a 68% reduction on 1990 emissions levels by 2030. This was in line with the recommendation set out the same month by the UK's Climate Change Committee in its latest Sixth Carbon Budget.[7] This also laid out further detail on the UK's path to net zero.

COP 26: accelerating climate action

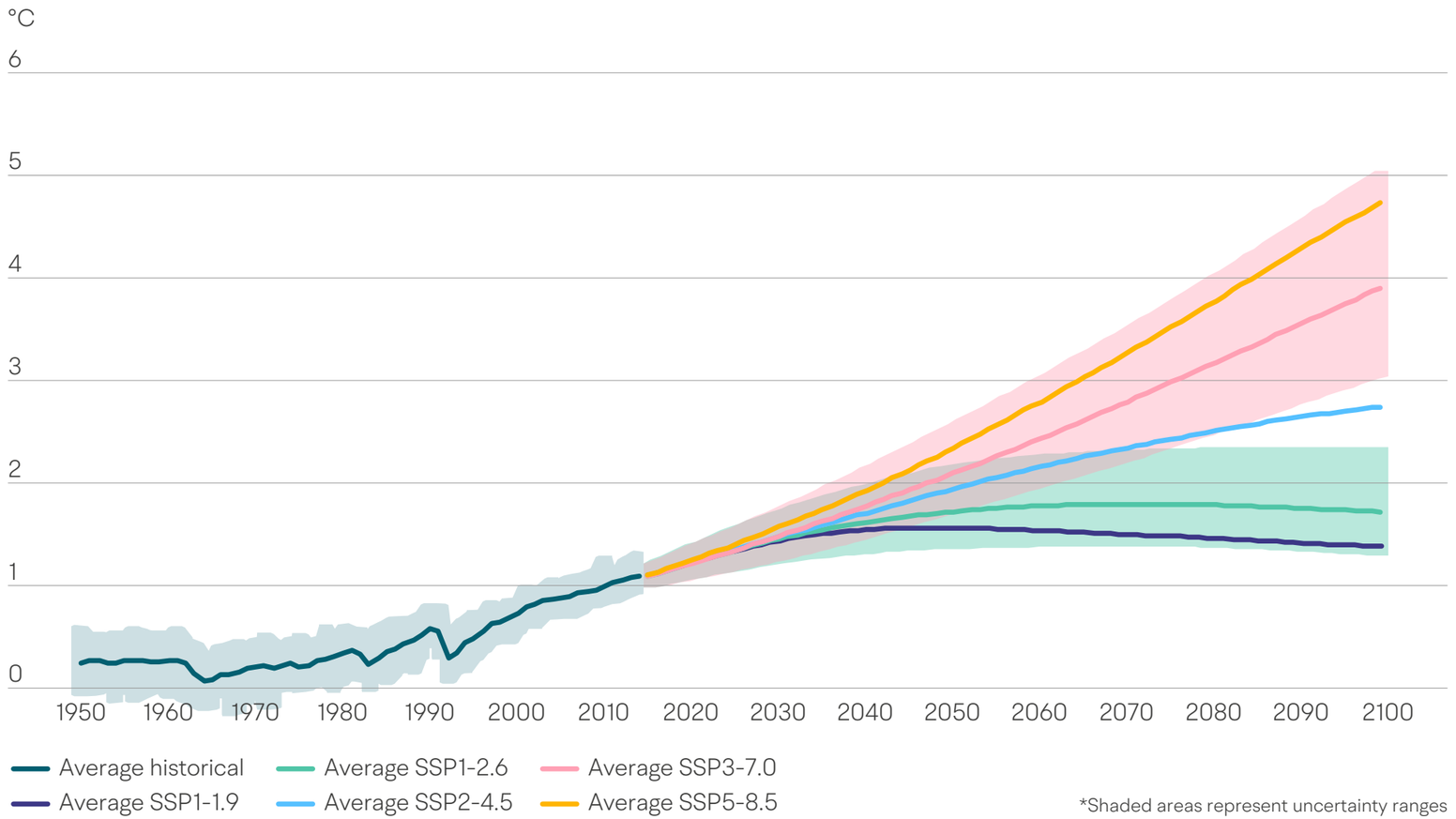
In November 2021, the UK will host the 26th UN Climate Change Conference of the Parties (COP26), to further accelerate climate action amongst the UNFCC signatories, and galvanise emissions-reducing activity more widely. In the run-up to the event, a range of related policies and reports are being published by government, such as its 'net zero strategy'.

Alongside these, a wide set of initiatives is being established across the private and public sectors, including those relevant to SMEs, such as the SME Climate Commitment. Noteworthy progress is also being made in the financial sector, for example the new Glasgow Financial Alliance for Net Zero, chaired by Mark Carney, the UN Special Envoy on Climate Action and Finance. This seeks to bring together leading net zero initiatives from across the financial system to accelerate the transition to net zero emissions.

Fig 1.1

Global surface temperature change relative to 1850-1900*

Source: IPCC[8]



*Shaded areas represent uncertainty ranges

Smaller businesses account for around half of UK business emissions

This research underscores that smaller businesses will need to play their part in this national effort and are a crucial community on the road to net zero, given their collective emissions.

In evidencing this, we have combined public data on industrial emissions by sector along with official statistics on the business population, to arrive at top-down estimates of current greenhouse gas emissions for SMEs.

We express these as a proportion of total business-driven emissions, and as a proportion of total UK emissions. We use three different calculation methodologies to increase robustness of the estimates, giving a range of emissions impacts. Figure 1.2 shows that SMEs are estimated to emit around half (43-53%) of business-driven greenhouse gas emissions, with the other half coming from larger businesses. In terms of total UK emissions, SMEs make up around 30% (29-36%), a significant proportion of the UK total when considered on this aggregate basis.

Given this emissions impact, it is vital that we rapidly build our understanding of where the UK's large and diverse population of nearly six million SMEs are on their transition journey, so that we and others can support them in progressing further, faster.

A more detailed technical discussion of UK emissions, including those related to SMEs, and also outlining the methodology used in arriving at the estimates in Figure 1.2, is given in the annexes.

Fig 1.2

Estimated share of UK territorial greenhouse gas emissions from SMEs

Source: In-house analysis of data from the Office for National Statistics and the Department for Business, Energy and Industrial Strategy

Chapter 2

Current maturity on the net zero transition journey

- We devised a ‘transition journey’ framework as a way to measure progress of smaller businesses on the transition to net zero
- We then used our survey data to assign a ‘maturity score’ to smaller businesses on this journey, finding that most are in the early stages of transition
- We also define four ‘personas’ of smaller businesses: carbon exposed, carbon complacent, carbon nimble and carbon correcting

Transition journeys to net zero vary

The path to net zero does not look the same for all smaller businesses. The type of actions to be taken, their sequencing, and the capabilities required can be very different.

For example, a microbusiness could be very aware of climate issues and the need to reduce emissions, not have formally measured their carbon footprint because they see it as time-consuming, but have taken relatively straightforward actions like switching energy supplier. Alternatively, a bigger manufacturer might have good knowledge of their energy use and an estimate of their carbon footprint, but may not yet have taken many substantive actions because of high capital costs and/or business disruption related to changing their production process or product design.

To address the complexities of defining what good looks like for smaller businesses on their path to decarbonisation, we developed an SME net zero 'transition journey' framework (TJF) to guide the design of the survey sample, questionnaire and the analytical framework used to process the results.

Devising our framework for the Net Zero 'transition journey'

The TJF is an analytical framework based on objective 'action indicators' relating to emissions abatement, informed by existing mainstream approaches to calculating the carbon footprint of a business, as well as specialist advice from a research consortium led by the Energy Systems Catapult. It aims to represent maturity on the transition journey in reference to three key dimensions (as presented in Figure 2.1): awareness and engagement, knowledge and capabilities and physical actions. This helps shed light on the progress made by smaller businesses in the UK on the journey to net zero emissions.

Each business participating in the survey has been assessed on these three dimensions and assigned an overall maturity score (1-100). Figure 2.2 shows how each dimension contributes to this score.

Fig 2.1

Components of the net zero transition journey framework

Source: British Business Bank

1. Awareness and engagement

- Does the business demonstrate awareness of the carbon agenda?
- Does the business consider reducing carbon emissions a priority?
- Has the business set targets to reduce its carbon emissions in the future?

2. Knowledge and capabilities

- Does the business measure its carbon emissions impact?
- Has the business implemented actions to grow its net zero capabilities?

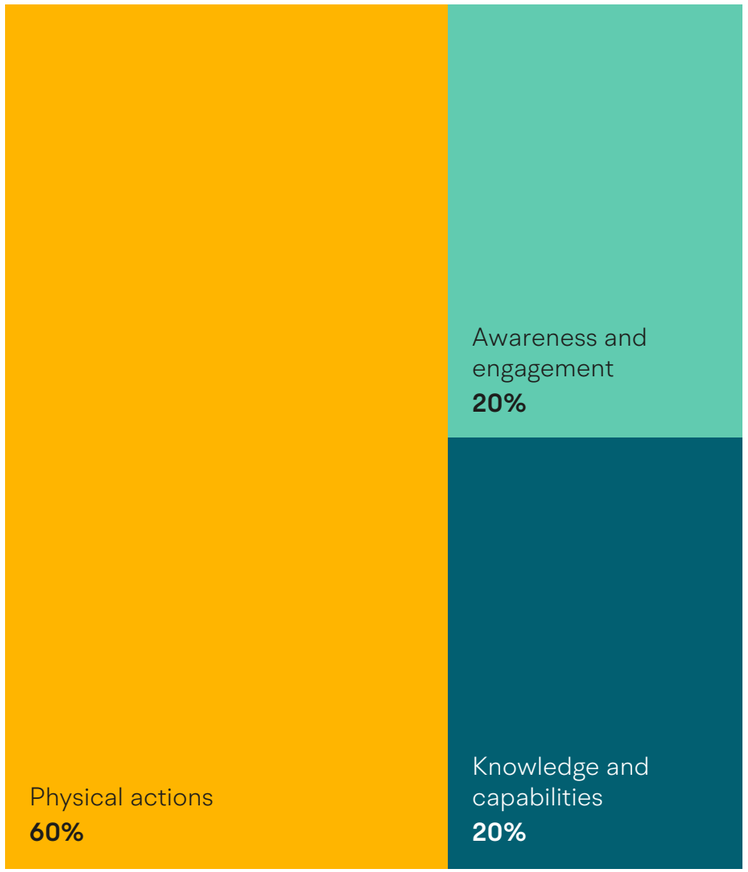
3. Physical actions

- Has the business taken any tangible action to reduce carbon emissions?
- Is the business considering or planning any action to reduce carbon emissions in the future?
- Has the business taken any actions that are 'extensive' (ie complex/ achieving significant reductions in carbon emissions)?
- Is the business considering or planning (but has not yet taken) any actions that are 'extensive' (ie complex/achieving significant reductions in carbon emissions)?

Fig 2.2

Components of the maturity score (0-100)

Source: British Business Bank



Assessing maturity levels of smaller businesses

By grouping individual maturity scores, four main maturity levels have been generated for this report.

The higher the maturity level a business reaches, the greater its overall progress along the TJF. As such, maturity levels can be described as 'readiness levels' or 'journey stages' to track maturity relative to an end state. They are conceptually similar to Technology Readiness Levels and Commercial Readiness levels, which are commonly used to track the maturity of technologies and start-ups respectively.

As shown in Figure 2.3, the majority of smaller businesses (76%) are within the earliest two stages of transition to net zero emissions.

The largest cohort (55%) falls into maturity level 2, comprising maturity scores between 25-49. These can be characterised as businesses that have implemented limited net zero actions, but understand the importance of making progress and may be considering selected actions that are aligned with other business objectives. Alongside these businesses, a further 21% sit in level 1, comprising maturity scores lower than 25/100, where businesses are largely inactive and disengaged and will require further support to start taking action.

Roughly the same proportion of firms (21%) are further along the transition at level 3. Businesses at this level have typically placed reducing carbon emissions at the heart of their activities, have strong capabilities to act and have typically taken multiple net zero actions, with more planned in the future. Progress beyond maturity level 3 was rare; only 2% were at level 4 in their journey. This comprises businesses that have scored 75/100 or higher and have therefore been ambitious in their net zero actions across the board.

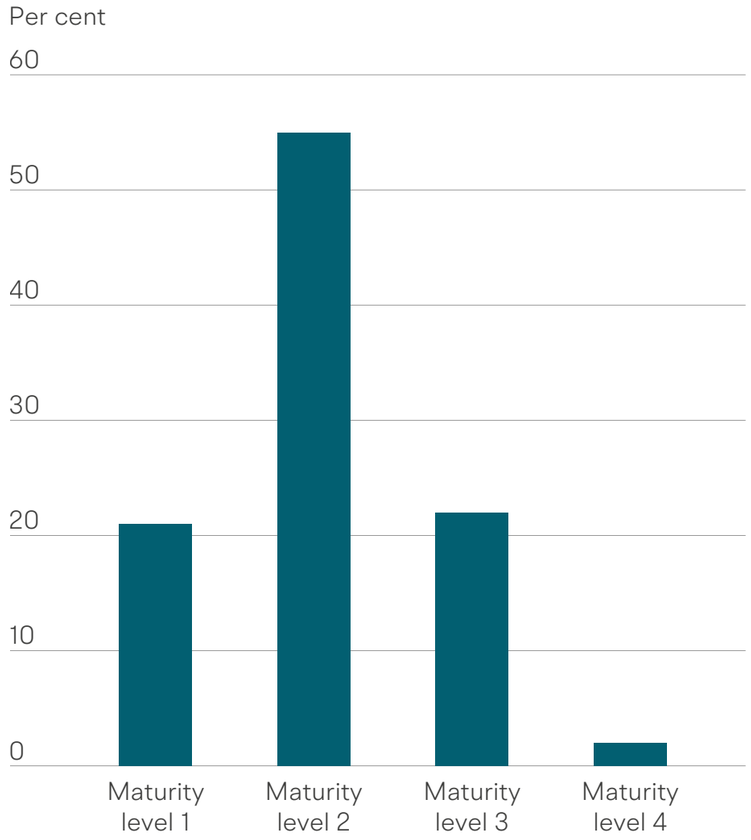
76%

of smaller businesses are at the earliest two stages of transition

Fig 2.3

Share of SMEs at each transition maturity level

Source: In-house analysis of the British Business Bank's net zero SME survey



Using personas to identify distinct groups of smaller businesses

To complement the TJF, we have also produced a data-driven segmentation of SMEs.

The purpose of this segmentation work is to move beyond broad statements about the whole SME population, and start to characterise specific groups of SMEs, which may then be used as a basis for more targeted policy intervention.

Cluster analysis was used to identify the commonalities and differences between groups of SMEs, by investigating which variables have the greatest explanatory power in accounting for patterns in the data. Having tested different variables, the best combination was business size (by number of employees), sector and estimated emissions intensity.

We also layered in the TJF data and drivers for action to support multifaceted personas that reflect individual business complexity.

Four high-level personas have been established, and a summary of these is given at Figure 2.4.

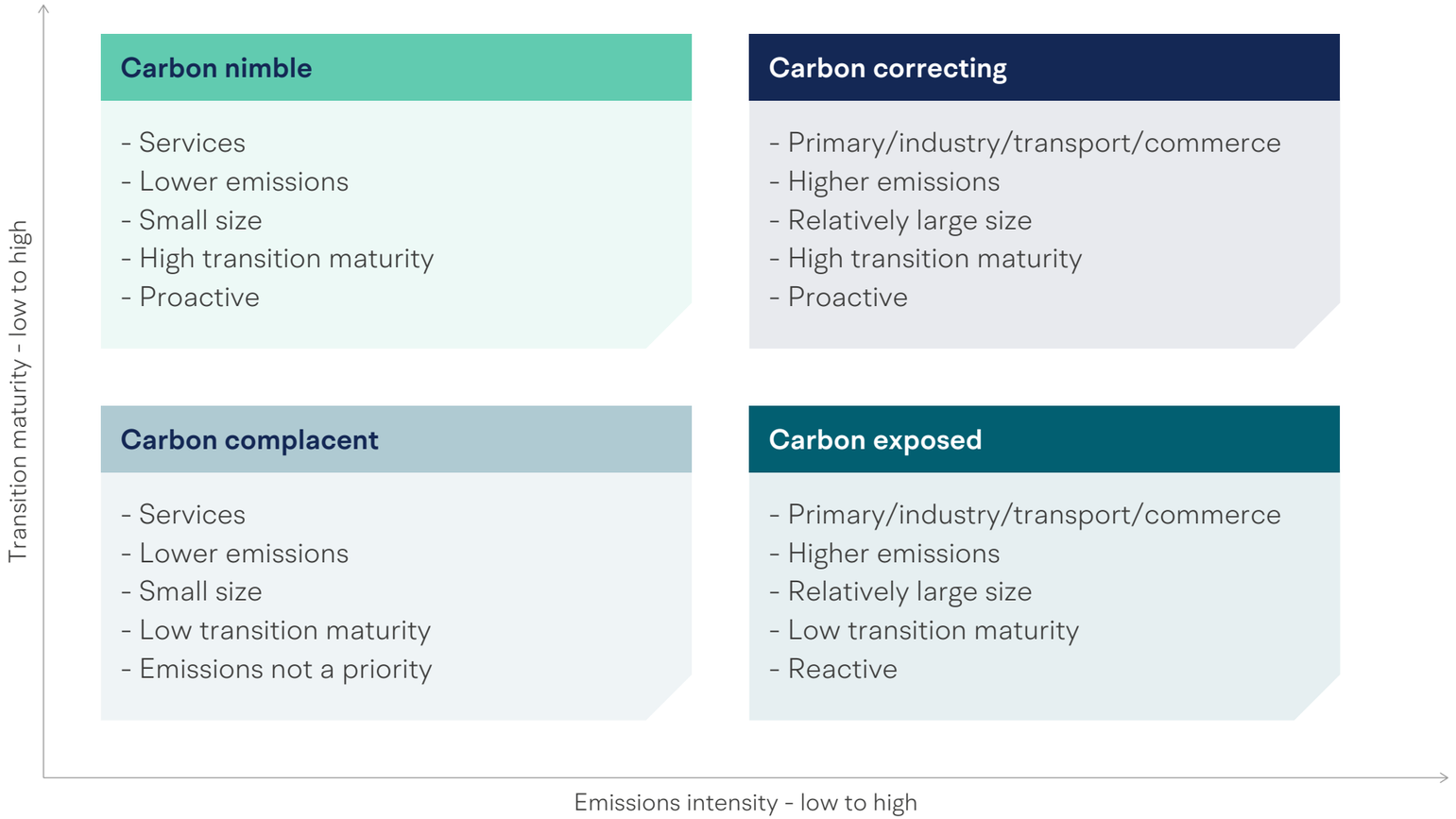
Each persona has a title and set of summary descriptors. It is important to note that the descriptors reflect statistically significant **prevalent** trends in each group, which differentiate one group from another; but as with all cluster analysis, these trends are not precisely followed by every business in our dataset tagged to a given cluster.

The sector and size distributions are in line with what we might expect; larger, production-led firms are predominantly in the two higher-emitting personas, while smaller, service-based firms are in the lower emitting ones. But a real split is seen in attitudes and progress on actions.

Fig 2.4

SME net zero personas – summary

Source: In-house analysis of the British Business Bank's net zero SME survey



How are smaller businesses distributed across the personas?

As our survey is representative, the proportion of businesses falling under each persona in our sample can broadly be assumed to be reflective of the distribution of the SME population. The results are as shown in Figure 2.5.

While it is encouraging to see that the two more emissions intensive personas are present in smaller proportions, the sheer size of the SME population means that the total numbers of businesses in these personas is significant, giving a sense of the scale of the transition challenge.

We have also looked at this segmentation on a geographic basis.[9] We have found that persona composition is closely correlated to the existing smaller business population distribution within each of the regions and nations but that other factors such as sectoral distribution in each region and nation also play a role.

The South's significant share of the SME population (54% in 2020[10]) means that businesses in this macro region form around half of each persona. But the South has a disproportionately high presence in **carbon nimble** (58%), and a low presence in **carbon exposed** and **carbon correcting** (46%). On the same basis, the North has a higher share of SMEs in **carbon correcting** (22%) and **carbon exposed** (20%) compared with its 19% overall share of the SME population. The same applies to the Midlands, which accounts for 15% of the total SME population but makes up 22% of **carbon correcting** and 16% of **carbon exposed**. Meanwhile, the Devolved Nations (with a 12% share of the SME population) have a slightly higher share than might be expected in **carbon exposed** (14%).

Fig 2.5

Personas as a proportion and number in the SME population*

Source: In-house analysis of the British Business Bank's net zero SME survey
Base: All participants (1,200)

	Carbon nimble	Carbon complacent	Carbon correcting	Carbon exposed
Implied proportion in the SME population	38%	34%	9%	18%
Implied number of businesses in the SME population[11]	2.3m	2.0m	0.55m	1.1m

* Percentages may not add up to exactly 100% due to rounding

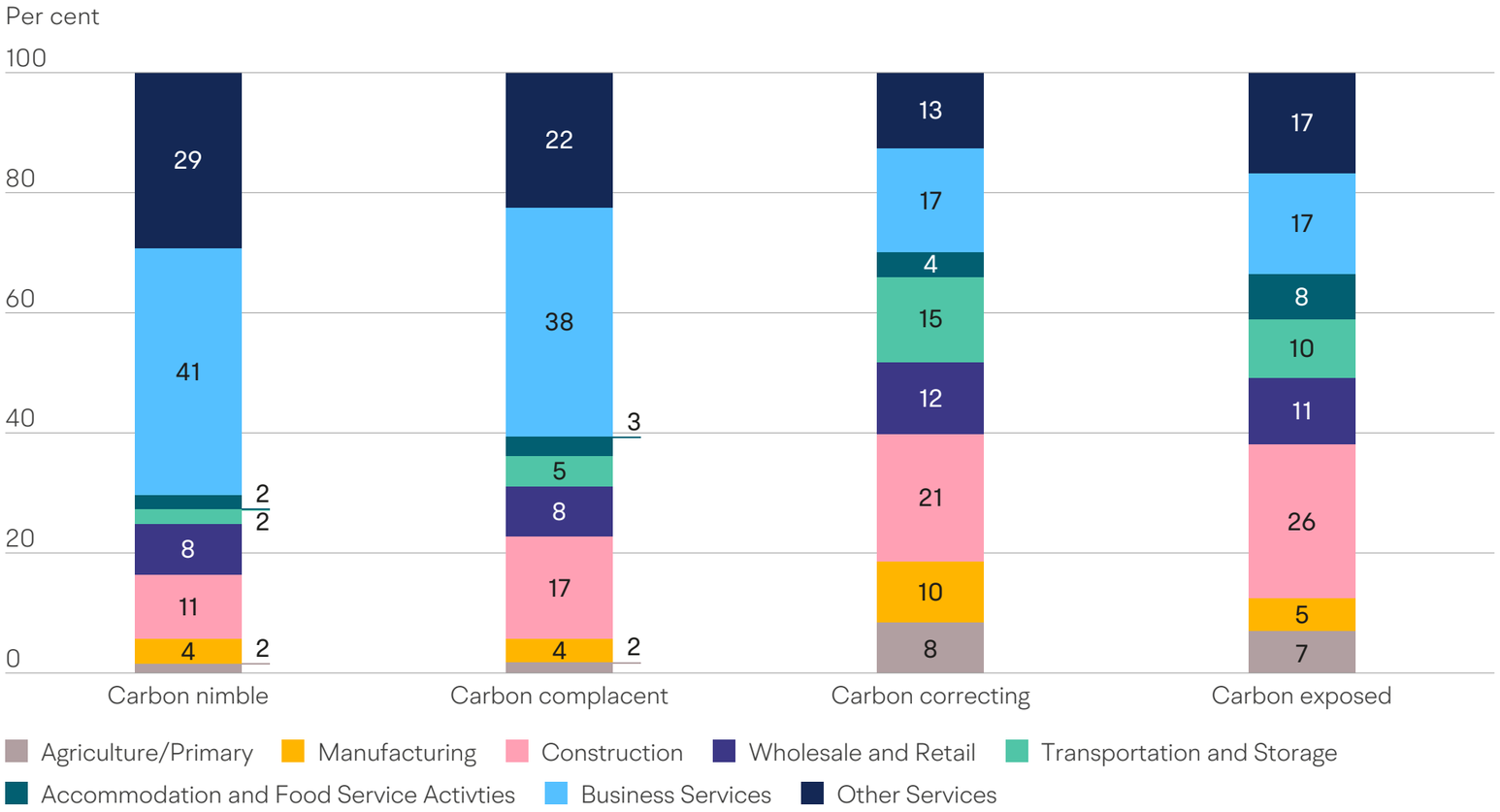
How do personas break down by sector?

Each persona has a distinctive blend of sectors, as Figure 2.6 shows. There is an expected service/ production split between the lower and higher emitting personas, with (for example) Construction being relatively more prominent in the **carbon exposed** persona. Similarly, the relative significance of the Transportation and Storage and Wholesale and Retail sectors in **carbon correcting** suggests that the transition has some traction in those sectors.

Fig 2.6

Breakdown of personas by sector grouping

Source: In-house analysis of the British Business Bank's net zero SME survey
Base: All participants (1,200)



How do personas break down by business size?

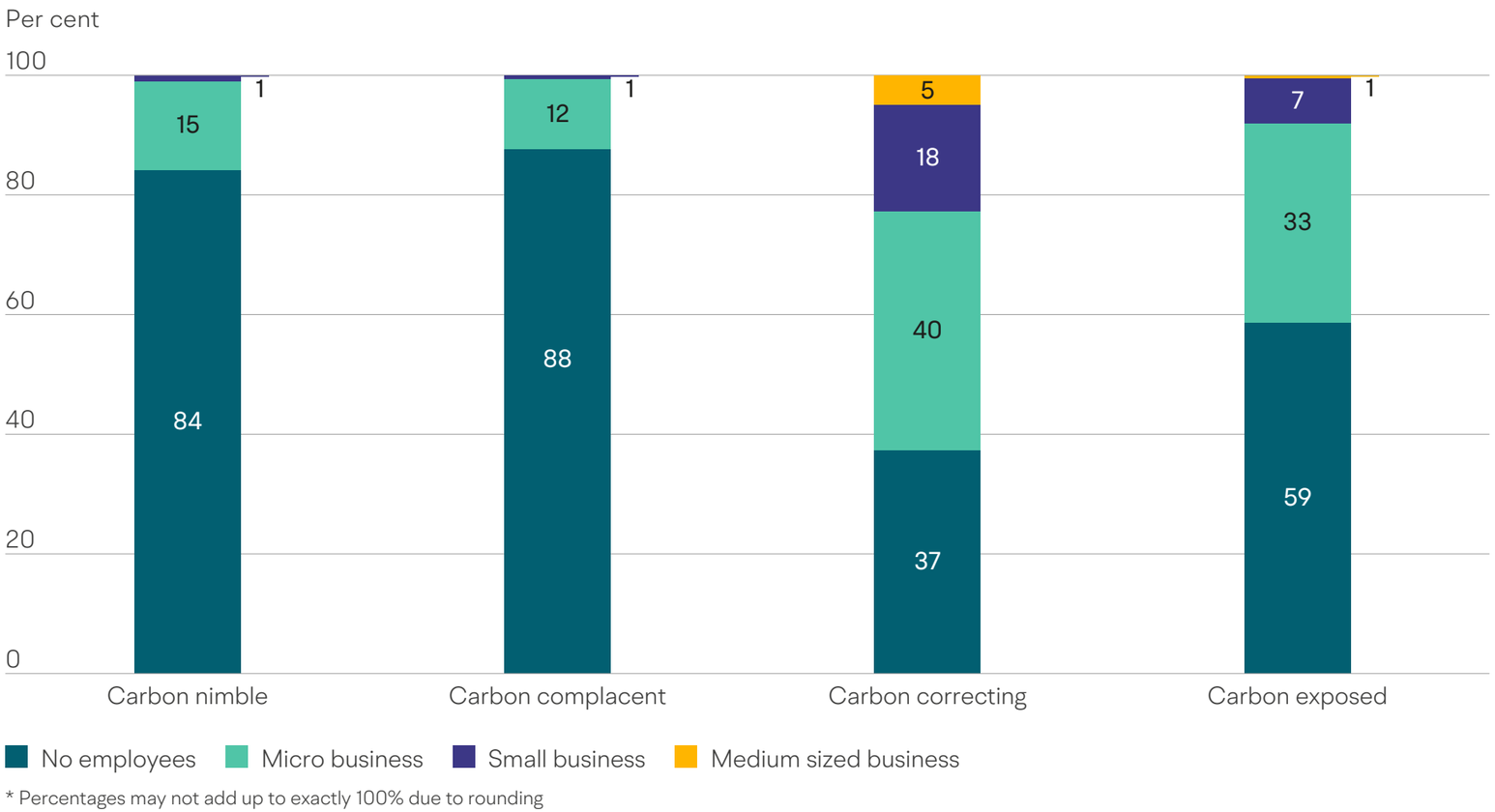
It is unsurprising to see that smaller SMEs dominate all personas and in particular the less carbon-intensive ones (**carbon nimble** and **carbon complacent**), as over 99% of SMEs in the UK have fewer than 49 employees[12] and over half operate in low-emitting sectors.[13] But it is worth noting, as shown in Figure 2.7, the makeup of the **carbon exposed** persona, where smaller businesses with no employees are very prominent.

Medium-sized (50-249 employees) and small-sized (20 to 49 employees) businesses are covered representatively by the net zero survey, but only make up 0.7% of the SME population altogether and as a result, their counts are small compared with other SME size categories in all of the personas. But almost all medium-sized businesses in the survey fall within the **carbon correcting** and the **carbon exposed** groups. These two personas also encompass the large majority of small-sized businesses (84% of all businesses in this size category); therefore, they have a much larger concentration of the largest SMEs compared with the **carbon nimble** and **carbon complacent** groups.

Fig 2.7

Breakdown of personas by business size (number of employees basis)*

Source: In-house analysis of the British Business Bank's net zero SME survey
Base: All participants (1,200)



* Percentages may not add up to exactly 100% due to rounding

Chapter 3

From awareness to action

- Strategic intent on net zero is split, with around half of smaller businesses saying decarbonisation is a priority
- Progress on capability-building is slow and there is little traction, for example, on measuring carbon footprints and setting emissions targets. There is a mixed picture on physical actions with mostly simpler actions taken
- Overall impacts of actions are largely neutral in financial terms, but SMEs report benefits on reputation and emissions reduction

Reasonable awareness of net zero, with some strategic prioritisation

We assessed the extent to which businesses are well informed about climate change and relevant policies, and how committed they are to doing something about it.

We have looked at two key indicators in the survey data:

- Business awareness of key concepts related to net zero. Specifically, our survey asked SMEs **how much they had heard about the UK government's target to reach net zero by 2050** and **the impacts of climate change on their business**
- Whether a business considered **reducing carbon emissions as a priority.**

Moderate awareness of net zero and the business impacts of climate change

This analysis shows a mixed picture. Around half of UK SMEs are well aware of key net zero concepts and have embedded relevant priorities in their business strategy, but a significant proportion (53%) are not yet ready to prioritise decarbonisation.

But a lack of awareness of net zero and the impacts of climate change is a persistent issue. While there is evidence suggesting that awareness is becoming significant (at nearly 60%), our research finds that there is still a substantial proportion of smaller businesses showing relatively little awareness of the net zero target and the implications of climate change for their business (Figure 3.1).

Across the UK, levels of awareness are broadly similar, except in Scotland where awareness is particularly high compared with all other regions. By contrast, awareness varies more widely and in a statistically significant way across sectors. Compared to the overall proportion of SMEs reporting high awareness of the two concepts, Agriculture and Primary Industries, Business Services in particular have proportionally more firms that fall within this category, while all other sectors have fewer (Figure 3.2).

Fig 3.1

Share of SMEs with high awareness of key net zero concepts

Source: British Business Bank's net zero SME survey
Base: All participants (1,200); single code

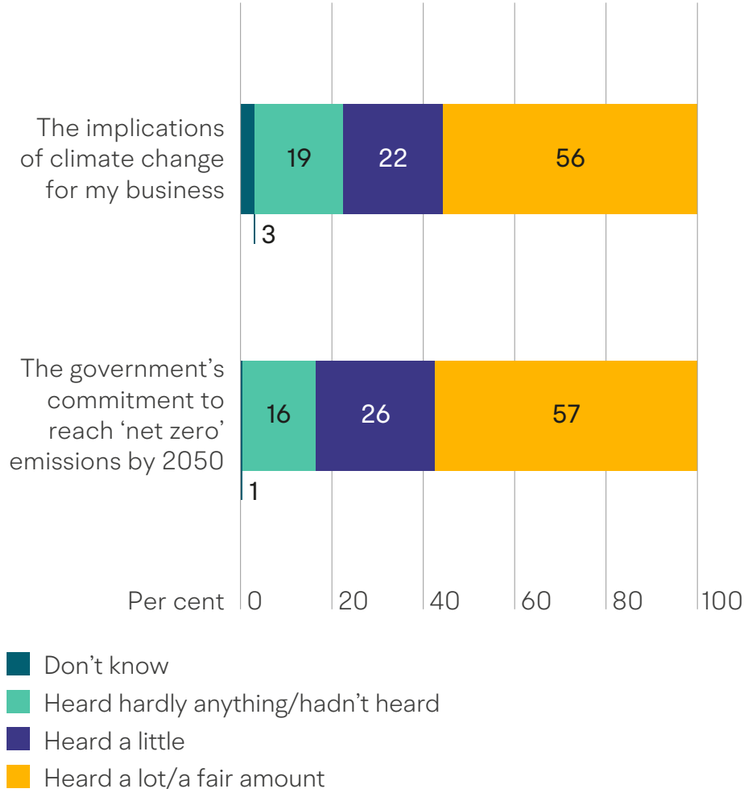
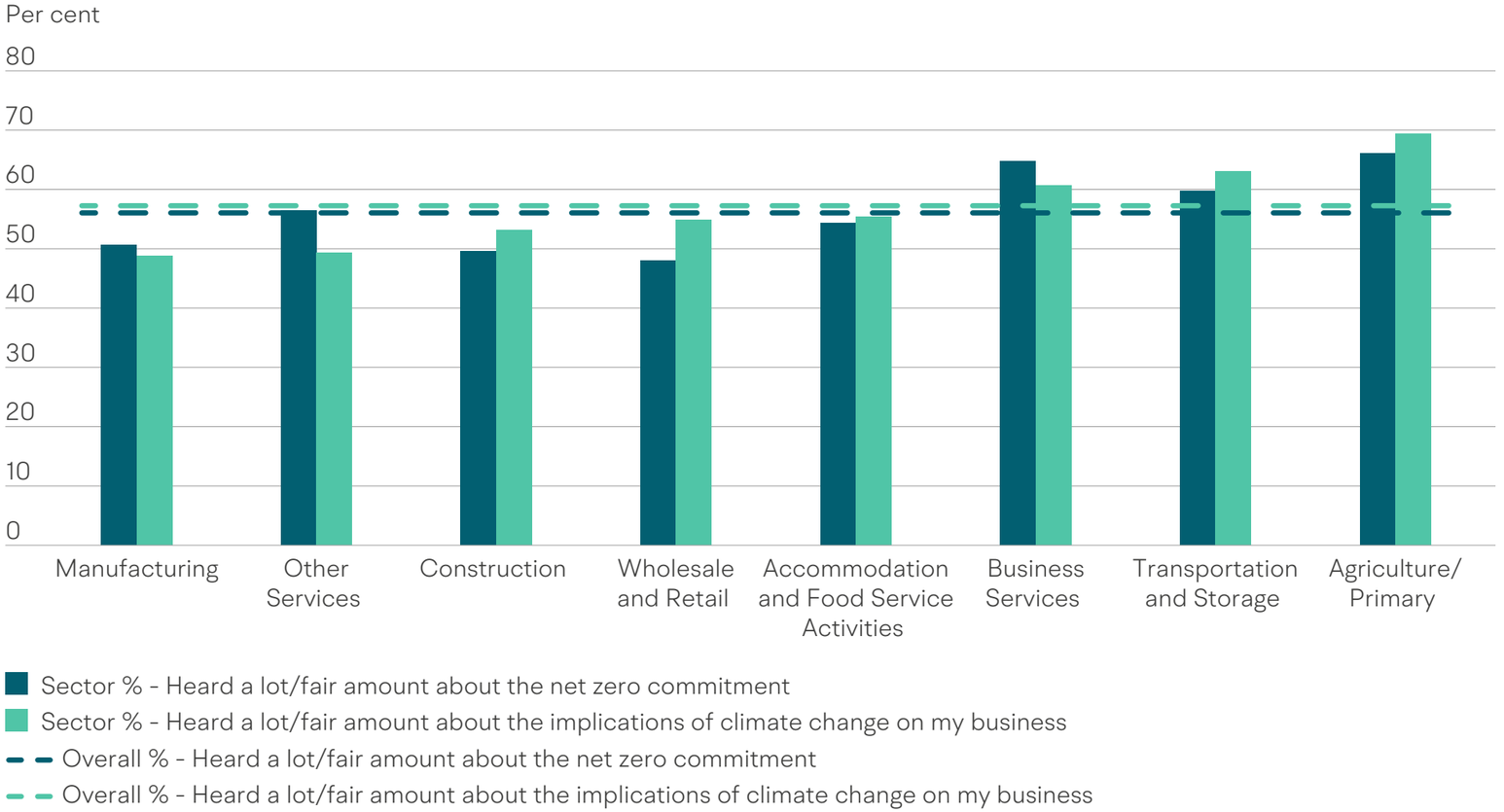


Fig 3.2

Share of SMEs with high awareness of key net zero concepts, by sector

Source: British Business Bank's net zero SME survey
Base: All participants (1,200); single code



Reducing carbon emissions is a priority for half of smaller businesses

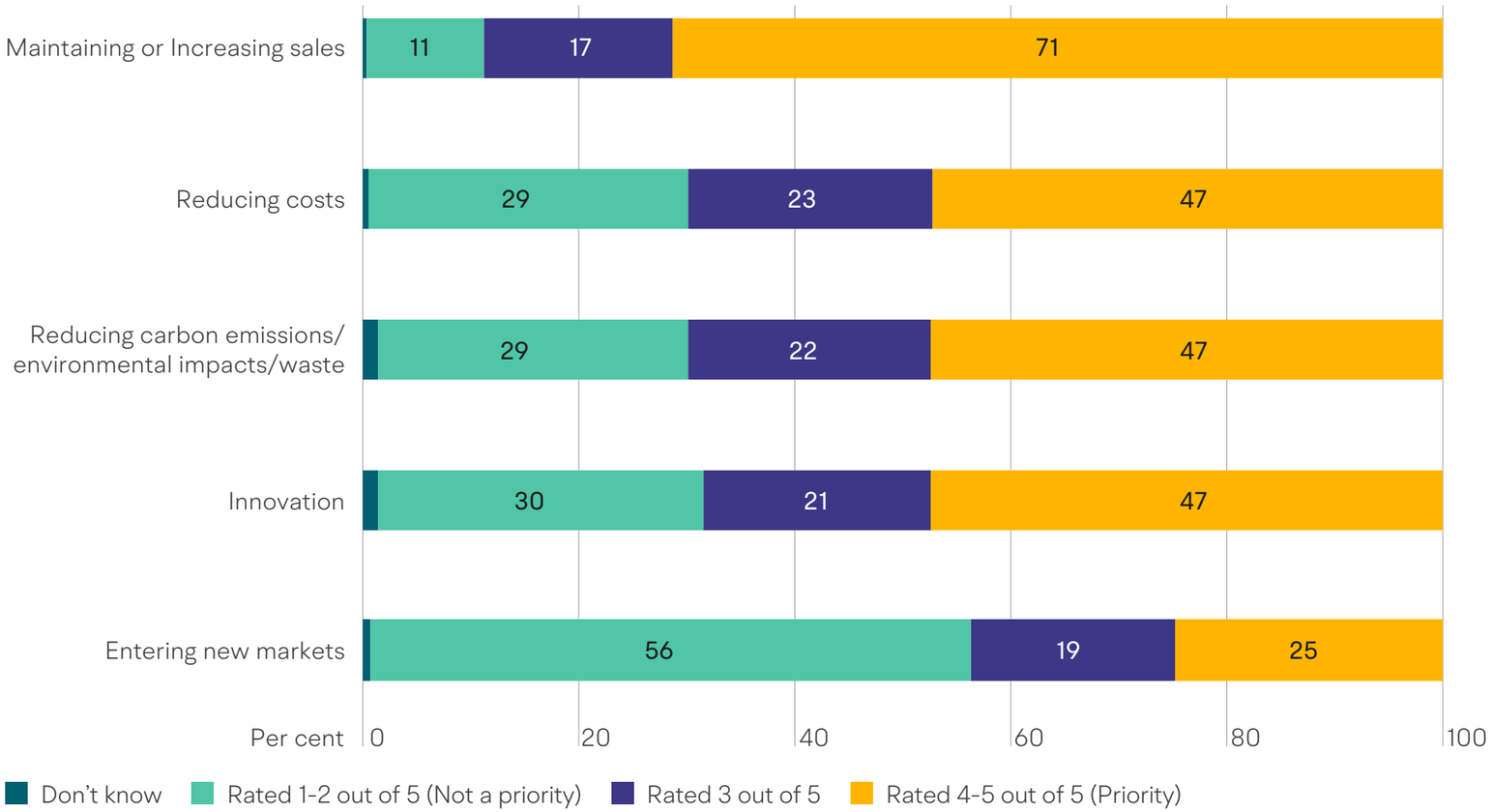
Many smaller businesses have adopted reducing carbon emissions as a formal business objective. Our survey results (Figure 3.3) indicate that reducing carbon emissions is a high or very high priority for roughly half of smaller businesses (47%). Yet, it's also clear there is some distance to go before broad adoption across smaller businesses, as just under 30% say that they do not see reducing carbon emissions as a priority.

Previous surveys have found similar positive signals on UK businesses' environmental attitudes. The majority of SMEs responding to the ERC's Business Futures Survey, for example, agreed that businesses should spend more on environment protection and that this should take precedence over profit, and over half reported that they prioritised sustainability/reducing their environmental impact.[14]

Fig 3.3

Level of priority assigned to reducing carbon emissions and other business objectives

Source: British Business Bank's net zero SME survey
Base: All participants (1,200); single code



Businesses from different sectors prioritise decarbonisation to different extents in the survey. Construction shows the greatest proportion of firms that consider it as a priority (56%), compared with just 45% of firms in Transportation and Storage and 42% in Business Services. Nevertheless, whether a smaller business prioritises reducing carbon emissions or not is most strongly correlated to the age of the business and the importance it places on innovation and entering new markets. Newer, more innovative, and more export or growth-oriented firms are more likely to consider reducing carbon emissions as a priority (Figure 3.4).

When size is considered, it is firms with no employees that are less inclined to say that reducing carbon emissions is a priority (47% v. an average 52% of micro, small and medium firms). As expected, smaller businesses who show strong awareness of the implications of climate change and – to a lesser extent – of the UK's net zero target are also more likely to think of reducing carbon emissions as a priority.

Fig 3.4

Share of SMEs that consider reducing carbon emissions a priority, by selected sub-groups

Source: In-house analysis of the British Business Bank's net zero SME survey
Base: All participants (1,200); single code

Awareness and other personal characteristics like gender also play a role. According to the survey results, a significantly higher proportion of owner-managers identifying as female consider reducing carbon emissions as a priority (56%) compared to those identifying as male (45%).

There is a mixed picture in the literature on how the Covid-19 pandemic has affected business attitudes towards net zero. Lockdowns around the world have undoubtedly reduced emissions, but whether net zero as an issue has risen higher or lower on SMEs' strategic agenda is unclear. In ERC's Business Futures Survey, just over a quarter of firms declared that 'reducing environmental impact' had become a more important priority since the Covid-19 crisis.[15] Results emerging from other business surveys do not reveal a fundamental change in SME attitudes to net zero compared with the pre-Covid-19 period. In fact, in a July 2021 membership survey by the British Chambers of Commerce,[16] three quarters (76%) of businesses surveyed disagreed with the notion that the pandemic had made net zero more of a priority, while 16% agreed.

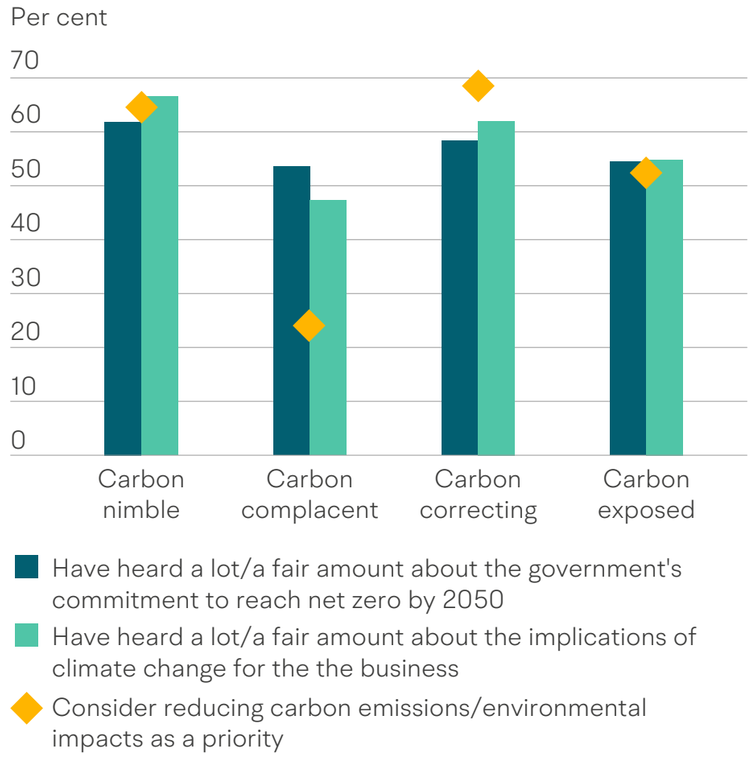
Degree of net zero awareness and prioritisation varies across personas

The results on awareness and strategy across the four personas are broadly consistent with their overall attitudes to net zero and their expected performance on the net zero transition journey (Figure 3.5). The **carbon complacent** – by far the most disengaged from the issue of decarbonisation – show markedly low levels of awareness of the net zero concepts covered in the survey, and even lower priority given to reducing carbon emissions within their business. Conversely, the highest proportion of firms with high awareness and strong emphasis on reducing carbon emissions within their strategies are found in the two most active personas on net zero, the **carbon correcting** and **carbon nimble**. More than half of the **carbon exposed** group also give high priority to reducing carbon emissions. This could be expected given that many firms in this group have medium to high emission levels, but it also suggests that their transition to net zero is mainly hindered by a lack of implementation rather than a failure to embed reducing carbon emissions in their strategies.

Fig 3.5

Share of SMEs that report high awareness of net zero concepts and priority given to reducing carbon emissions, by persona

Source: British Business Bank's net zero SME survey
Base: All participants (1,200); single code



Slow progress on capability-building

While there is reasonable awareness of net zero, we see limited movement on enhancing knowledge and capacity.

There is a range of relatively low-effort actions that smaller businesses can take which may not produce significant or immediate impacts on carbon emissions, but can be helpful in preparing the ground for any physical actions to follow.

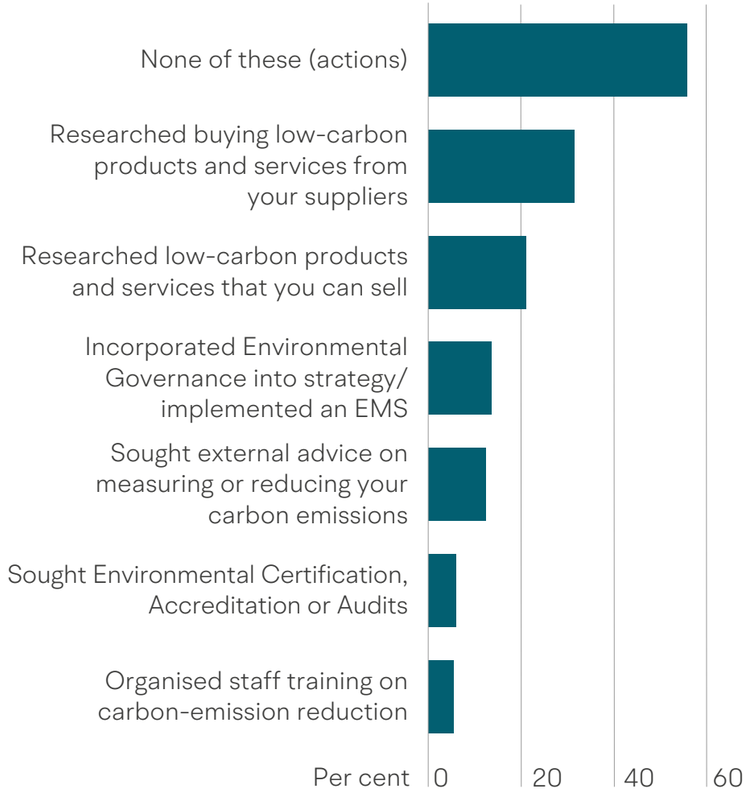
These actions can also improve a business' culture, awareness and knowledge around reducing carbon emissions. Examples include **researching low-carbon products to use in the business or to sell, organising company training** or **getting advice on low-carbon solutions.** This report refers to these actions as 'capability-building actions'.

Based on the survey results, the majority of smaller businesses still have no or minimal engagement with this type of net zero action. Fifty-six per cent of businesses report not having taken any capability-building actions out of the six types of actions presented (Figure 3.6).

Fig 3.6

Share of smaller businesses that have taken capability-building actions

Source: British Business Bank's net zero SME survey
Base: All participants (1,200); multicode



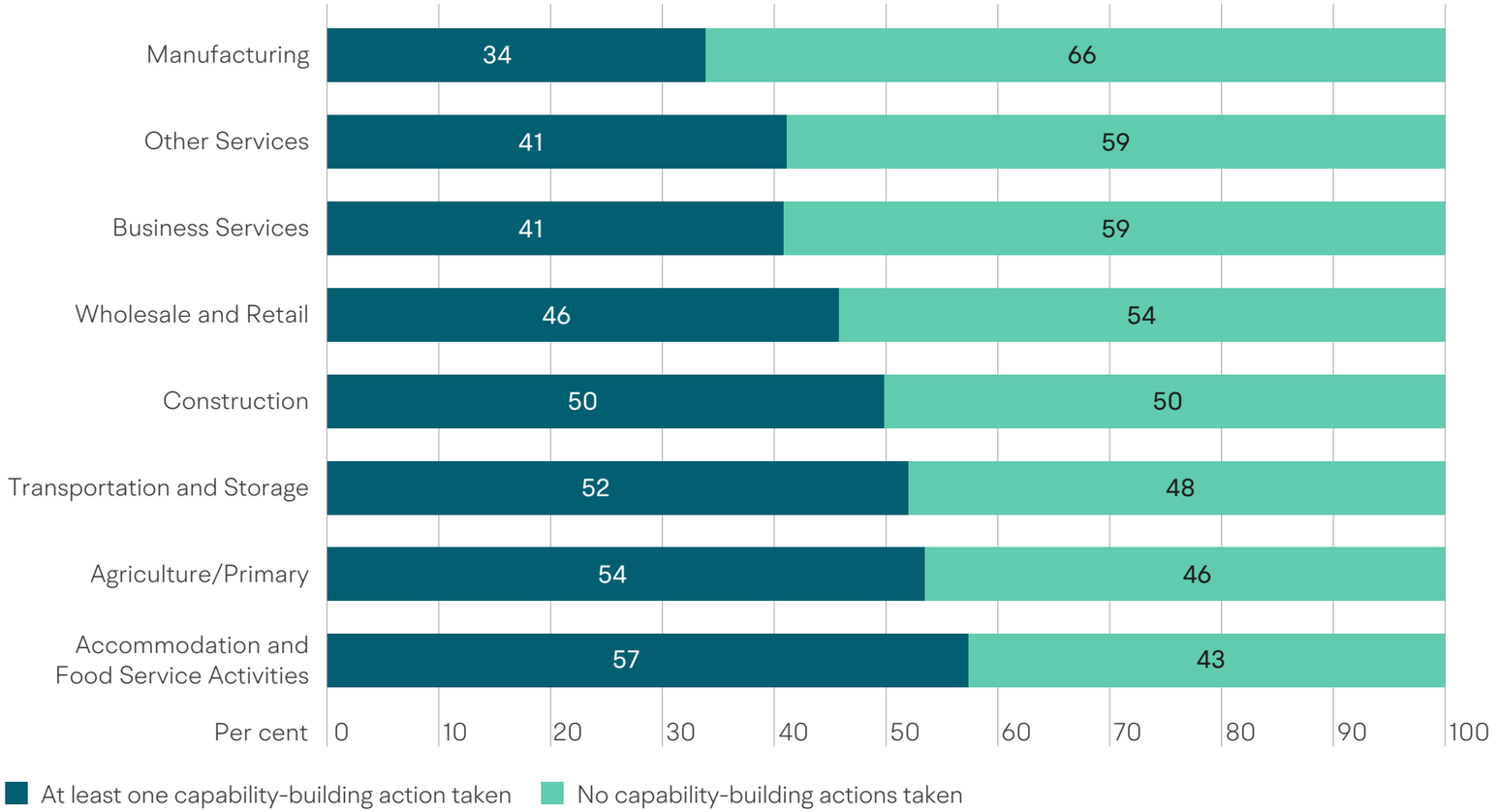
The most frequently reported actions were research into low-carbon products that can be procured from suppliers (31%) or sold (21%), followed by the implementation of **environmental governance/an Environmental Management System** (14%). About a third of businesses took between one and two of the six actions presented (one third of the total sample), and only 5% took more than three.

From a sectoral perspective, there is also wide variation in the proportion of SMEs that have begun taking action to build up their net zero capabilities (Figure 3.7). Business and Other Services firms are among the most likely to report that they have not taken any capability-building action and Manufacturing firms report the lowest levels of activity; two thirds have taken none. This translates into much lower activity by Manufacturing firms across all types of capability-building action. For instance, only 22% of SMEs in this sector say they researched buying low-carbon products and services from suppliers, compared with 31% overall.

Fig 3.7

Share of smaller businesses that have taken capability-building actions, by sector

Source: British Business Bank's net zero SME survey
Base: All participants (1,200); multicode

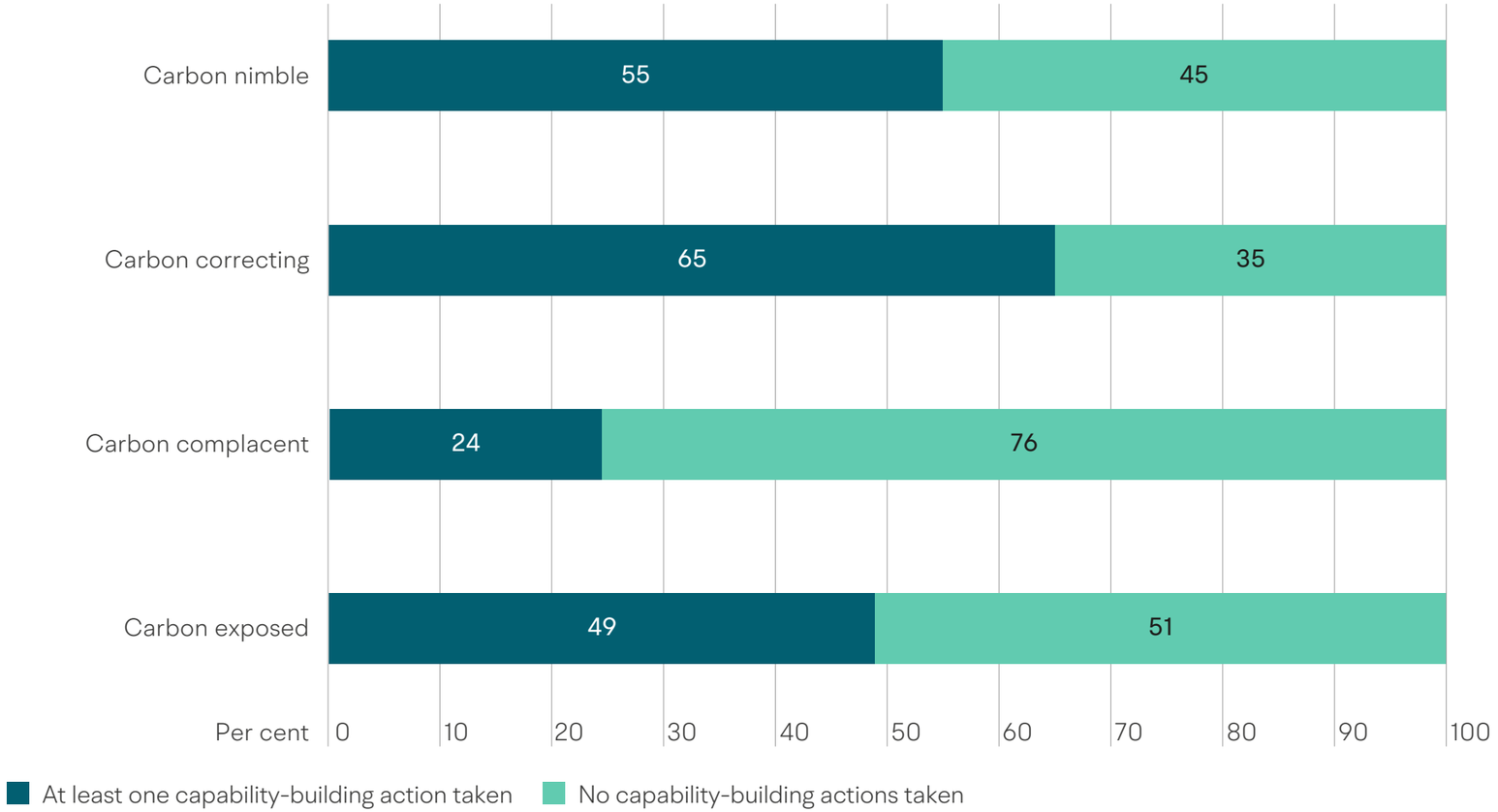


Across the four personas, it is the **carbon complacent** group that shows the lowest levels of activity on capability-building actions, with over three quarters reporting no action at all (Figure 3.8). At the opposite end, the **carbon nimble** and **carbon correcting** firms are the least likely to report this, in line with their higher overall engagement with decarbonisation strategies and actions. The **carbon exposed** group has rather mixed performance on capability-building actions, with one half engaging with these and the other not taking any action to grow their net zero capabilities.

Fig 3.8

Share of smaller businesses that have taken capability-building actions, by persona

Source: In-house analysis of the British Business Bank's net zero SME survey
Base: All participants (1,200)



Carbon footprint measurement and target-setting is very limited

A well-known example of a capability-building action is measuring carbon emissions and setting targets.

Few smaller businesses have done this so far. The smallest businesses, in particular, may perceive this as too time-consuming and complex, or may decide to focus their limited resources on implementing other relevant actions.

However, an embedded practice of measurement and target-setting gives a strong indication that the business has the intent and the right tools to make progress on reducing its carbon emissions.

Our survey suggests that 6% of SMEs have **measured their carbon footprint in the last five years** (Figure 3.9). This is slightly lower than in previous business surveys that included some SMEs. For instance, only 9% of small businesses and 5% of microbusinesses report having measured their carbon footprint in a recent UK business survey.[17] While businesses can still make progress on reducing carbon emissions without measuring their footprint, this shows that most don't have robust information on their contribution to carbon emissions and therefore may not have sufficient knowledge of what actions could be feasible and relevant for their business.

All SMEs that reported having measured their carbon footprint in the last five years were also asked whether they had **set targets to reduce their carbon emissions**. Of those businesses that reported measuring their carbon footprint in our survey, around half (52%) reported that they had (Figure 3.10). When seen as a proportion of the overall survey sample, this amounts to just 3% of the surveyed SME population.

We also found that carbon footprint measurement is not strongly related to the SMEs' sector, region or firm age, but correlates strongly with their employee size/turnover bands, and their responses to questions on awareness and business strategy. Larger SMEs and those with high awareness of net zero concepts and who prioritise reducing carbon emissions are most likely to measure their carbon footprints. This is expected, as larger businesses are likely to require a more regular and systematic assessment of their carbon emissions. Yet, it could also suggest that smaller businesses find it more difficult to measure their carbon footprint, and greater adoption could be achieved by signposting them to the appropriate guidance or support.

Adoption of carbon footprint measurement varies quite significantly across the four personas and complements each group's overall attitude to net zero (Figure 3.11). At nearly 4% and 2% (respectively), the **carbon exposed** and **carbon complacent** businesses are less likely to report that they had measured their carbon footprint over the last five years, compared with their more mature **carbon correcting** and **carbon nimble** peers.

Fig 3.9

Share of SMEs that have measured their carbon footprint in the last five years

Source: British Business Bank's net zero SME survey
Base: All participants (1,200); single code

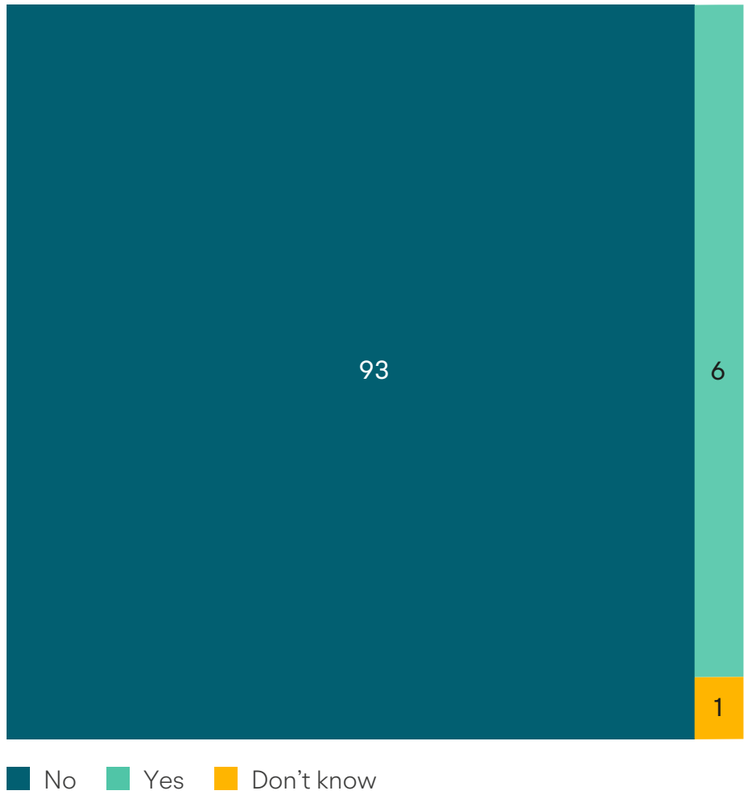


Fig 3.10

Share of SMEs that have set targets to reduce their carbon emissions (among those that have measured their carbon footprint)

Source: British Business Bank's net zero SME survey
Base: Participants who have measured the carbon footprint of their business in the last five years (74); single code

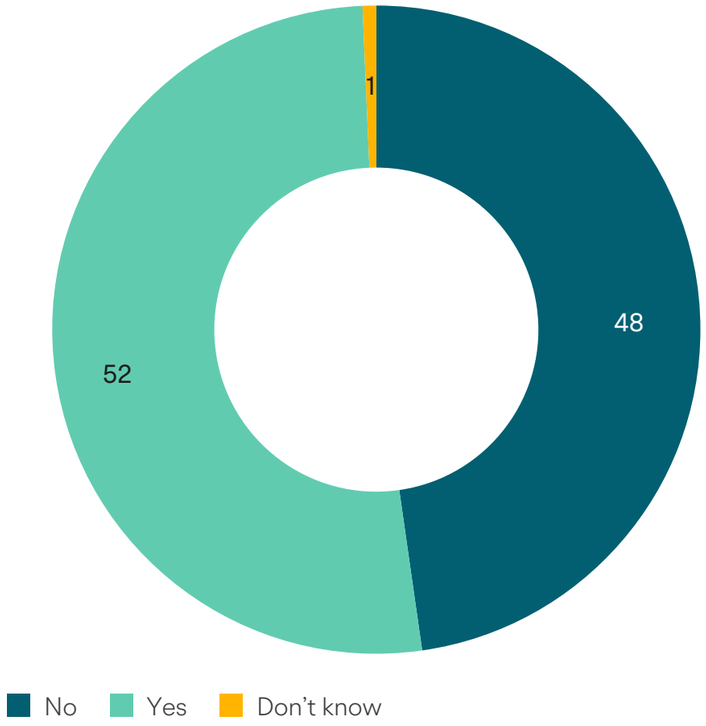
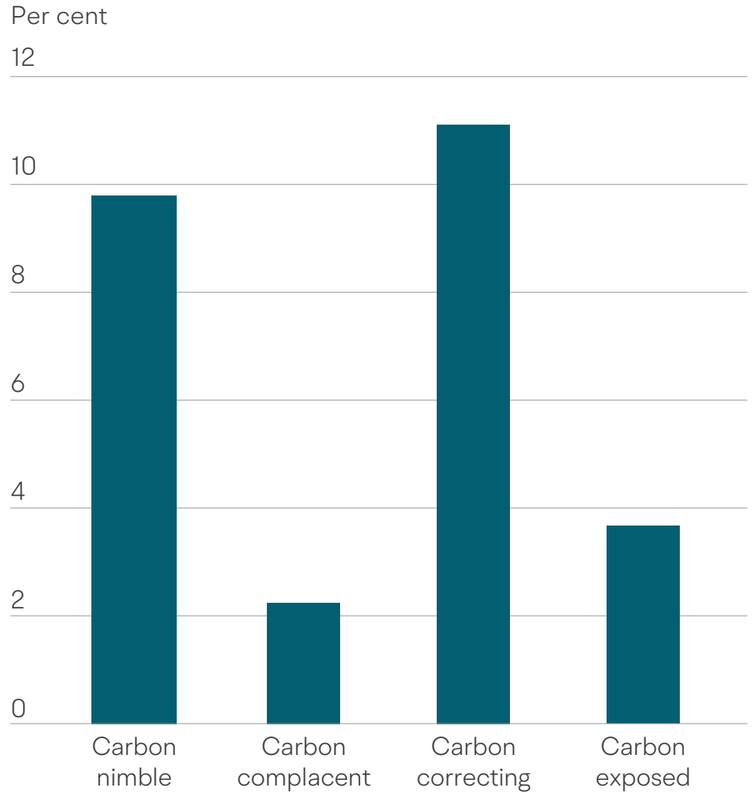


Fig 3.11

Share of SMEs that have measured their carbon footprint in the last five years, by persona

Source: British Business Bank's net zero SME survey
Base: All participants (1,200)



Basic physical actions often taken, but limited traction on more advanced steps

There is a wide range of physical actions that a smaller business may choose to take to reduce its carbon emissions, depending on the nature of their activities. So far, businesses have tended to take a limited number of straightforward actions, especially in waste reduction and energy efficiency.

The British Business Bank worked with a research consortium led by the Energy Systems Catapult to define the key physical actions that an SME may take to reduce its carbon emissions/environmental impacts and that could provide a strong indication of how advanced it is on the transition to net zero emissions. We identified a total of 24 actions across four main areas, as shown in Figure 3.12. Further details on the classification of these actions are included in Annex 1.

Additionally, not all physical actions are equally impactful on the carbon footprint of a smaller business, or require the same degree of control, investment and effort to implement. To recognise this, physical actions are also classified based on the extent of the change achieved and other factors including the complexity and cost of implementation. In particular, the 24 physical actions are broken down into 'simple' and 'extensive' to mark the difference between those that are easier to implement but typically have lower impact on carbon emissions, and the higher complexity, generally higher impact actions.

The next sections in this chapter will consider, in turn:

- the adoption of physical actions across SMEs
- the types of physical actions that SMEs had taken
- the types of physical actions planned/considered by SMEs but not yet taken, or not being considered
- to what extent any physical actions taken could be described as extensive.

Fig 3.12

Physical actions covered by the British Business Bank's net zero SME survey

Source: British Business Bank

Energy efficiency of business premises and equipment

- Install a smart meter
- Switch to green or renewable energy supplier
- Purchase more energy-efficient office/IT equipment
- Install smart controls (for lighting, heating or ventilation)
- Improve building insulation
- Install more efficient heating or ventilation system
- Install renewable energy generation
- Select an energy-efficient building (when choosing business premises)

Business vehicles, travel and employee commuting

- Introduce digital meetings as an alternative to face-to-face
- Introduce very-low-emissions business vehicles
- Introduce permanent working from home policies (post-Covid-19)
- Select lower-carbon business travel options
- Encourage lower-carbon transport options for employee commuting
- Introduce incentives for employees to buy electric cars for personal use

Production processes

- Introduce energy audits or energy monitoring on production processes or equipment
- Install automated or smart controls to reduce waste (for example of energy or materials; to avoid overheating/overcooling)
- Install more energy-efficient production equipment or make other changes to a production process to reduce energy use
- Install a heat recovery system
- Switch to an alternative manufacturing process with a lower-carbon footprint

Business supplies, products and services, packaging and waste

- Purchase lower-carbon goods or services (such as buying low-carbon food ingredients if a food business; or low-carbon office supplies if a service business)
- Find lower-carbon delivery and distribution solutions (such as deliveries by electric vehicles or bikes, shared shipping, reducing distribution miles)
- Introduce waste reduction, recycling or upcycling, or circular design initiatives (creating products that no longer have a lifecycle with a beginning, middle and end)
- Redesign product or service to have lower carbon emissions during manufacture, in-use, or at end of life (such as changing to lower-carbon product packaging methods)
- Taking any emissions-reducing actions with suppliers, customers or partners

Net zero physical actions taken, planned or considered by SMEs

The Bank's survey asked SMEs to indicate whether they had already taken an action, planned or considered it for the future, or not considered it at all, for each of the 24 net zero actions discussed above. Actions that were only relevant to Manufacturing firms or firms with employees were only asked to respondents meeting these criteria, and whenever respondents felt an action was not relevant or possible for their specific business, they could say so.

The resulting data can be used in multiple ways to assess the quality and quantity of actions taken/considered by smaller businesses to reduce their carbon emissions.

As a first step, the survey data on actions can be used to understand what proportion of SMEs are 'active', ie what proportion has taken at least one action to reduce carbon emissions. On this basis, looking across the data, 94% of SMEs have taken at least one physical action.

If we consider the main action areas, the analysis shows that **energy efficiency of business premises and equipment** is clearly the area with the highest levels of physical actions for SMEs, with 78% of businesses reporting at least one action within this area and more than half planning/considering at least one (59%), but yet to implement it (Figure 3.13). This shows strong awareness of the benefits of energy efficiency among SMEs[18] compared with other action areas and likely reflects the more tangible benefit of lower bills that typically result from reduced energy consumption.

Business supplies, products/services, packaging and waste has the second highest rate of uptake across the SMEs surveyed. Seventy-three per cent report taking at least one action in this area and 35% are planning/considering (but haven't yet taken) at least one. Despite this, there is considerable nuance across specific actions. Recycling proved an established practice for the vast majority of SMEs, but far-reaching actions to accelerate the transition to net zero – for instance, lower-carbon transport and distribution solutions and working with the supply chain – have not yet been tested or embedded within most SMEs.

Actions relating to **business vehicles, travel and employee commuting** show much lower levels of action than the previous two areas. Overall, 64% of SMEs were taking at least one action in that area. This is however also an area where more SMEs seemed to be still considering whether to take action. Many respondents reported considering replacing current business vehicles with low-emission ones, but had not necessarily been able or willing to act on that intent.

94%

of SMEs have taken at least one physical net zero action

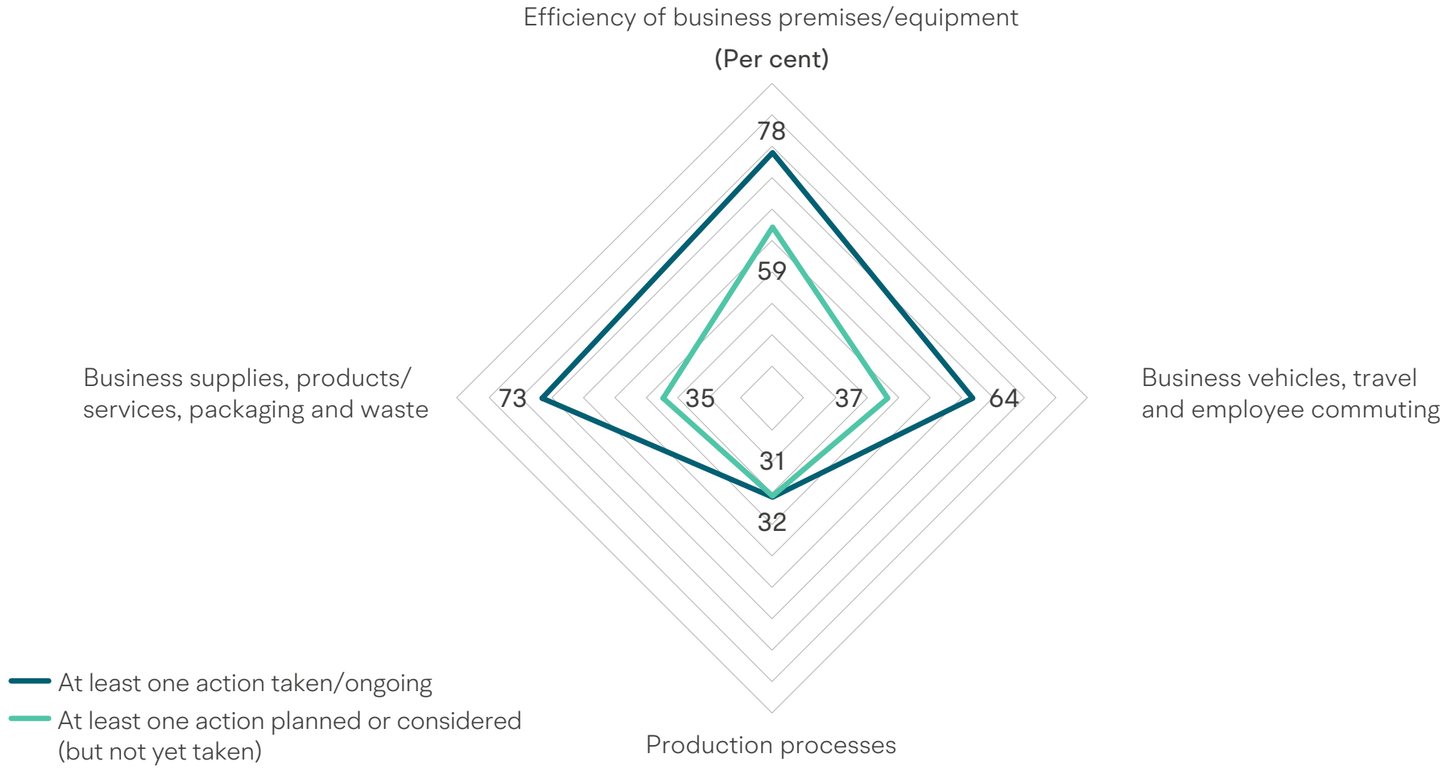
The physical action area covering **manufacturing and production processes** has seen far fewer actions from the relevant smaller businesses than any other area covered by the survey.[19] Less than one third reported any action at all on manufacturing and production processes. Changes to these processes typically create significant disruption costs to the business and require substantial upfront investment, which is likely to significantly deter adoption by smaller businesses.

A further way to gather insights from the survey data is to identify the specific actions that most SMEs said they had taken or were considering/planning to take, as well as those they were most often declining to even consider for the foreseeable future.

Fig 3.13

Share of smaller businesses that have taken, and/or are planning/considering (but haven't yet taken) at least one physical action

Source: In-house analysis of the British Business Bank's net zero SME survey
Base: Efficiency of business premises/equipment - 1,091; Business vehicles, travel and employee commuting - from 248 to 1,200, depending on the action; Production processes - 211; Business supplies, products/services, packaging and waste - 1,200



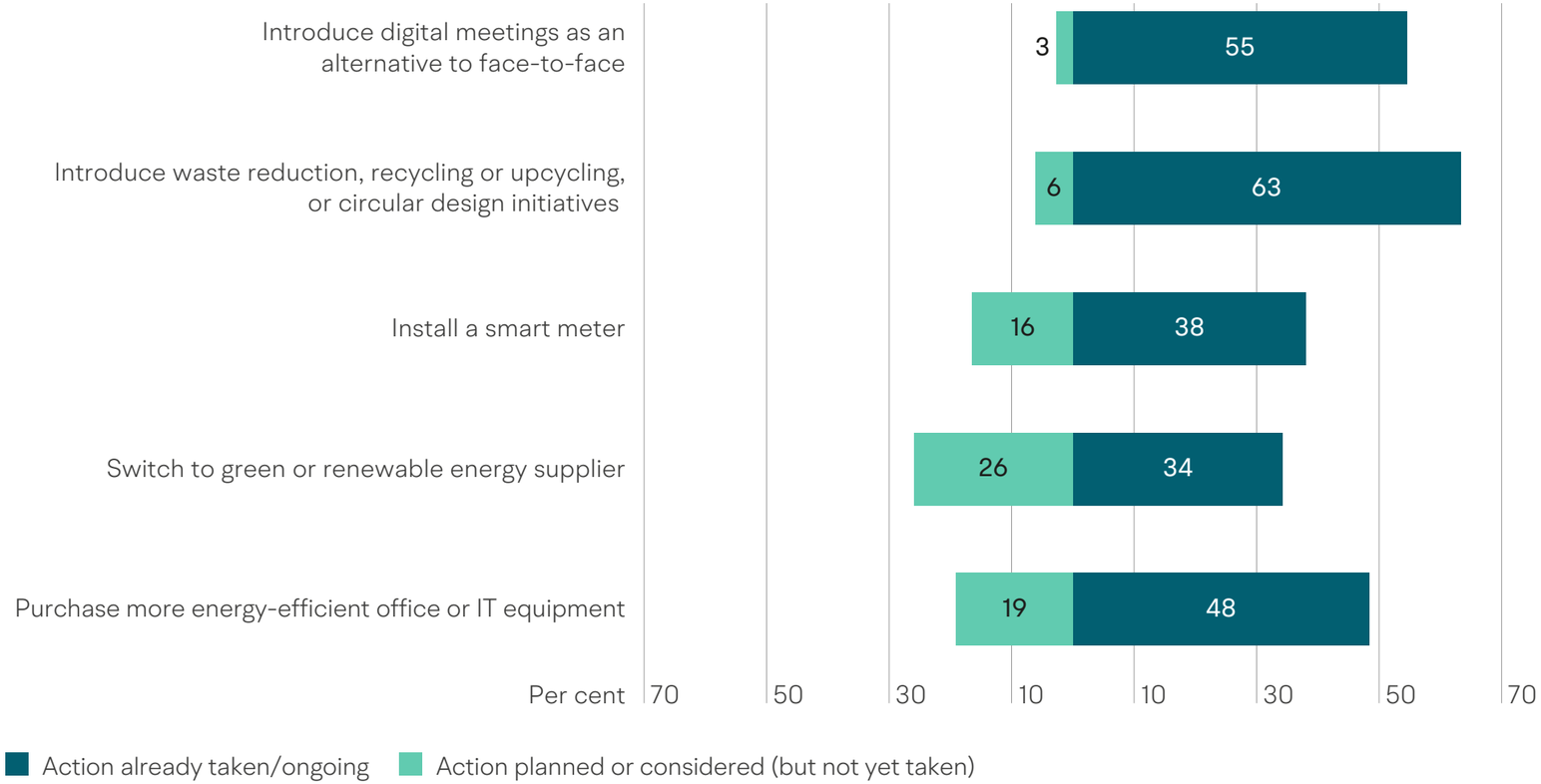
In terms of actions already taken, the top five is a varied mix of relatively low-commitment actions with potentially low impact on decarbonisation, at least at the level of the individual business (Figure 3.14). Nearly two thirds of respondents reported **introducing waste reduction, recycling or upcycling or circular design initiatives** as an action they had already taken. This is by far the most prevalent physical action amongst smaller businesses, partly because it is applicable to most SMEs. Nearly all produce some type of waste, and there are considerably fewer constraints on SMEs that want to manage their waste responsibly, as compared with other interventions that may be beyond their control (eg changes to business premises rented from a landlord).

The majority of smaller businesses (55%) also reported **having introduced digital meetings as an alternative to face-to-face ones**. A surge in remote working during the Covid-19 pandemic was undoubtedly a catalyst for this type of action. The resulting changes to company travel and employee commuting seem to have taken hold, as suggested by the fact that uptake of other physical actions covering the workforce – such as introducing permanent work-from-home policies – was also high among the survey respondents.

Fig 3.14

Top five physical actions reported as taken

Source: British Business Bank's net zero SME survey
Base: Efficiency of business premises/equipment - 1,091; Business vehicles, travel and employee commuting - from 248 to 1,200, depending on the action; Production processes - 211; Business supplies, products/services, packaging and waste - 1,200; single code*



* Respondents were asked about each action individually, and could select one answer from a list of prompts

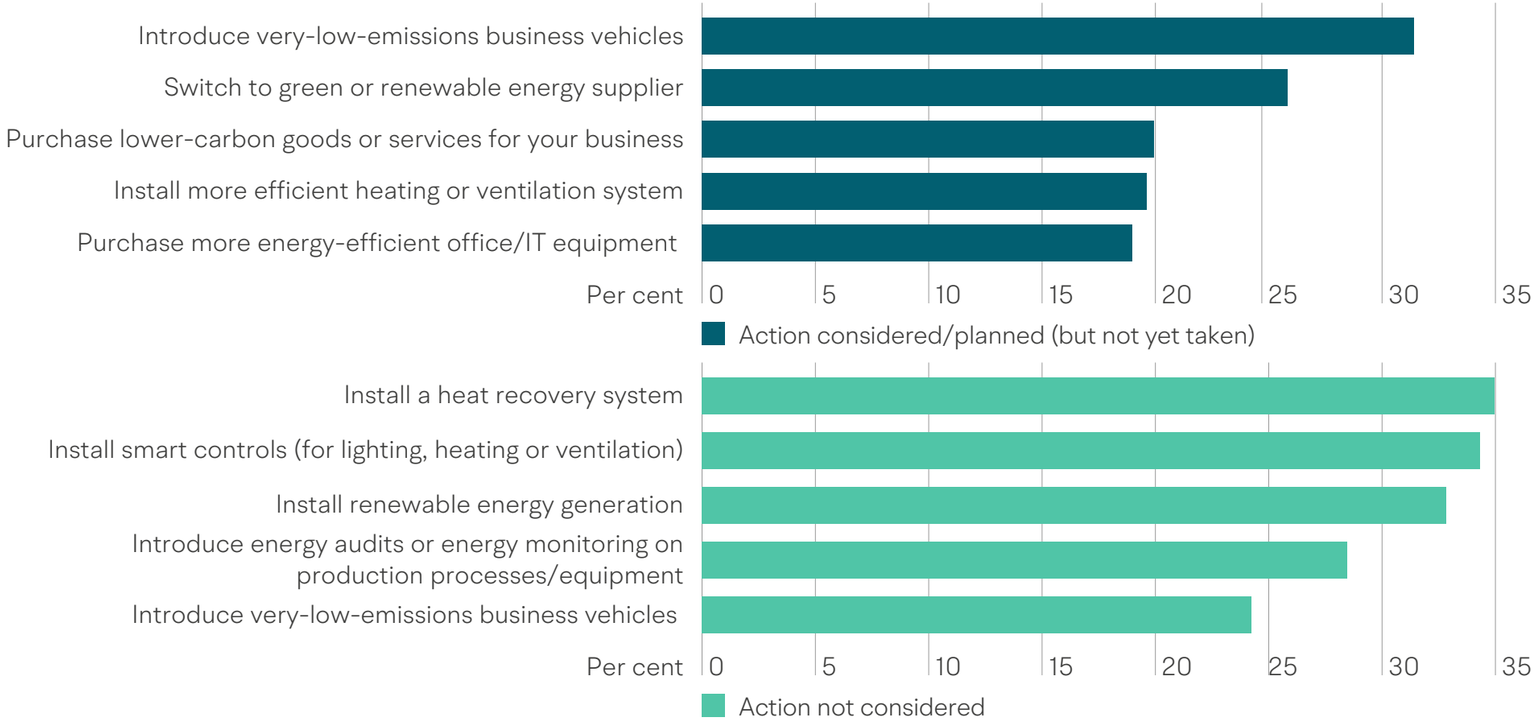
Just under half (48%) report **having purchased more energy-efficient office/IT equipment** and nearly 20% are considering or planning to implement this action in the future. Overall, this was the third most frequently reported physical action taken, followed by **installing a smart meter** (38%) and **switching to a green or renewable energy supplier** (34%). These three actions were widely recognised even by businesses that had not implemented them, as shown by the high share of respondents that were planning/considering them.

Some of the actions most frequently reported as taken – namely purchasing more efficient IT or office equipment and switching to a green or renewable energy supplier – were also among the most recurrent actions being planned or considered (Figure 3.15). In addition to these, there were three types of actions most frequently reported as planned or considered.

Fig 3.15

Top five physical actions reported as being planned/considered, but not yet taken (top) and not being considered (bottom)

Source: British Business Bank's net zero SME survey
Base: Efficiency of business premises/equipment - 1,091; Business vehicles, travel and employee commuting - from 248 to 1,200, depending on the action; Production processes - 211; Business supplies, products/services, packaging and waste - 1,200; single code*



* Respondents were asked about each action individually, and could select one answer from a list of prompts

First, introducing **very-low-emission business vehicles**. While only 8% of SMEs had already introduced very-low-emission vehicles in their business, the proportion of respondents that were planning or considering taking this action was considerably higher, at 31%. Uncertainties about the performance of the low-emission vehicles currently on the market and availability of charging points may explain why intentions are high relative to action in this area.

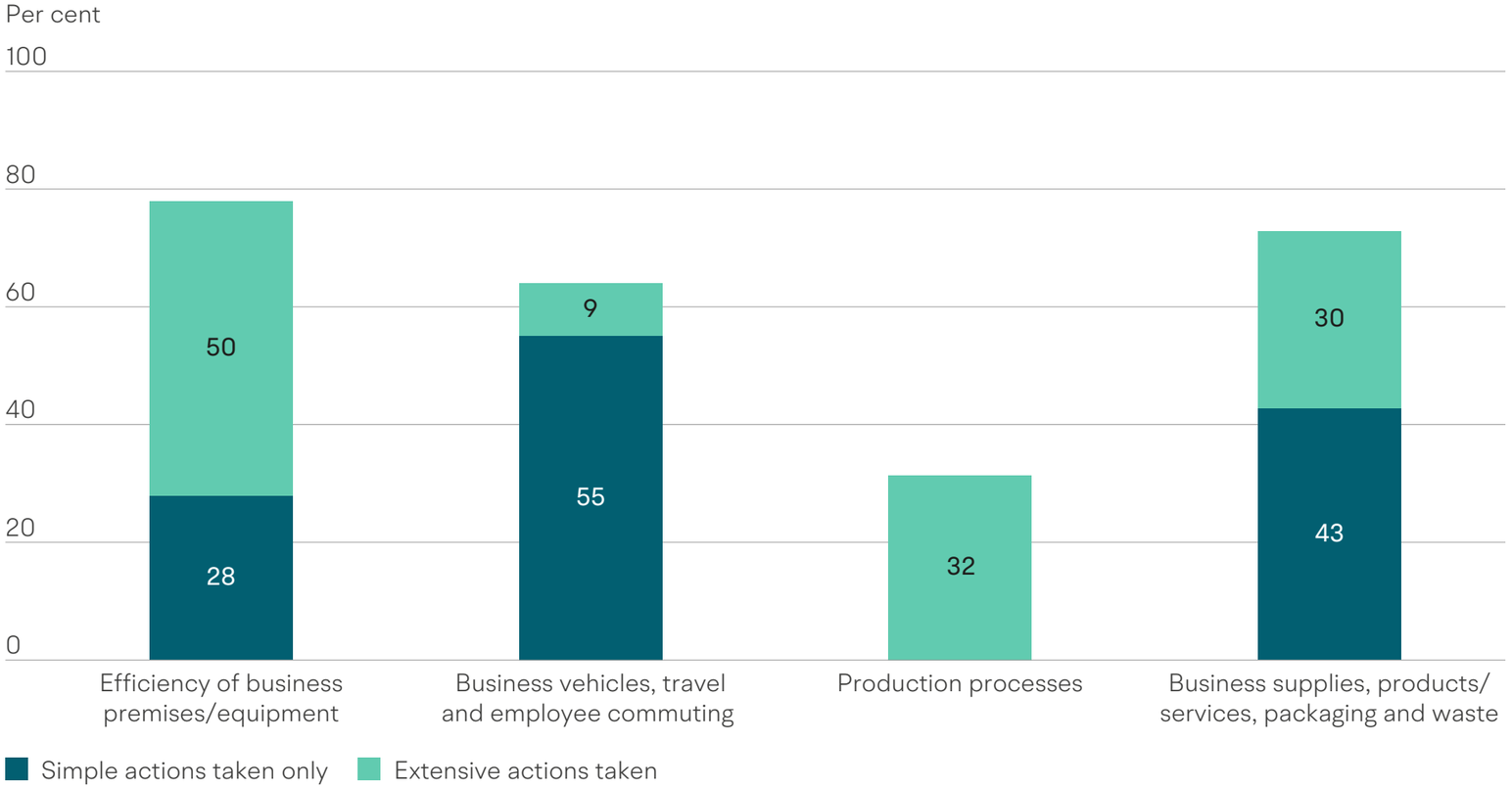
The other two actions being frequently considered or planned by SMEs were **installing a more efficient heating and ventilation system** and **purchasing lower-carbon products/services,** albeit with just one in five respondents considering/planning either action. A number of barriers could explain the relatively high interest they attract compared with actual activity, including disruption/upfront costs or the lack of suitable low-carbon alternatives to specific inputs used by the business.

With regard to the actions that were least likely to be considered (even if potentially possible and relevant to the responding business), introducing very-low-emission vehicles is also among the top five (Figure 3.15).

Fig 3.16

Share of smaller businesses that report having taken 'extensive' actions v. 'simple' actions only

Source: In-house analysis of the British Business Bank's net zero SME survey
Base: Efficiency of business premises/equipment - 1,091; Business vehicles, travel and employee commuting - from 248 to 1,200, depending on the action; Production processes - 211; Business supplies, products/services, packaging and waste - 1,200



There is clearly some polarisation on this action across the SME population. Proportionally more SMEs are planning/considering introduction of very-low-emission vehicles, compared to those that aren't, but at 25%, it implies that a quarter of the SME population are not even thinking about it at the moment. Other resource-intensive actions were also often mentioned as not being considered by respondents, including **installing renewable energy generation, installing a heat recovery system** and **implementing energy audits/monitoring systems**. These actions also had some of the lowest rates of adoption, at 11%, 4% and 14% respectively.

The action-level survey data also enables an analysis of actions according to their potential impact on emissions and complexity of implementation, based on a comparison between 'simple' and 'extensive' actions. This shows significant variation in the level of action complexity that SMEs are prepared to take on across the four action areas considered in this report (Figure 3.16).

Over 30% of SMEs engaged in manufacturing have taken extensive actions in production processes, an action area where all actions can be described as extensive (eg installing a heat recovery system or more efficient production equipment, switching to a lower-carbon manufacturing process). A similar proportion have done so in the area of business supplies, products/services and packaging/waste (ie redesigning products/services to be lower carbon, working with supply/value chain to reduce emissions). This is substantially below the half of businesses who said they were taking actions defined as extensive in the area of efficiency of business premises and equipment – which includes installing renewable energy generation and selecting an energy-efficient building (when choosing business premises).

Actions are having neutral bottom-line impacts, but boosting reputation and emissions reduction

Most smaller businesses report no clear impacts from net zero actions on either revenue or costs, but there is a perception of positive impact on brand and reputation, and on reducing carbon emissions.

Alongside asking about smaller businesses' track record and views on net zero actions, the survey also tested respondents' perceptions of the **impact generated by any net zero actions** they may have taken in the past on **operating costs, carbon emissions, revenue/turnover** and **reputation/brand/customer satisfaction.**

These perceptions don't relate to any specific action, but rather to the overall impact of all of the actions they had taken prior to the survey.

Based on this data, most smaller businesses that have taken net zero actions are yet to see any substantial impact (positive or negative) from those actions (Figure 3.17).

More than three quarters report no or minimal change on revenue/turnover (79%) and reputation/brand/customer satisfaction (76%). A larger share report a tangible impact (positive or negative) on carbon emissions and cost, but this is lower than that of businesses perceiving no or minimal impact (53% and 64% respectively).

1 in 5

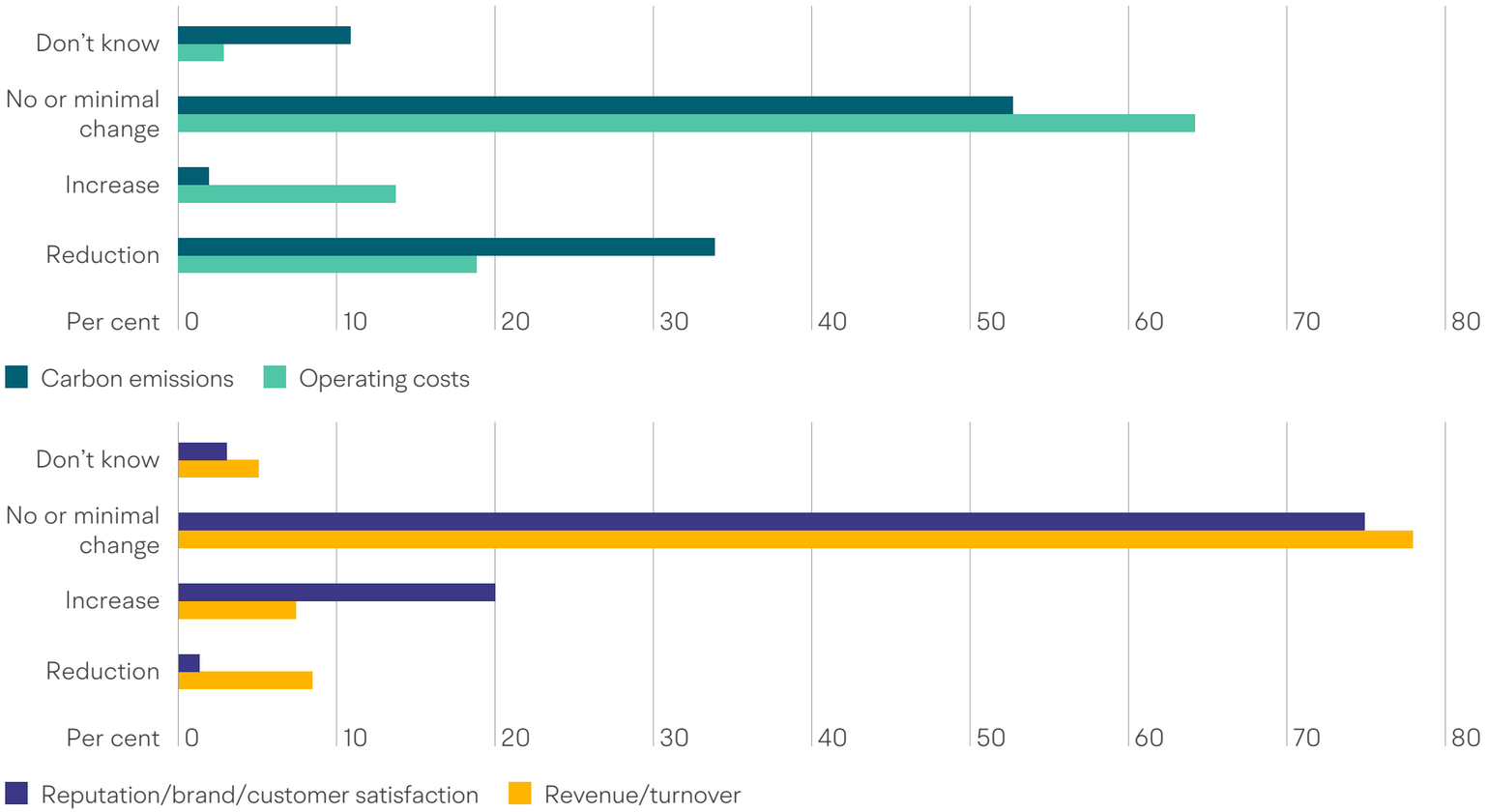
SMEs taking net zero action saw benefits to reputation, brand or customer satisfaction

Overall, the most tangible impacts were perceived on carbon emissions, which one third of respondents thought had been reduced, and reputation/brand/customer satisfaction, which had improved for one in five businesses. Views were more mixed when it came to impacts on operating costs and revenue. Whilst 19% reported a reduction in costs, 14% said they had actually seen costs rise. Similarly, the share of businesses mentioning a positive and a negative impact on revenue were roughly the same (8% and 9% respectively).

Fig 3.17

Perceived impact of net zero actions taken by smaller businesses across multiple business performance indicators

Source: British Business Bank's net zero SME survey
Base: All participants (1,200); single code



Chapter 4

Unlocking ambition: drivers, barriers and enablers

- A wide range of barriers to action was reported, with cost (35%), especially upfront costs, and feasibility (32%) most frequently cited
- The most common driver of past action by far was because it made financial sense
- Firms suggested that the best enablers to unlock further action include intervention in the tax system, and grants

Key drivers for net zero actions: financial benefits most critical

When asked about their reasons for taking net zero actions, SMEs provided a wide range of motivations.

When smaller businesses were asked about their top three reasons driving the net zero actions they had undertaken the most common response by far was that the action(s) **made financial sense** for their business, mentioned by just over half (51%) of respondents (and by one in five as the main reason - see Figure 4.1). These are businesses that have seen an opportunity to reduce costs, increase sales or secure a reasonable return by investing in actions to reduce their carbon emissions. Such investments are most likely made with the prospect of a long-term financial gain – in fact, financially-motivated businesses are also the least likely to say that they had seen any change in revenue from net zero actions they had already taken: 80% said they hadn't.

Other reasons or **other business benefits** were also mentioned by a significant proportion of businesses (44% and 33% respectively). The latter motivation covers any wider benefits for the business, including productivity, innovation, resilience and staff motivation. This was most often mentioned in combination with financial motivations, with one in two saying that they acted because it made financial sense also taking these other business benefits into account.

A substantial share of respondents (46%) also mentioned **alignment with their business strategy/purpose** as one of the top three reasons for taking action, with 23% citing this as the main reason. This is an unsurprisingly common answer, as roughly the same proportion of smaller businesses (47%) said reducing emissions was a somewhat relevant business priority. Businesses motivated by strategic reasons generally seemed to value the action's contribution to reducing carbon emissions more than its impact on the bottom line. In fact, less than half (44%) of those that mentioned strategy as a top three motivation also said they were motivated by a financial payback.

51%

of SMEs taking net zero actions mentioned that it made financial sense, among their top three reasons for acting

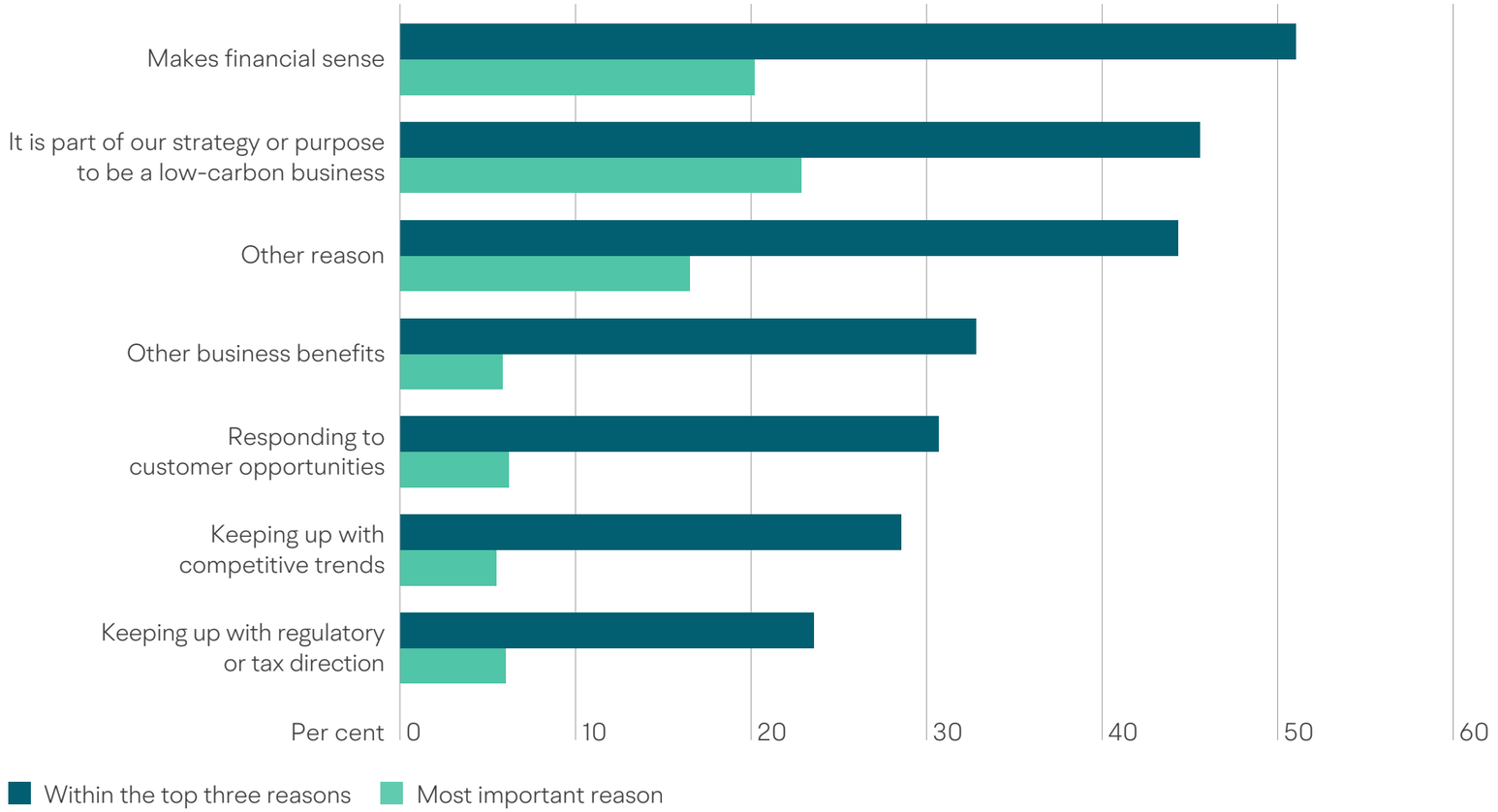
Responding to customer opportunities and **keeping up with competitive trends** were relevant drivers for many, but somewhat less frequently reported among the top three reasons for taking net zero actions (by 31% and 28% of businesses respectively). Future financial returns from net zero actions may well be a background motivation here, given that the majority who selected these drivers also mention that the action made financial sense among their top three reasons.

Keeping up with regulation was the least frequently reported motivation for taking net zero actions overall, possibly because it is only relevant to specific high-emission business activities that smaller businesses in the UK are not typically involved in. This was much more frequently mentioned as a key motivation by businesses in Transportation and Storage (35%) than in any other sector.

Fig 4.1

Top three reasons for smaller businesses to take net zero actions

Source: British Business Bank's net zero SME survey
Base: 1,200 for most important, 1,027 for top three ; single code, three rotating questions

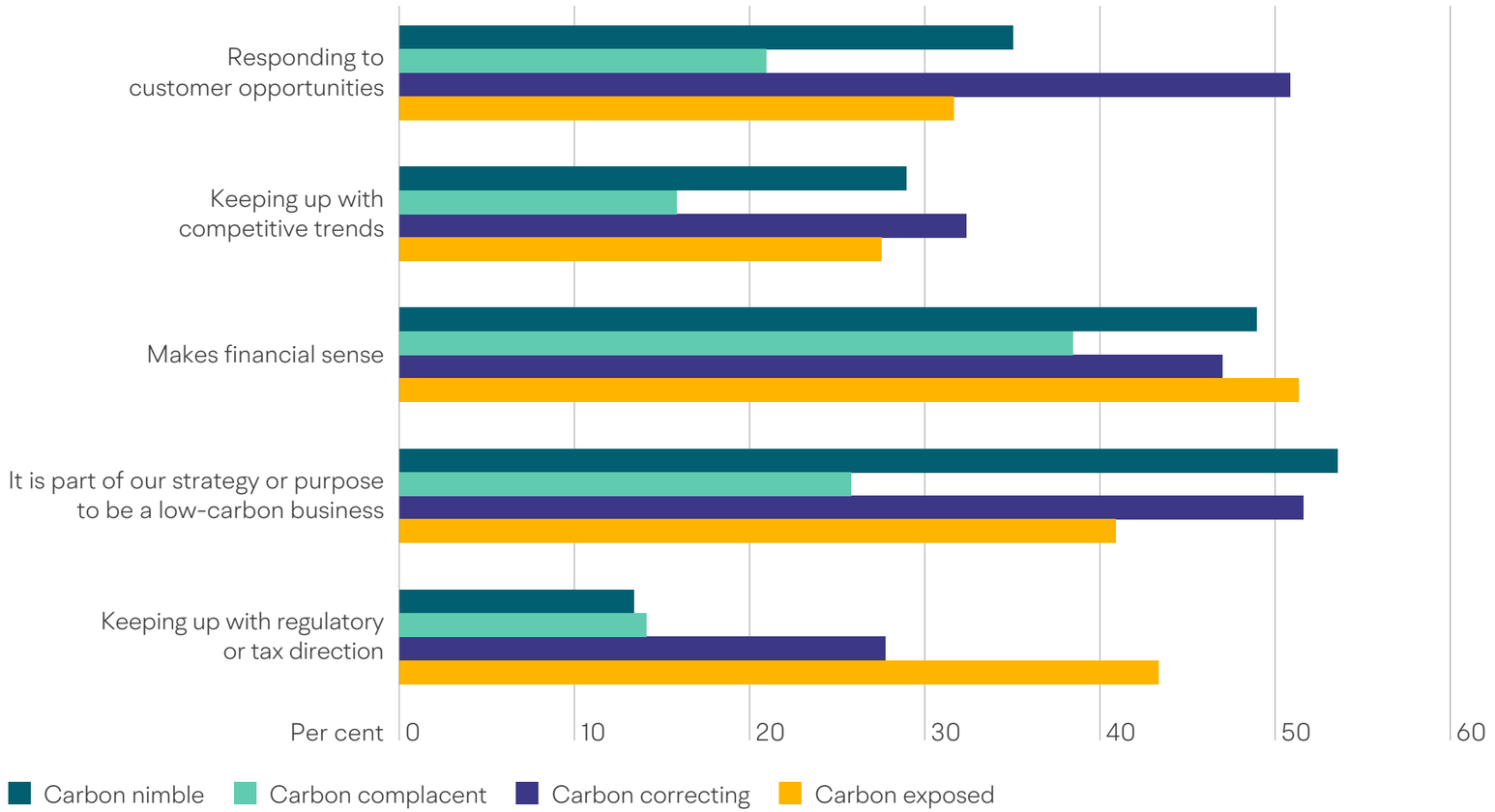


Looking at drivers from a personas perspective, it is evident that most SMEs considering net zero actions do take into account their potential impact on their bottom line (Figure 4.2). Excluding the **carbon complacent** group where 'no action taken' was the predominant response, this driver was rated highly by all personas but particularly **carbon exposed** (52%). **Carbon exposed** businesses also put more emphasis on keeping up with regulation/tax direction as a driver for action (43%) than any other persona. By contrast, **carbon correcting** and **carbon nimble** present a more proactive attitude to net zero actions. Financial motivations are important drivers for **carbon correcting** firms, as well as responding to customer opportunities and keeping up with competitive trends. Among both **carbon correcting** and **carbon nimble**, taking actions that advance a strategy to be a low-carbon business was more important than financial considerations.

Fig 4.2

Selected top three reasons for taking net zero actions, by persona

Source: In-house analysis of the British Business Bank's net zero SME survey
Base: 1,200 for most important, 1,027 for top three



Key barriers: a diverse range as cost and feasibility most cited

The responses to our survey questions on key barriers preventing action on net zero indicate that these are multiple, complex and specific to the business. Over 20 types of barriers featured in the results.

A condensed view of the types of barriers mentioned (Figure 4.3) clearly shows that **feasibility** (32%) and **cost** (35%) are seen as the main bottlenecks, and far more important than capacity/willingness to act (18%) or information (12%). This pattern can also be seen at the individual barrier level (Figure 4.4), where the most frequently reported factors were the **upfront capital cost** of net zero actions (21%), and **lack of an appropriate technology/infrastructure or vehicles** (18%).

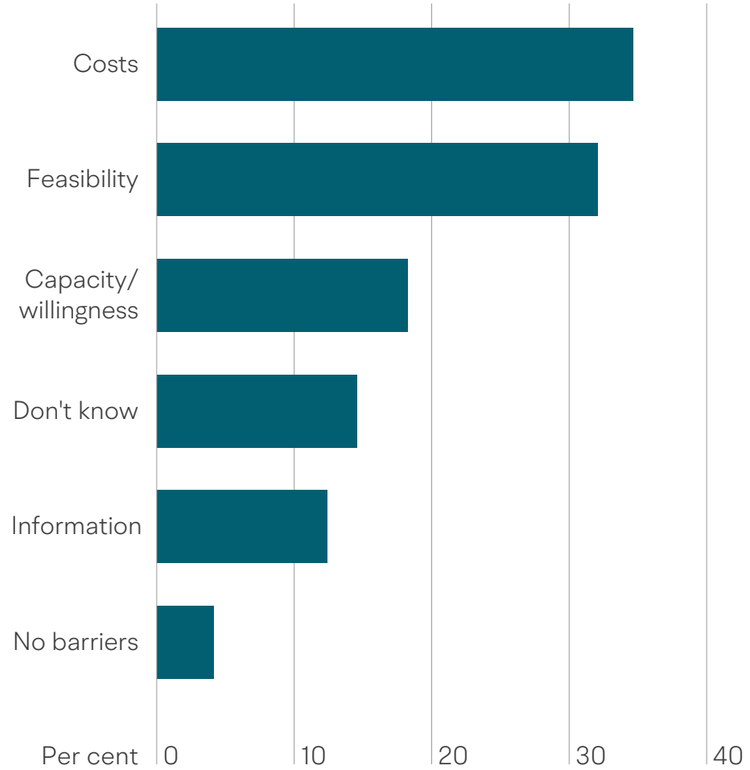
The importance of cost-related barriers is consistent with the findings of previous surveys. At the same time, our results show a more nuanced picture, where costs are a key issue, but many SMEs are also held back by a perceived lack of net zero solutions that work for them. Another recurrent issue related to feasibility was **lack of control over the action** (15%), as many businesses felt unable to take action without input or cooperation from others, eg landlords or supply/distribution chain partners.

From a cost perspective, **lack of available cash/ finance** was also among the top 10 barriers mentioned, alongside **ongoing operating cost** (at 11% and 9% respectively). As a result, it seems likely that more SMEs would consider taking net zero actions if the multiple challenges related both to internal and external finance availability were addressed.

Fig 4.3

Barriers to net zero actions, grouped by broad type

Source: British Business Bank's net zero SME survey
Base: All participants (1,200); multicode*



* Proportions represent the share of SMEs that reported at least one barrier within the relevant category

When capacity/willingness were mentioned as barriers to net zero actions, this was often justified by the low level of priority the business gave to such actions or related objectives (mentioned by 13%). Further, a significant group of businesses (15%) said they didn't know what their barriers were. This suggests that low engagement/interest has as much relevance as a barrier as others in the top 10.

According to the results of the ERC Business Futures Survey Covid-19 has both driven the adoption of net zero practices and acted as a key barrier. The pandemic does not feature as a key barrier in our survey (mentioned by only 2% of respondents).[20] Similarly, regulation was perceived as both a driver and a barrier in the Business Futures Survey, but overall it does not seem very significant in our survey for the vast majority of SMEs.

Fig 4.4

Top 10 barriers to net zero actions

Source: British Business Bank's net zero SME survey
Base: All participants (1,200); multicode*

* Proportions represent the share of SMEs that mentioned each specific barrier

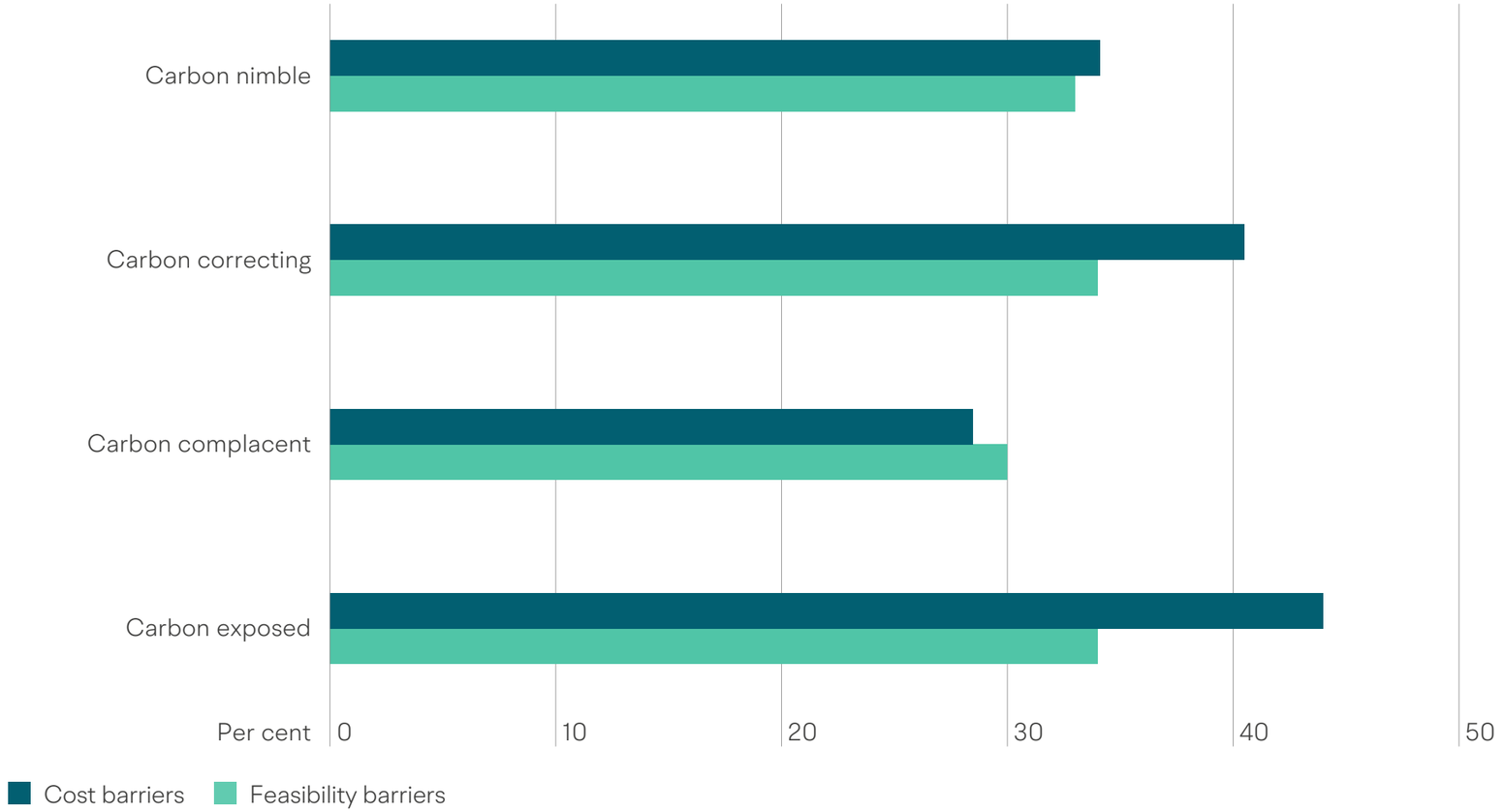
Given how prevalent cost and feasibility-related barriers were across all businesses, what drove differences across different types of businesses was mainly the extent to which either was perceived as a bigger issue. This can be seen across personas as well as across sectors.

The **carbon exposed** were the group that placed the most importance on net zero actions, and therefore also looked at cost as the most significant barrier (Figure 4.5). So did the **carbon correcting** group, suggesting that this may be a greater barrier for SMEs that are more carbon intensive and/or have planned significant investments relating to net zero. For the other two groups, cost was important but less of a concern, and mentioned as often as feasibility-related barriers.

Fig 4.5

Feasibility and cost-related barriers to net zero actions, by persona

Source: In-house analysis of the British Business Bank's net zero SME survey
Base: All participants (1,200)

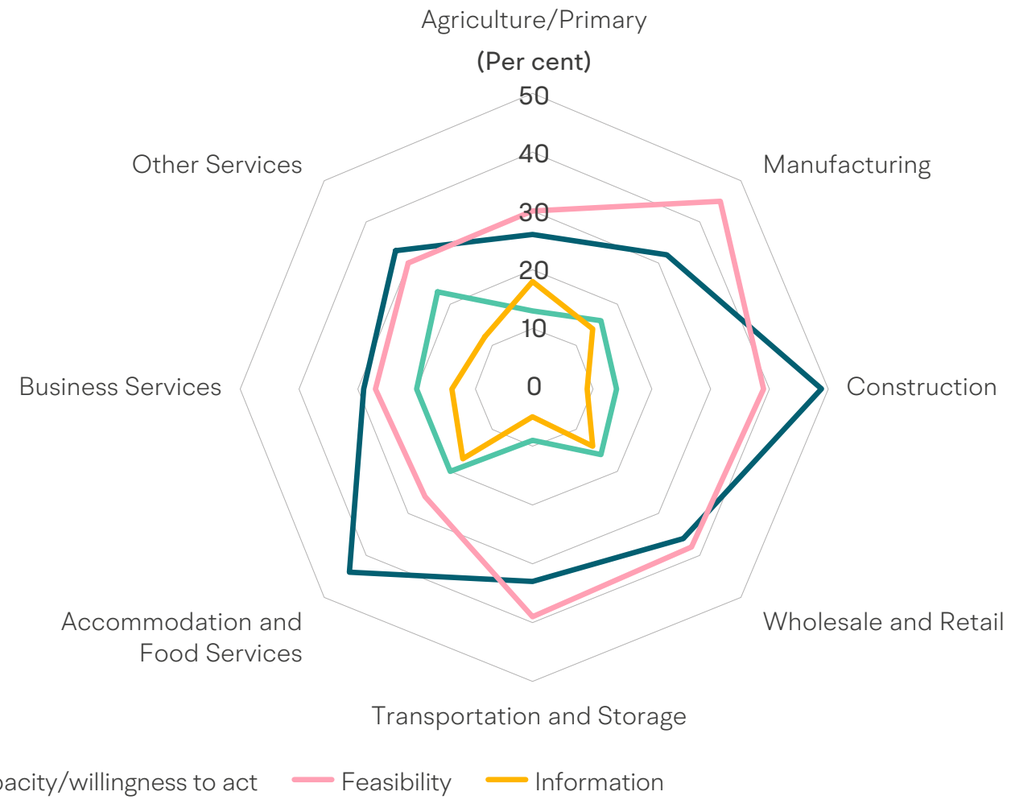


Sectoral differences on these two barriers were even more significant, particularly on cost (Figure 4.6). This was by far the greatest barrier in Construction and Accommodation and Food Services, while businesses in Manufacturing, Wholesale and Retail and Transportation and Storage more frequently said they were being held back by feasibility-related challenges. Service-based industries - with a partial exception for Accommodation and Food Services - were slightly less likely to mention either barrier, but more frequently mentioned capacity/willingness to act as a barrier compared to all other sectors.

Fig 4.6

Barriers to net zero actions grouped by broad type, by sector

Source: British Business Bank's net zero SME survey
Base: All participants (1,200); multicode*



* Proportions represent the share of SMEs that reported at least one barrier within the relevant category

Key enablers: tax, information and finance most popular

Overall, SMEs identified information, tax, external finance (including grants) and clearer standards and regulations as helpful policy levers to encourage more action.

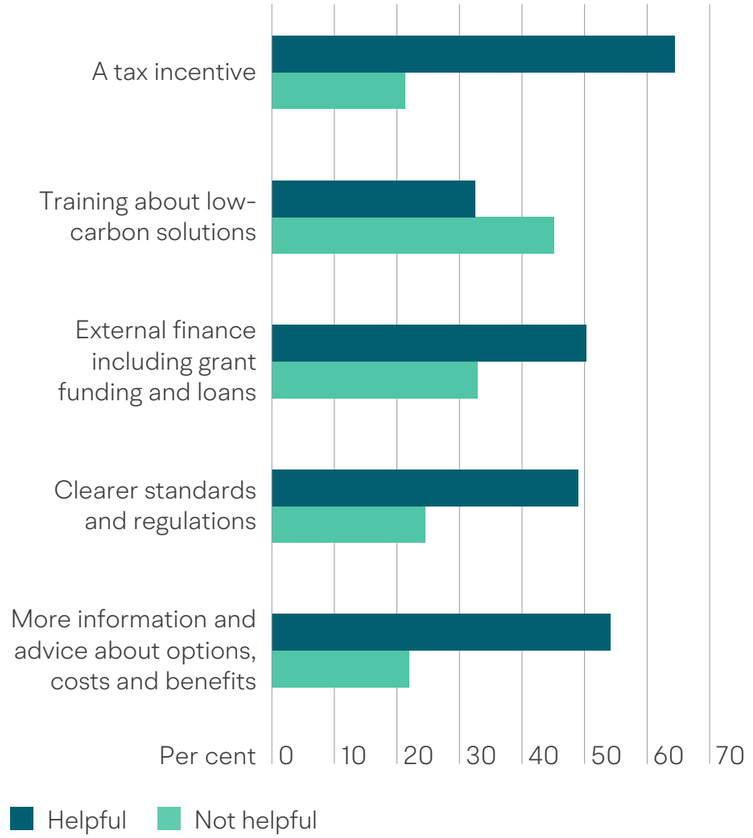
The survey data on enablers shows there was a clear consensus (64%) across all kinds of smaller businesses that **an intervention through the tax system** would encourage action (Figure 4.7). **Information, external finance (including grants)** and **clearer standards and regulations** were also all rated as helpful by at least half of the respondents. The only exception was **training about low-carbon solutions,** which most businesses perceived as less effective in encouraging more action.

Crucially, there were differences in how these enablers were perceived when the data was broken down, including when viewed on a macro region, sector and persona basis.

Fig 4.7

Perceived usefulness of enablers for net zero actions

Source: British Business Bank's net zero SME survey
Base: All participants (1,200); single code, rotating questions on all

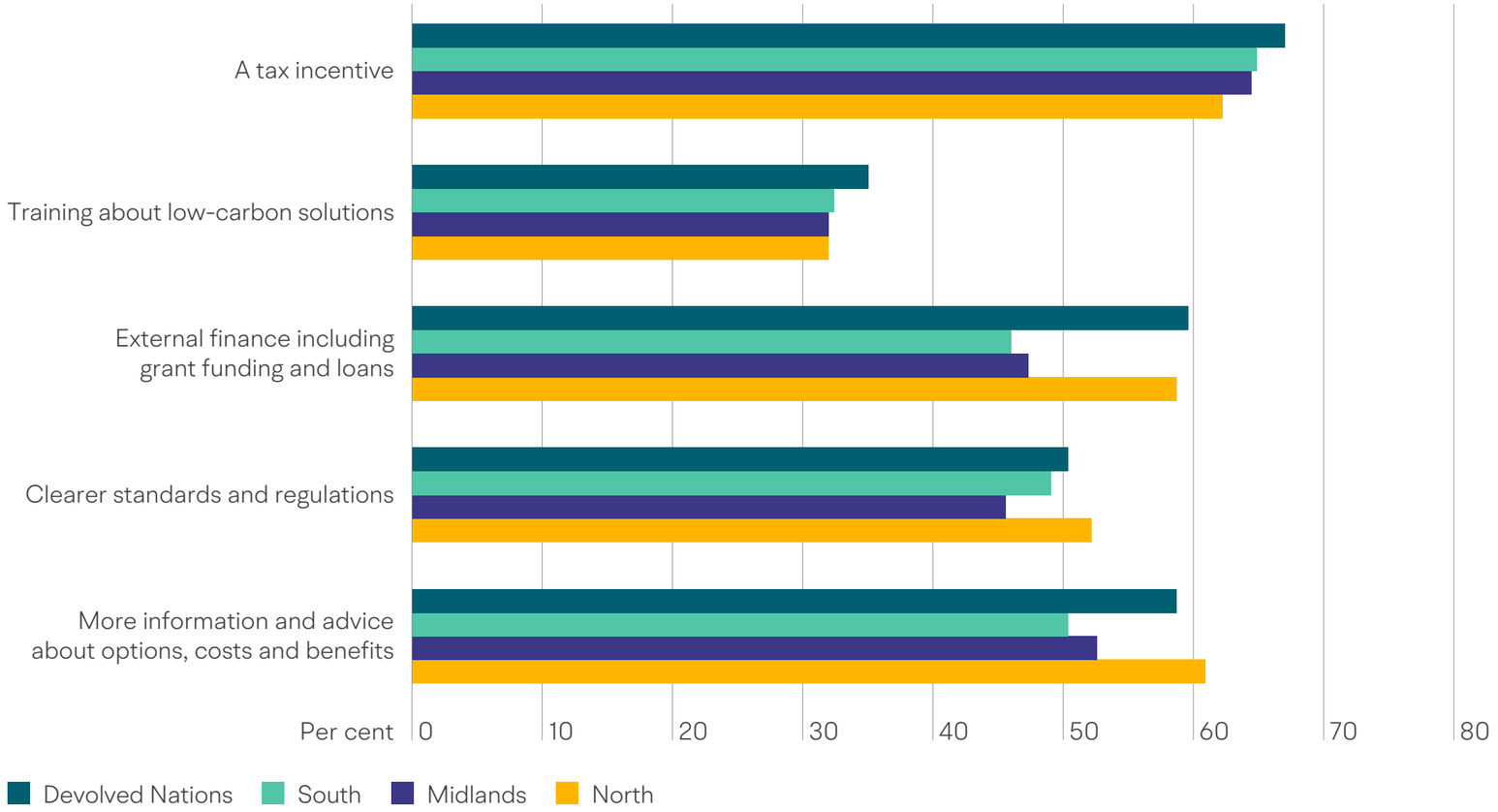


Starting with UK macro regions (Figure 4.8), the North and Devolved Nations are more positive towards receiving more information about emissions-reducing options and external finance than the South and the Midlands, where a tax incentive is the only enabler seen as helpful by more than 60% of businesses. This may be an indication that businesses in the North and Devolved Nations currently face greater challenges in getting the right information and external finance they need to do more to reduce their carbon emissions.

Fig 4.8

Perceived usefulness of enablers for net zero actions, by enabler and macro region

Source: British Business Bank's net zero SME survey
Base: All participants (1,200); single code, rotating questions on all



Sectors also appear to perceive these enablers differently (Figure 4.9), with three patterns emerging on the most frequently mentioned enablers (tax incentives, external finance, information about emissions-reducing options). In Construction and Manufacturing, tax incentive is the only enabler perceived as helpful by more than 50% of respondents. In other sectors such as Wholesale and Retail, Transportation and Storage and Accommodation and Food Services, external finance (including grants and loans) and more information about emissions-reducing options are also rated as helpful by the majority; the latter in particular is seen as helpful by 71% of Accommodation and Food Service businesses, compared with 54% overall.

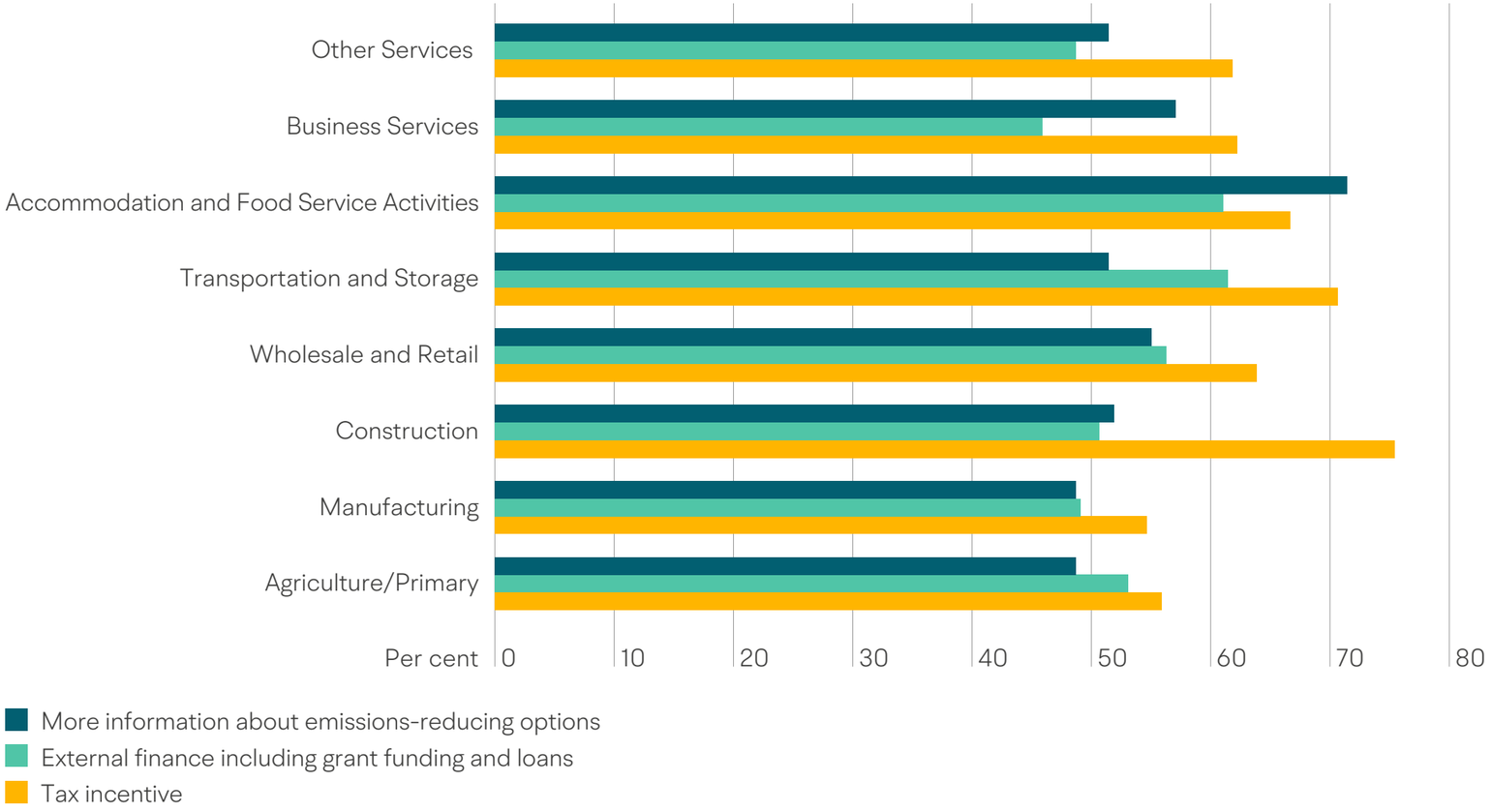
Lastly, Business and Other Services respondents are instead the least positive towards external finance, with less than half thinking of this enabler as helpful, and proportionally more would welcome more information about emission-reducing options.

These different preferences should be considered when designing enablers for net zero actions, as they suggest gaps in information, financing and incentives affect sectors to different degrees.

Fig 4.9

Perceived usefulness of selected enablers for net zero actions, by sector

Source: In-house analysis of the British Business Bank's net zero SME survey
Base: All participants (1,200); single code, rotating questions on all



General attitudes to enablers can also be different when seen through the lens of the four net zero personas (Figure 4.10). The **carbon correcting** group is less concerned about clearer regulations and standards than the **carbon nimble** and **carbon exposed** groups, and the most positive towards external finance and training (although the latter enabler was most often seen as not useful).

The majority of **carbon nimble** and **carbon exposed** businesses think all enablers except training are somewhat useful, but in the latter group there's a clear gap between tax incentives and the rest, signalling that **carbon exposed** have a greater preference for tax incentives as an enabling mechanism. For the **carbon complacent** businesses, it is unclear whether any of the discussed enablers would significantly change their attitudes towards net zero. About half think tax incentives could be helpful, but none of the enablers finds support across a significant majority of businesses within this group.

Fig 4.10

Perceived usefulness of enablers for net zero actions, by persona

Source: In-house analysis of the British Business Bank's net zero SME survey
Base: All participants (1,200)

Chapter 5

Financing action

- Currently, internal cash often funds net zero actions; 11% of smaller businesses have accessed external finance to support activity towards net zero
- Over one in five SMEs (22%) would consider external finance for net zero actions in future
- Local UK financial ecosystems remain at the early stages of net zero adaptation

Financing net zero actions often relies on retained cash

Not all net zero actions are capital-intensive or expensive to implement, but the most impactful actions often require a significant outlay of capital for individual businesses.

The cumulative level of investment required is also substantial: it is estimated that capital investment in net zero technologies in the UK will need to scale up from around £10bn/year to around £50bn/year by 2030, before peaking in 2035 and plateauing towards the 2040s.[21] Smaller businesses' contribution to this is vital and needs to be better understood.

We asked respondents to indicate how they had funded any net zero action already taken. The greatest share of businesses selecting a listed funding source said that they had used **internal retained cash or profit** (21%), followed by **external loans** (11%) and **loans from owners or directors** (9%). The remaining sources – including **grants, friends and family, equity and other sources** - accounted for less than 5% of responses each (see Figure 5.1).

Strikingly, 63% said that they used none of the sources listed. This is most likely due to the respondent not having taken any action, but it may cover other circumstances. For instance, there may be a lack of direct cost to the business for many 'softer' actions e.g. installation of a smart meter, or this could also reflect difficulty in attributing costs to specific income streams or uncertainty on the part of the respondent.

Across the personas (Figure 5.2), proportions of businesses that have accessed external finance (loans from banks and other lenders) for net zero actions taken range from 5% within the **carbon complacent** group to 25% in **carbon correcting**. Levels of activity on net zero inevitably have an impact on borrowing patterns for these four groups, but it is likely that sector and carbon intensity are also relevant, given the relatively high rate seen in the **carbon exposed** group.

Fig 5.1

Sources used to fund net zero actions already taken

Source: British Business Bank's net zero SME survey
Base: All participants (1,200); multicode

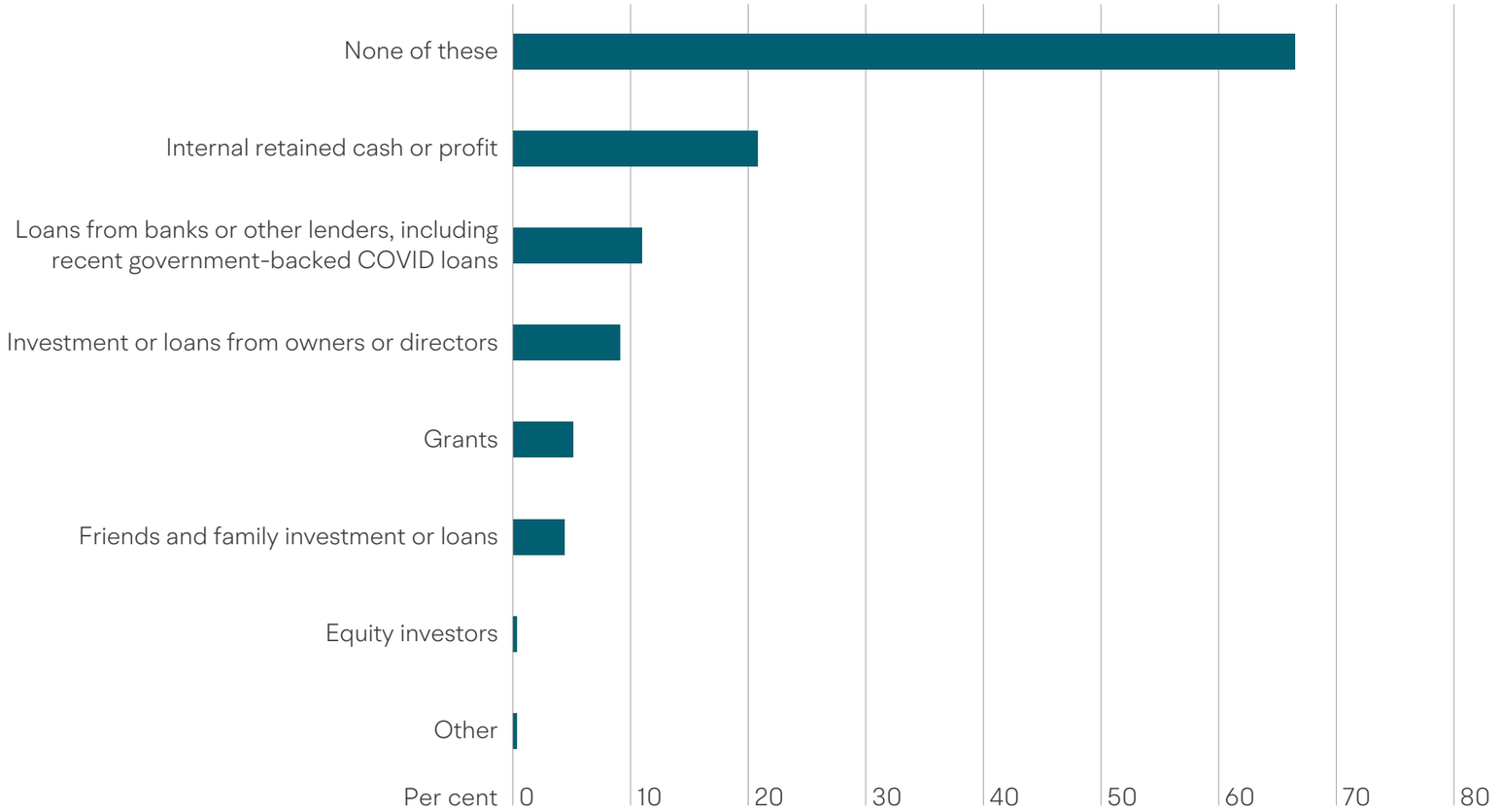
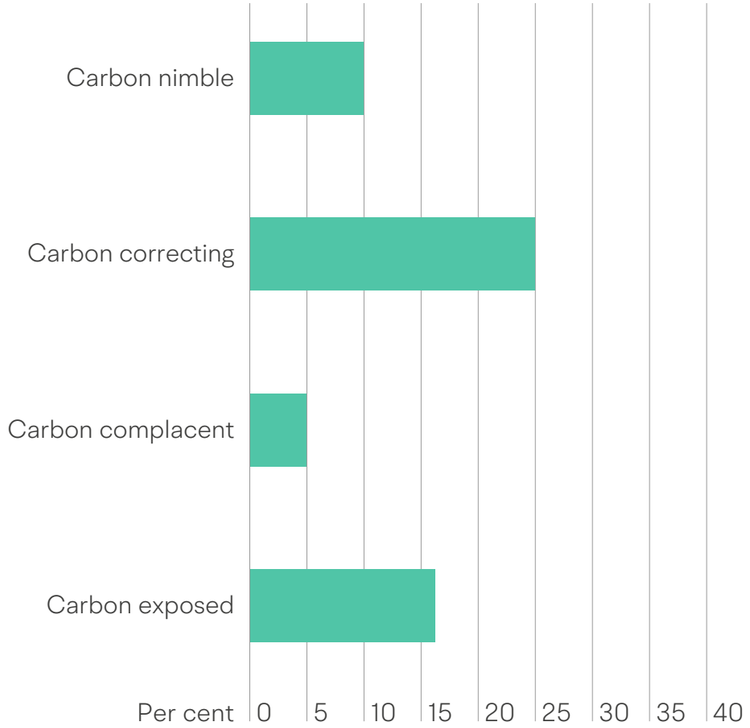


Fig 5.2

Share of smaller businesses that have accessed external loans to invest in net zero actions taken, by persona

Source: In-house analysis of the British Business Bank's net zero SME survey
Base: All participants (1,200)



Financing the future: 1.3 million smaller businesses willing to consider external finance for net zero

Finance is part of the solution to drive more action, with over one in five smaller businesses having appetite to use external finance to support future net zero actions.

So far, 11% of the smaller business population - equating to around 700,000 businesses in the UK - have already accessed external finance to support net zero actions. These figures include equity, but are overwhelmingly loan-based. Similarly, looking forward, 22% of the UK smaller business population (equivalent to around 1.3 million businesses) say they are prepared to access external finance, largely via loans, to support net zero actions in the next five years.[22] For context, this equates to about half of smaller businesses that currently say they would be happy to borrow to grow (37%).[23]

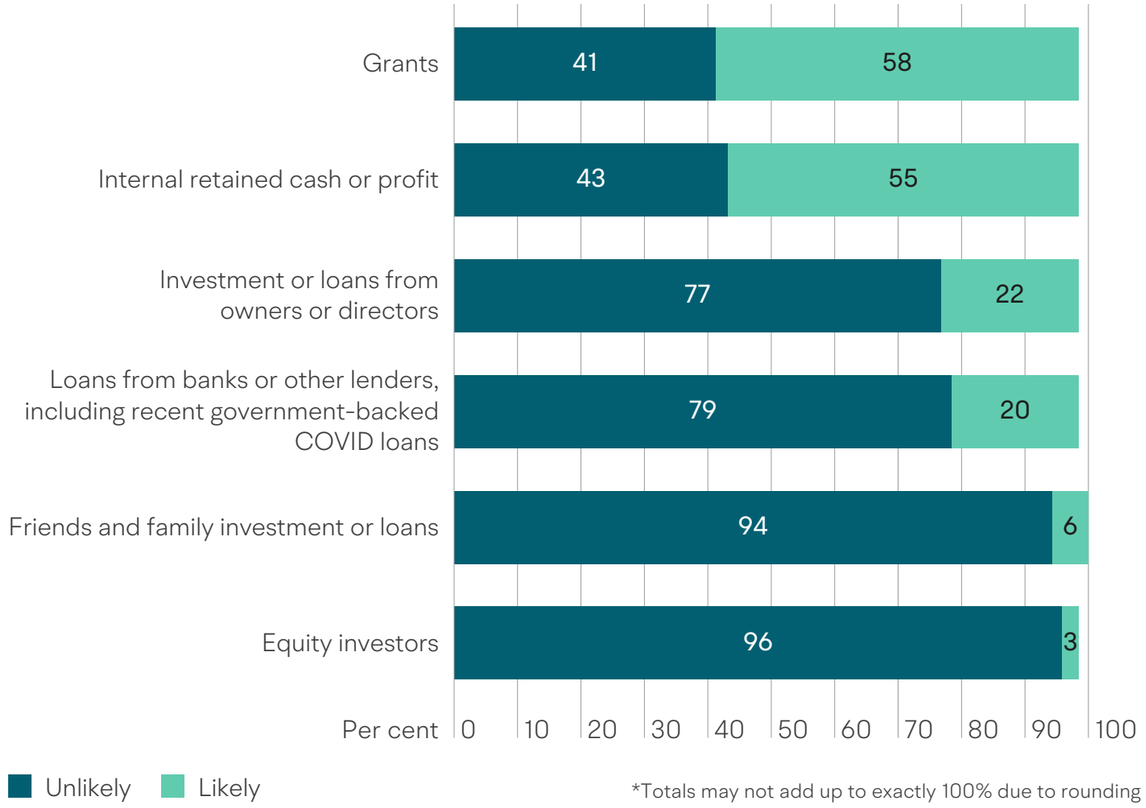
Fifty-eight per cent of SMEs who are considering or already doing at least one action said that they would be very or fairly likely to access **grant funding** to support future net zero actions, ahead of **retained cash/profit** (55%), **external finance from banks or other lenders** (20%) and **investments/loans from owners/directors** (22%). Fewer than 10% were open to **equity** or **investment/loans from friends and family.**

Businesses in different sectors show differing attitudes to accessing external loans to invest in net zero actions (Figure 5.4). For instance, more than a quarter of businesses in Agriculture and Primary Industries, Transportation and Storage, and Wholesale and Retail say they are likely to use loans in the future for this purpose, but this proportion drops to only 15% in Construction and Business Services respectively.

Fig 5.3

Propensity of SMEs to access financial support for net zero actions*

Source: British Business Bank's net zero SME survey
Base: Participants who are considering/doing at least one net zero action (877); multicode, rotating questions for all

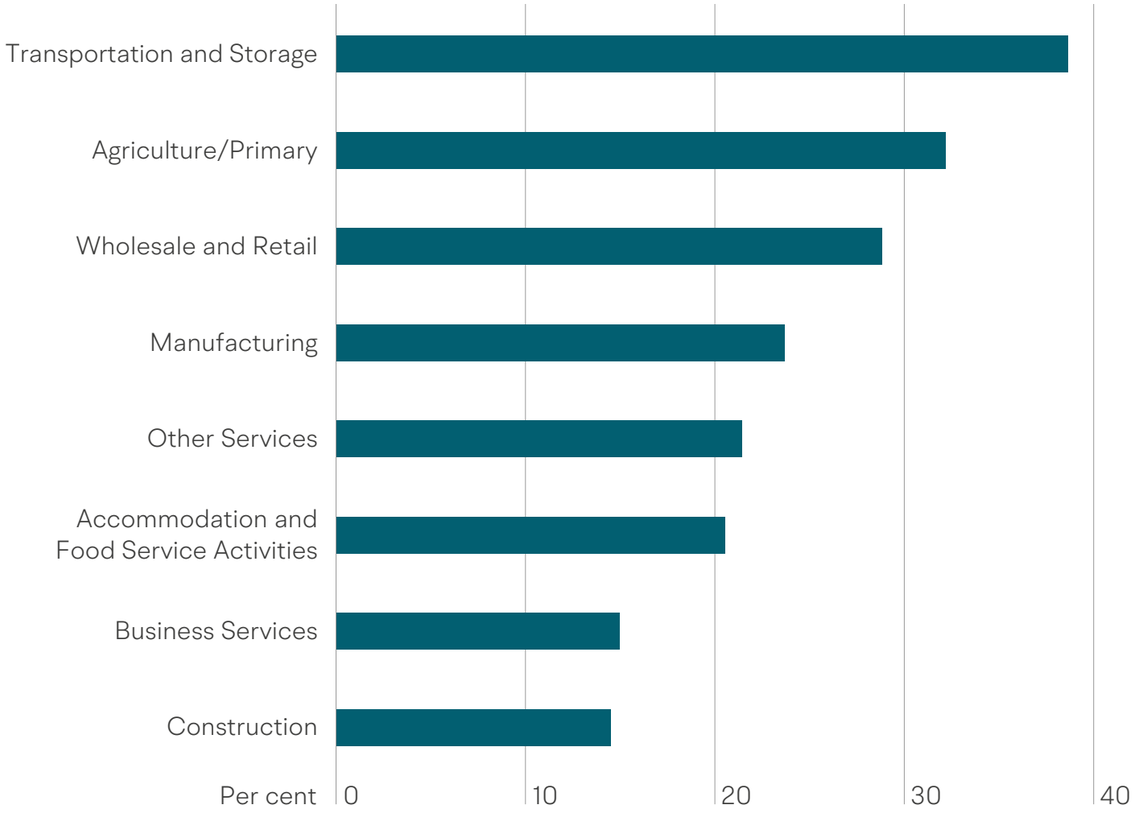


*Totals may not add up to exactly 100% due to rounding

Fig 5.4

Propensity to access external loans for future net zero actions, by sector

Source: British Business Bank's net zero SME survey
Base: Participants who are considering/doing at least one net zero action (877); multicode, rotating questions for all



Current levels of engagement and activity are key in explaining attitudes to external finance. This is best illustrated by looking at the results across the four personas (Figure 5.5). Appetite for net zero external finance (loans) is highest (33%) for the **carbon correcting** group, suggesting that those that are most engaged and have the furthest to travel in reducing their carbon emissions appear most likely to consider external finance for future actions.

However, the majority would not consider external borrowing to support actions contributing to the net zero target. This may reflect some reluctance to borrow for net zero actions in the still challenging financial climate, but could also result from gaps in supply or information about suitable borrowing options. Numerous sources agree that for the finance system to be effective at incentivising action among businesses (and particularly SMEs), it must consider environmental factors systematically[24] and offer solutions that mitigate the specific financing challenges related to net zero investments (eg complex risk assessments or long payback periods).[25]

A relevant study commissioned by our UK Network sheds some light on how business finance intermediaries[a] perceive the current state of the market for net zero financial products and the key factors impacting SMEs' access to these products. In particular, the research findings (discussed in more detail in Box 1) illustrate stark differences in terms of intermediaries' understanding and engagement in the context of net zero. They also show a clear gap in:

- Intermediaries' knowledge of net zero finance options and ability to provide advice
- SMEs' ability to assess the combination of finance options available.

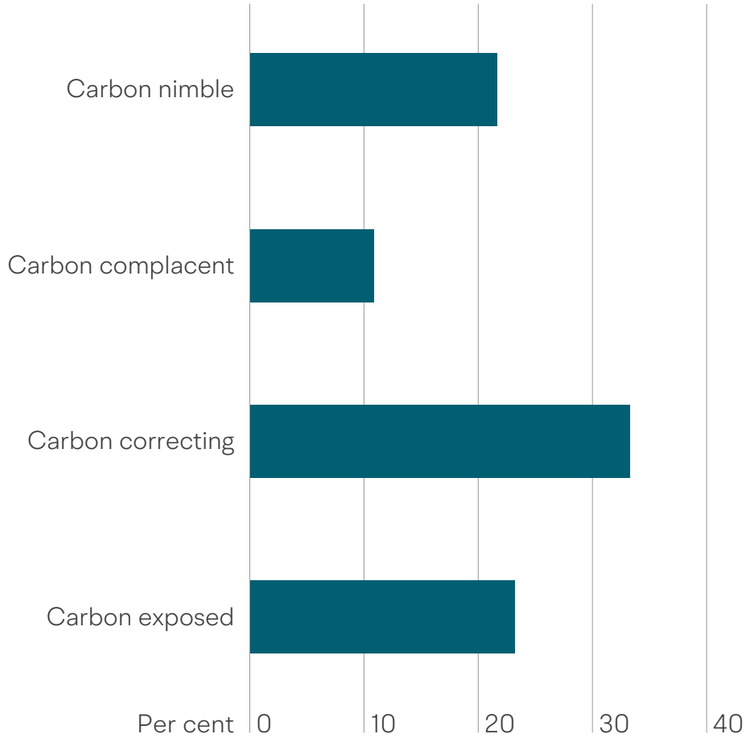
[a] Defined as the range of actors that are involved in the finance journey for businesses, including lenders, funders, advisors, entrepreneurs and business networks.

Fig 5.5

Propensity to access external loans for future net zero actions, by persona

Source: In-house analysis of the British Business Bank's net zero SME survey

Base: Participants who are considering/doing at least 1 net zero action (877)



Box 1

A developing ecosystem - SME Intermediary Survey findings

During June and July 2021, the Bank's UK Network (UKN) field team held in-depth conversations with 159 business finance intermediaries across the UK's regions and Devolved Nations to investigate the state of the SME finance ecosystem in relation to net zero-related projects.

An opportunity for development

Over three quarters (78%) of intermediary respondents saw a business opportunity in helping their clients with their net zero-related projects. Over half, 64%, reported that they were either currently developing their own professional service offerings, or planned to, to support SMEs.

Room for improvement

However, 60% of those surveyed felt that the business support ecosystem did not currently help SMEs to understand and identify net zero-related projects. Furthermore, the majority saw difficulties for SMEs assessing the combination of finance options available and their ability to access them (73% and 74% respectively). The following potential reasons for this were highlighted within the UKN's research:

- Undersupply of net zero related finance
- The need to match advisers to SMEs seeking help

Undersupply of net zero related finance

Many respondents (39%) perceived that there is an inadequate supply of finance dedicated specifically to net zero across their region or nation. A business finance broker commented:

> "We would refer to one or two specialist lenders, albeit they only deal in renewables."

Box 1 (continued)

The need to match advisers to SMEs seeking help

Another key barrier identified for the ecosystem was linking SMEs with the right advisers - 38% of intermediaries reported that this was a major barrier to helping SMEs access finance for net zero-related projects. Respondents called out specific issues such as a poor referral network, a lack of specialist advisers and a lack of signposting or information that was easy for SMEs to understand. A public sector intermediary's comment provided further insight:

> "There needs to be something more formal and more structured. At the moment the ecosystem is not well formed and relies on a few people/ organisations to promote these projects."

SME finance ecosystem not proactive on net zero

Intermediaries focused on smaller and micro SMEs reported that their clients currently had other priorities. Therefore, at the time of surveying, respondents' net zero-related support services were typically only being provided on a reactive basis.

Low levels of adviser preparedness

40% of respondents admitted to not having everything they needed to support SME clients looking to finance net zero projects. Many cited requirements to put their own house in order, improve in-house expertise, expand networks and establish new collaborations. Overall, only a third judged themselves as ready.

Annex 1

Methodological note and evidence review

- This annex provides details on the approach to the research, for example on the design and delivery of the survey
- It further includes a summary of an evidence review, undertaken as part of the background to this work

Approaching our methodology

Within our overall approach to the research, we developed certain specific methodologies to support our objectives, whether in terms of primary or secondary data gathering and analysis.

Research objectives and activities

In order to help further understanding and develop an enhanced evidence base with regards to smaller businesses and their transition to net zero, we started by identifying relevant research objectives, abridged below:

- describe UK smaller businesses emissions, using publicly available data
- understand actions on net zero taken, planned and considered by SMEs, and identify barriers and enablers for actions
- develop a 'transition journey' framework based on SME actions relating to emissions reduction; this would support an estimate as to the relative 'transition maturity' of the SME population
- understand baseline attitudes and awareness of SME owner-managers towards net zero
- consider firm/owner-manager characteristics, and which correlated most with different degrees of actions taken and/or planned
- develop a data-driven segmentation of SMEs, considering transition maturity and other relevant parameters, ideally to identify more targeted and distinct relevant 'personas'

The research activities put in place to address these objectives included:

- an **analysis of secondary data on SMEs' greenhouse gas (GHG) emissions,** triangulating datasets from the Office for National Statistics and from the Department for Business, Energy and Industrial Strategy. Top level estimates for SMEs are presented in the report at Chapter 1, and a summary of the methodology used in their generation is given below; a background review on relevant emissions data and literature is given in Annex 2.
- an **evidence review** based on the existing academic and policy literature on SMEs and their approach to environmental practices. The review fed into the research, including the development of the questionnaire, and supported a better understanding of literature gaps and the wider context around SMEs' decarbonisation efforts. A high-level overview of the findings is provided later in Annex 1.

– a **survey targeting UK SMEs, to understand their of net zero attitudes, practices and actions.** In line with our research objectives, and having considered the nature of existing research and literature, we designed a survey exploring business characteristics, net zero actions planned, considered and taken, and perceived barriers and enablers to actions. The survey was administered to 1,200 SMEs using an approach described later in this annex, which allowed us to reach a representative sample of the UK SME population.

Estimates of SMEs' contribution to UK greenhouse gas emissions

The estimates of the contribution of SMEs to UK business and overall GHG emissions provided in Chapter 1 were calculated in mid September 2021, using the latest releases of relevant data sources available at that date. The main ones were:

– UK GHG emissions by Standard Industrial Classification (2019 final estimates), published by the Department for Business, Energy and Industrial Strategy (BEIS) on 24 June 2021[26]

– Business Population Estimates 2020, published by BEIS on 8 October 2020[27]

– Regional Gross Value Added by industry at current basic prices (2019 provisional estimates), published by the Office for National Statistics (ONS) on 26 May 2021[28]

– Annual Business Survey – UK non-financial business economy: 2019 results, published by ONS on 24 June 2021.[29]

To prepare these data sources for making the estimates, two preliminary steps were taken. As a first step, the team identified GHG emissions that are attributable to private businesses, to be used as a starting point for the estimates. To do this, we selected all Standard Industrial classification (SIC) section codes linked to private sector businesses and excluded the following:

– Activities of households as employers; undifferentiated goods and services-producing activities of households for own use

– Consumer expenditure

– Land use, land use change and forestry (LULUCF)

This does not guarantee a perfect match between emissions and the types of entities responsible, but ensures that emissions that are least likely to be linked to a substantial number of SMEs are not considered.

Following this, GHG estimates were matched to SME data from other sources based on the SIC section they referred to. This led to the further partial exclusion of the financial and insurance activities section from the calculations, as data gaps made it unfeasible to allocate emissions to businesses in that sector for all three chosen estimation approaches.

One key limitation of the data available for these estimates was the lack of information on the carbon efficiency of different types of SMEs. The Bank will be looking at ways to help address this data gap in its future research plans.

Having prepared the data, three alternative approaches were then applied to estimate the contribution of SMEs to UK business emissions and overall emissions. We used multiple methods to account for uncertainties in the estimation parameters and gaps in the data. The three approaches apportion emissions to SMEs based on:

- employment
- turnover
- gross value added (GVA).

In all three cases, two main steps were followed in the estimation process. First, the total employment, turnover, GVA and the proportion of each that can be attributed to SMEs were derived for every sector within scope. Employment and turnover were calculated from the 2020 Business Population Estimates in proportion to the values assigned to businesses with 0 to 249 employees. Since this dataset does not include data on GVA, the team extracted the overall GVA figures from ONS Regional GVA dataset and apportioned it to SMEs based on data retrieved from ONS Annual Business Survey.

As a second step, emissions per unit (of employment, turnover or GVA) were calculated using the appropriate figures for each sector. This enabled consideration of the sector's emissions 'intensity', which can vary depending on the nature of the business activities undertaken in each. The third and final step consisted in multiplying the emissions per unit by the estimated employment, turnover and GVA attributable to SMEs. This provided an estimate of total emissions contributed by SMEs in kilotonnes of GHG (on a carbon dioxide equivalent basis), which was then divided by UK emissions from businesses and total emissions, to derive proportional estimates.

Survey methodology

The survey comprised 1,200 interviews conducted between 3rd August and 3rd September 2021, using computer-assisted telephone interviewing (CATI) and based on a sample purchased from a commercial business database. The survey fieldwork was carried out by Ipsos MORI on behalf of the British Business Bank.

The survey targeted small and medium-sized businesses, defined as businesses with 0 to 249 employees, based in the UK. Quotas were set by employment size, sector and region to secure a representative pool of responses. Further, survey eligibility was limited to respondents who could confirm they were the business owner, a senior manager and/or someone with responsibility for managing business finances, and screening questions were included to verify that their business also met the following additional criteria:

- be a for-profit private sector organisation
- be currently trading or if not trading, on a temporary pause.

The interviews had an average length of 27 minutes per business. The representativeness of the results was further ensured by weighting the data to reflect the 2020 SME business profile (in terms of size, sector and region) from the Business Population Estimates 2020, published by BEIS.

The survey mostly consisted of close-ended multiple-choice questions, with a limited number inviting open-ended answers. Respondents were typically asked to choose one answer option only; Figures in the report define the underlying data as single code when this applies, or multicode when respondents could choose more than one option.

The number of SMEs that were asked each question (referred to as 'base' in the Figures) is reported under each Figure. Some Figures use more detailed base breakdowns, where applicable.

Net zero physical actions

Working with experts from a consortium led by the Energy Systems Catapult, the British Business Bank identified 24 main net zero actions that SMEs could take to reduce their carbon emissions. These were shortlisted as the core actions from an initial longlist of around 50, in an effort to keep the response burden for SMEs at a reasonable level.

The 24 actions in the survey were divided into four 'action areas' in the survey based on how they contribute to reducing emissions in each of the three 'scopes' defined by the Greenhouse Gas Protocol, a widely used greenhouse gas accounting standard.[30] The three scopes are:

- **Scope 1,** covering direct emissions from owned or controlled sources
- **Scope 2,** which includes indirect emissions from the generation of purchased energy
- **Scope 3,** consisting of indirect emissions (not included in Scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions

The mapping of each action area against the three scopes is as follows, and visualised in Figure A1.1:

- **Energy efficiency of business premises and equipment.** Actions falling under this category are designed to reduce emissions from electricity used for buildings and processes, and fuels consumed for heating and processes. The former are typically reported as Scope 2 emissions, and the latter as Scope 1.
- **Business vehicles, travel and employee commuting.** This category includes actions taken for the purpose of reducing two types of emissions. First, emissions from transportation of employees and/or goods, in vehicles owned or controlled by the reporting company. These are typically accounted for under Scope 1 if they use fuels, or Scope 2 if they are electric vehicles. Second, they include actions to reduce emissions from transportation of employees to and from work, which fall under Scope 3 emissions.

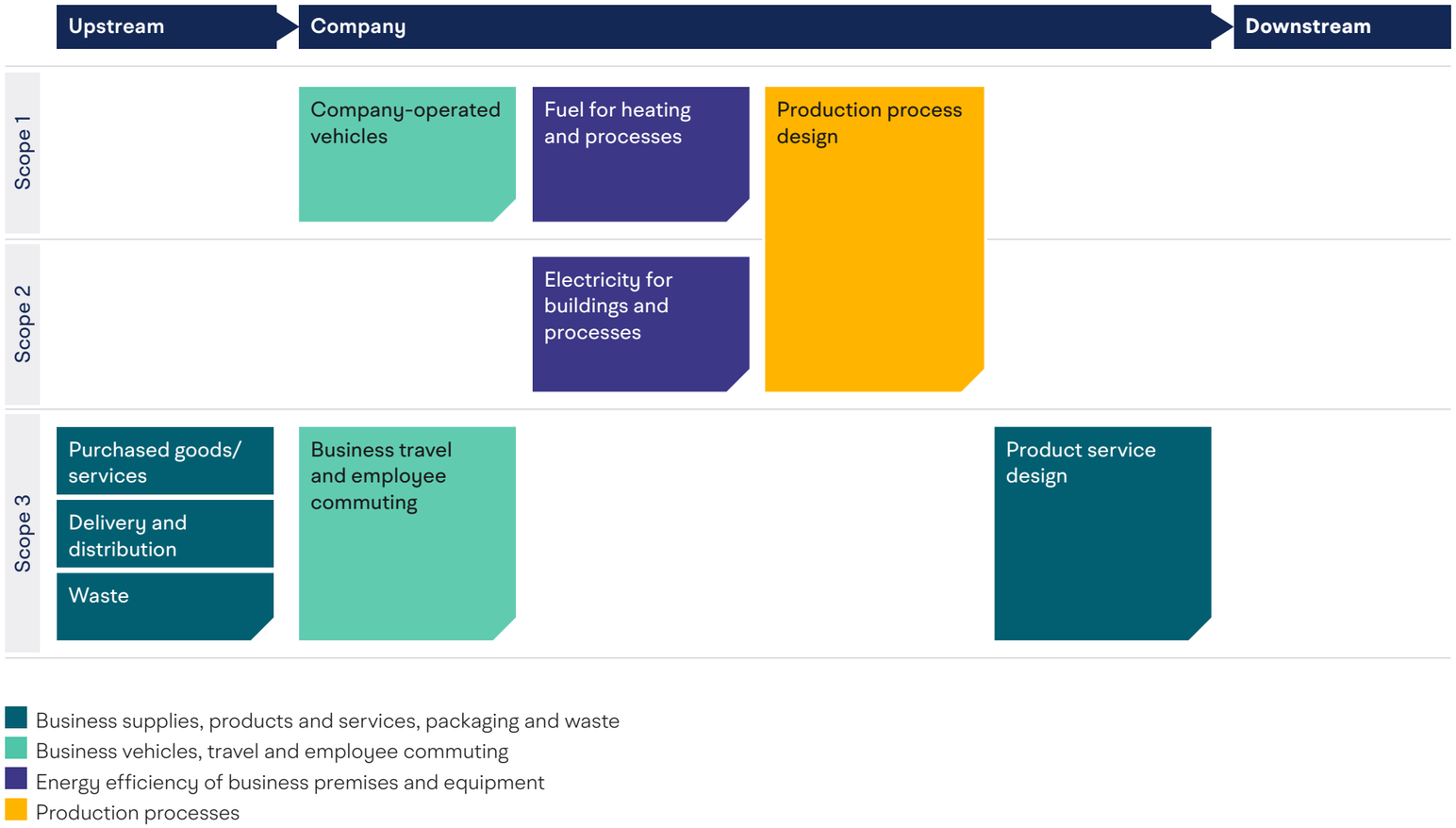
– **Production processes.** These actions aim to reduce emissions deriving from manufacturing process design, which are typically reported under Scope 1 and 2. Questions on actions in this category were only asked to SMEs that manufacture goods.
– **Business supplies, products/services, packaging and waste.** This category covers actions mainly designed to reduce emissions from the following activities, which are all reported as Scope 3 emissions: purchased goods and services; delivery and distribution services; product and service design; treating waste from business operations.

Note that all questions on actions involving employees were not asked to SMEs with no employees.

Fig A1.1

Mapping of the survey's net zero action areas against GHG protocol scopes

Source: British Business Bank



Another key classification used for net zero actions covered the extensiveness of the actions ie their complexity, level of investment/effort required, and size of impact on carbon emissions. Specifically, the actions presented in Figure A1.2 were defined as 'extensive', with all others described as 'simple'.

Fig A1.2

Actions classified as 'extensive' by net zero action area

Source: British Business Bank

Net zero action area	Extensive actions
Energy efficiency of business premises and equipment	Install smart controls (for lighting, heating or ventilation)
	Improve building insulation
	Install more efficient heating or ventilation system
	Install renewable energy generation
	Select an energy-efficient building (when choosing business premises)
Business vehicles, travel and employee commuting	Introduce very-low-emissions business vehicles
	Introduce incentives for employees to buy electric cars for personal use
Production processes	Install automated or smart controls to reduce waste (for example of energy or materials; to avoid overheating/overcooling)
	Install more energy-efficient production equipment or make other changes to a production process to reduce energy use
	Install a heat recovery system
	Switch to an alternative manufacturing process with a lower-carbon footprint
Business supplies, products and services, packaging and waste	Redesign product or service to have lower carbon emissions during manufacture, in-use, or at end of life (such as changing to lower-carbon product packaging methods)
	Taking any emissions-reducing actions with suppliers, customers or partners

Transition journey framework score calculation notes

The transition journey framework (TJF) presented in Chapter 2 aims to measure SMEs' progress on their transition to net zero emissions by calculating a maturity score for each based on their performance on three dimensions: awareness and engagement, knowledge and capabilities and physical actions. Each of these, in turn, consists of multiple components that contribute in different degrees to the performance of SMEs on a given dimension.

The components covered by each dimension are presented in Figure A1.3, alongside their weighting. The components of the TJF were tested for reliability using the McDonald's Omega and Cronbach's Alpha coefficients. This analysis confirmed that our framework meets the commonly accepted thresholds for reliability on both tests (0.73-0.74 respectively).

As is often the case with index measures, the weighting was developed based on a qualitative understanding of the importance of each component. In particular, a number of principles were applied to ensure the weightings would be meaningful:

- action is more likely to occur when businesses take reducing carbon emissions as a priority and have specific targets around this, than based on awareness alone
- measuring the business carbon footprint is important, but may not be practical for every business and therefore shouldn't completely drive the assessment of net zero knowledge and capabilities; this dimension should give greater consideration to other actions that businesses are taking to improve knowledge, culture and capabilities around decarbonisation
- the quantity of actions already taken should be the most important aspect assessed under the physical action dimension, but consideration should also be given to the complexity/level of effort associated with of those actions. To a lesser extent, the quality and quantity of any actions that the SME is planning/considering (but has not yet taken) should be taken into account.

Fig A1.3

Dimensions and detailed components of the transition journey framework

Source: British Business Bank

TJF dimension	Dimension components and weight
Awareness and engagement (Max score: 20)	Awareness (40%)
	Prioritisation and target-setting (60%)
Knowledge and capabilities (Max score: 20)	Carbon footprint measurement (30%)
	Net zero capability-building actions taken (70%)
Physical actions (Max score: 60)	Net zero actions taken - all (50%) and extensive actions (20%)
	Net zero actions planned/considered – all (20%) and extensive actions (10%)

All components are based on data sourced from responses to questions asked in the British Business Bank's net zero SME survey, recoded to align with the scoring system used in the TJF. In undertaking this step, a key challenge that emerged was the fact that some businesses were asked fewer questions on physical actions than others, because they did not have separate business premises, had zero employees, and/or did not manufacture or make goods. To address this, actions were weighted so that respondents excluded from some sections would receive proportionately more points for any actions taken or considered.

Estimates of SMEs' emission levels extrapolated from the survey

To better understand the emissions intensity of SMEs responding to our survey, we classified them in eight emission bands based on information they provided in the survey on their annual energy spend and quantity and use of business vehicles, combined with the following secondary sources:

- Gas and electricity prices in the non-domestic sector, published by Department for Business, Energy and Industrial Strategy and last updated on 29 June 2021[31]
- Greenhouse gas reporting: conversion factors 2021, published by Department for Business, Energy and Industrial Strategy on 02 June 2021[32]

This approach is not intended to provide an accurate measurement of each responding SME's carbon footprint, which would not have been feasible within the time and level of information and effort that could reasonably be expected from a voluntary survey participant. Nevertheless, it was important for the analysis to take into account how the SMEs compared on emissions, which helps define the 'starting point' for their transition journey. To this end, the eight emission bands provide some indication of whether the SME is best described as a low or high emitter (relative to other SMEs) and has informed the development of the personas. The emission bands and corresponding carbon emission ranges are provided in Figure A1.4, alongside the proportions of SMEs in the survey sample that fall under each.

Fig A1.4

SMEs by the estimated emission band

Source: British Business Bank
Base: All participants (1,200)*

Emission bands	Per cent of SMEs in the sample
1 (up to 5Kt CO2e)	34
2 (5-10Kt CO2e)	25
3 (10-20Kt CO2e)	12
4 (20-50Kt CO2e)	14
5 (50-100Kt CO2e)	6
6 (100-150Kt CO2e)	2
7 (150-500Kt CO2e)	6
8 (over 500Kt CO2e)	2

* Percentages may not add up to exactly 100% due to rounding

In developing the emission bands, we combined the survey-provided data along with the secondary sources using the following approaches. Taking emissions from business premises first:

- we began with extrapolating energy consumption from the energy spend information provided in the survey. This was calculated under the assumption that the spend would be roughly equally distributed between electricity and gas.[33] The spend was then divided by the unit prices for the two sources for the respective size category to derive an estimate of electricity and gas consumed per year in Kwh.
- we then converted energy consumption into estimated carbon emissions from business premises. Conversion factors for electricity and gas were used to calculate the carbon dioxide equivalent emissions associated with consumption of each. The two were then added together to derive an estimate of emissions from energy consumption in business premises.

Emissions from company-operated vehicles were calculated by:

- extrapolating fuel consumption from information on the number and average mileage of company-operated vehicles provided in the survey. The number of company-operated vehicles of each category (cars, motorbikes, vans/light goods vehicles, heavy goods vehicles, buses and coaches) was multiplied by the corresponding average annual mileage reported by each respondent, providing the total annual vehicle fuel consumption for each SME. Those reported as electric vehicles were excluded from the calculations to reduce complexity and account for data limitations, and thus assumed to have zero emissions; this is unlikely to have had a large impact on the estimates, as only 5% of respondents reported operating electric cars.
- converting vehicle fuel consumption into estimated carbon emissions from company-operated vehicles. Conversion factors for fuels were used to calculate the GHG emissions associated with consumption of fuel for each vehicle category. Box 2 provides more details on the specific assumptions and conversion factors used. The emission estimates thus obtained were added up to derive an overall estimate of emissions from company-operated vehicles.

Box 2

Conversion factors and assumptions used to calculate emissions for different vehicle categories

- **Cars:** average conversion factors across fuel types.
- **Motorbikes:** conversion factors for petrol (based on data availability).
- **Vans/light goods vehicles:** conversion factors for diesel (based on data availability).
- **Heavy goods vehicles:** these were assumed to all use diesel, but further assumptions were needed to apply the appropriate conversion factors in this case, due to the impact of vehicle load and refrigeration on emission levels. Specifically, the team assumed an average 50% load for all heavy goods vehicles reported, and looked at the sectors the businesses operated in to assess if they were likely to use refrigerated vehicles to transport goods (eg fresh foods, flowers, pharmaceuticals). Where this was the case, half the fuel consumption by heavy goods vehicles operated by the business was assumed to be from refrigerated ones.
- **Buses and coaches:** conversion factors were only available for buses and were used for both buses and coaches. The factors did not include information on the fuel type assumed, and were provided as emissions per passenger km for an average occupancy of 12.76 people.

Evidence review

The evidence review undertaken for this project informed the direction of the research, including the design of the survey, through identification of key trends and areas for further examination. A summary of this evidence review is presented as follows, with specific reference to barriers, actions and enablers.

Barriers to action

Research indicates that emissions reduction actions taken increase with business size, with an apparent gap between firms identifying emissions reduction as a priority and actions taken.[34] SMEs are more likely than large firms to have reported no climate change impacts on their business, while large firms are more likely to have either already invested or plan to invest in energy efficiency than SMEs.[35] Meanwhile, the Carbon Trust show two thirds of SMEs do not have a consistently documented and implemented energy policy; those who have no intention of creating one say they do not spend enough to justify it.[36]

As one example of a barrier faced by SMEs, recent international work by the Bank's equivalent institution in France, bpifrance, notes that there is a disconnect between the personal and professional attitudes of SME owner-managers, with professional concern for the environment (ie in terms of business priorities) being considerably weaker.[37]

But barriers to SMEs acting to reduce emissions are multifaceted. For example, OECD work states that uncertainty related to greening measures and the burden of greening on SME resources are prominent.[38] Further, 'eco-adopters' may be sceptical towards 'greening' – seeing it as 'draining profits while presenting uncertain market benefits'.[39] Short-term tenancy agreements and planning horizons may also present a particular challenge to SMEs.[40] This is important when considering findings examining France's full business population, that one in two managers say they will have to adapt their business model to meet net zero.[41]

When considering energy efficiency specifically, the Carbon Trust show that a lack of time and money is cited as the primary barrier preventing SME action in this area.[42] Relatedly, the European Investment Bank (EIB) also explore business approaches to their building stock and its energy efficiency. UK SMEs perceived building stock to be at a lower-than-average efficiency standard, and rightly so – based on a standard measurement framework, less of UK SMEs' commercial building stock meets high energy-efficient standards, compared to the EU. The EIB also show that UK firms allocate less investment into energy efficiency improvements (as a share of total investment) than international counterparts (including in the EU and US). This applies across the business size spectrum.[43]

Themes of regulation and taxation are commonly cited in the literature as perceived barriers to emissions reduction, including data showing the cost of meeting regulations or standards is cited by 32% of UK SMEs, behind only lack of information and the Covid-19 pandemic.[44] Set against this, one theme which has been debated extensively is the 'Porter hypothesis', which stated that environmental regulation can enhance, rather than inhibit, competitiveness.[45]

The British Business Bank's UK Network surveyed intermediaries and found that cultural barriers and a history of grant dependency may apply for UK SMEs. Moreover, information failures abound in a financial context: half of intermediaries say that they do not have sufficient knowledge of finance options for net zero-related projects, and three quarters of intermediaries think it would be difficult for an SME wanting to undertake a net zero-related project to assess the combination of finance options available.[46]

Drivers and enablers

Set against some indications of limited transition maturity above, the ERC did recently show that some of the most common net zero practices undertaken by SMEs were 'changed processes or transport/logistics to reduce carbon emissions' (with more than half reporting this), with use of more renewable energy in second place.[47]

The literature refers heavily to cost reduction as a primary incentive[48] driving actions but it is does not appear to be the only incentive. Much of the literature agrees that 'customer pressure' is an important driver influencing consumer action – also expressed as reputation and image, capturing market share and increasing competitiveness. This includes the ERC's recent study, which cites customer demand for low-carbon products/services as a key external driver,[49] and the Carbon Trust finds that SMEs are much more likely to be asked by customers to reduce their environmental impact now than 3 years ago,[50] up from 12% to 28%. Elsewhere, exposure to extreme weather events is cited as a driver of change – in other words, the proximity of consequences changed behaviour.[51]

Nevertheless, issues relating to cost remain important. ERC found that reducing costs and improving image/reputation were the most significant internal drivers;[52] similarly, the Carbon Trust point to reduced costs, reduced energy consumption and improving the environment as the main benefits to SMEs.[53]

There is varied coverage of market-level enablers in the literature. OECD research identifies that regulatory changes that reduce barriers of entry to 'eco-entrepreneurs' means these enterprises can capture market share in previously monopolistic markets, although lock-in effects of existing technologies are a barrier to overcome. Nevertheless, this demonstrates the kinds of opportunities greening can offer SMEs.[54] Another market-level intervention, carbon pricing, is advocated by many - for instance, the Zero Carbon Commission has recommended a £75/tCO2e minimum by 2030.[55] With that said, an OECD study shows that in the French manufacturing sector, there is a positive relationship between the size of firm and effectiveness of carbon pricing in reducing energy use. In other words, the effectiveness of carbon pricing might be more limited for smaller firms. This may be due to credit constraints.[56] [57]

Alongside carbon pricing, Bankers for Net Zero propose a series of measures, including reforming tax, government procurement and access to finance, scrapping VAT on low- and zero -carbon products and making all investments that reduce emissions tax-deductible.[58] In arriving at market-level solutions, several sources emphasise the importance of a sector-based approach.[59]

The London School of Economics note that for SMEs to 'participate fully in the transition they need to be made aware of what will be required of them, as well as more business, financial and legal advice'.[60] Our UK Network found that business finance intermediaries show some support for this, with 44% saying the Bank should create or signpost educational content – but as many as 70% go further in support of an intervention to boost the supply of finance relating to net zero. Intelligence from our UK Network also indicates that intermediaries are largely at an early stage in developing green finance products and some lack understanding of the issue.[61]

Some of the literature notes that increased corporate social responsibility and/or improved wellbeing measures act as a driver of green practices, whether intentionally or not. The Covid-19 pandemic appears to have played a dual role in the adoption of net zero practices in UK SMEs. It has both driven adoption - as some firms have sought to reduce costs in times of crisis - but has also constrained diffusion. Nearly half of firms in the ERC's Business Futures Survey stated that Covid-19 was a barrier to their net zero practices.[62]

The literature also points to some methodological challenges. As with every research methodology, self-reported surveying has some drawbacks. For example, awareness (and motivation) can be challenging to gauge via self-reported surveys of SME owners, which may be a limitation in survey-based research approaches; self-reporting may also lead to overemphasis of external barriers compared to internal factors.[63]

Annex 2

Smaller businesses' greenhouse gas emissions – technical note

- This annex examines relevant aspects of UK emissions data, which forms part of the background to this work
- Includes consideration of UK business emissions from a sector, region and SME perspective

Key features of UK emissions data

The baseline used for monitoring progress towards the Climate Change Act net zero target are the territorial estimates of the UK's greenhouse gas (GHG) emissions, published by the Department for Business, Energy and Industrial Strategy (BEIS).

Territorial emissions statistics focus on measuring what emissions are released in the UK, by all households and businesses present, regardless of where in the world they live or are registered. They therefore exclude emissions from UK businesses and residents that occur abroad, including from international aviation and shipping, and any emissions embedded within the supply chain of manufactured goods and services imported into the UK (while including emissions that occur in the UK resulting from exported goods and services). When emissions are measured on a territorial basis, UK emissions account for around 1% of the global total.

The UK is required to report its estimated GHG emissions on a range of different bases in order to fulfil a number of international agreements.[64] Therefore, they are also officially estimated in two other ways, which deal with the national and international aspects of emissions behaviour:

- **residency:** This focuses on what emissions are released by UK residents and businesses in the UK and abroad, but excludes non-resident emissions taking place in the UK
- **footprint:** These are estimates of emissions associated with the consumption of goods and services by households within the UK, incorporating supply chain emissions estimates for those goods and services, irrespective of whether or not their production process occurs within the UK.

These estimates cover the Kyoto 'basket' of seven gases: carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), sulphur hexafluoride (SF6) and nitrogen trifluoride (NF3). The last four gases are collectively referred to as fluorinated gases or F gases.[65]

Territorial emissions are reported by source and end user. When emissions are reported by source, they are attributed to the sector that emits them directly. When emissions are reported by end user, energy supply emissions by source are reallocated in accordance with where the end-use activity occurred.

Further, some emission estimates are also available at the subnational level. Specifically, BEIS publishes estimates of territorial CO2 emissions for Local Authority areas.[66] In these statistics, emissions are assigned to all 379 Local Authorities in the UK: 314 of these are in England, 32 in Scotland, 22 in Wales and 11 in Northern Ireland. The statistics show emissions allocated on an end user basis where emissions are distributed according to the point of energy consumption (or point of emission if not energy related).

In Annex 1, we identify the emissions data source we have used in Chapter 1, which is the final 2019 estimates of UK territorial emissions. At other points in the remainder of this Annex, we also refer to provisional emissions estimates, for 2020.

General trends in UK greenhouse gas emissions

The latest 2020 provisional territorial estimates show CO2 emissions in the UK fell 10.7%, compared with 2019, to 326.1 million tonnes (Mt).[67] This is the largest proportional fall in a single year since the start of the data series in 1990, slightly larger than the 8.6% fall seen in 2009 during the global financial crisis.

Total greenhouse gas emissions also fell by 8.9% to 414.1 Mt carbon dioxide equivalent (CO2e) over the same period. This significant fall was mainly driven by the impacts of the Covid-19 pandemic and the resulting restrictions which led to large reductions in the use of road transport during the nationwide lockdowns and the reduction in business activity. Only CO2 emissions from the residential sector increased (1.8%) as more people stayed at home.

Looking at the longer-term trend and progress towards the net zero target, the rate of reduction in the carbon intensity of the UK economy since 2000 has been the fastest in the G20,[68] and emissions in 2020 were 51% below 1990 levels, marking a halfway point to meeting the net zero target. This brings per capita UK emissions close to the world average.[69] Emissions from energy supply are also 65.5% lower than they were in 1990.

The UK's reduced emission levels are overwhelmingly driven by three changes. The first is a shift away from coal for electricity; indeed the government recently brought forward the removal of unabated coal from the UK's energy mix by a year, now set to October 2024.[70] The second factor is a structural departure from manufacturing and more efficient processes within the remainder of the manufacturing base, and third, the fossil fuels supply market is now also smaller and more efficient.[71]

There has been much less progress on heating of homes and offices, and especially transport.[72] Emissions from transport fell by 1.8% (2.2 MtCO2e) in 2019, their second year of falls having previously risen since 2013.[73] Despite this, transport remained the largest emitting sector, responsible for 27% of all greenhouse gas emissions in the UK. Transport emissions were only 4.6% lower than in 1990, as increased road traffic has largely offset improvements in vehicle fuel efficiency.

UK business greenhouse gas emissions by sector

Emissions estimates are also broken down by industry, using SIC codes, as well as National Communications sectors.

The published statistics on industrial emissions do not however include a breakdown by business size. Nevertheless, the available sectoral estimates of GHG emissions by businesses illustrate the significant variation in emission levels that can exist among firms with different activities and markets.

In 2019, using National Communications sector splits and attributing emissions to the sector that emits them directly, 27% of net GHG emissions in the UK were estimated to be from the Transport sector, 21% from Energy Supply, 17% from Business, 15% from the Residential sector and 10% from Agriculture. The other 10% was attributable to the remaining sectors: Waste Management, Industrial Processes, the Public sector and the Land Use, Land Use Change and Forestry sector.[74]

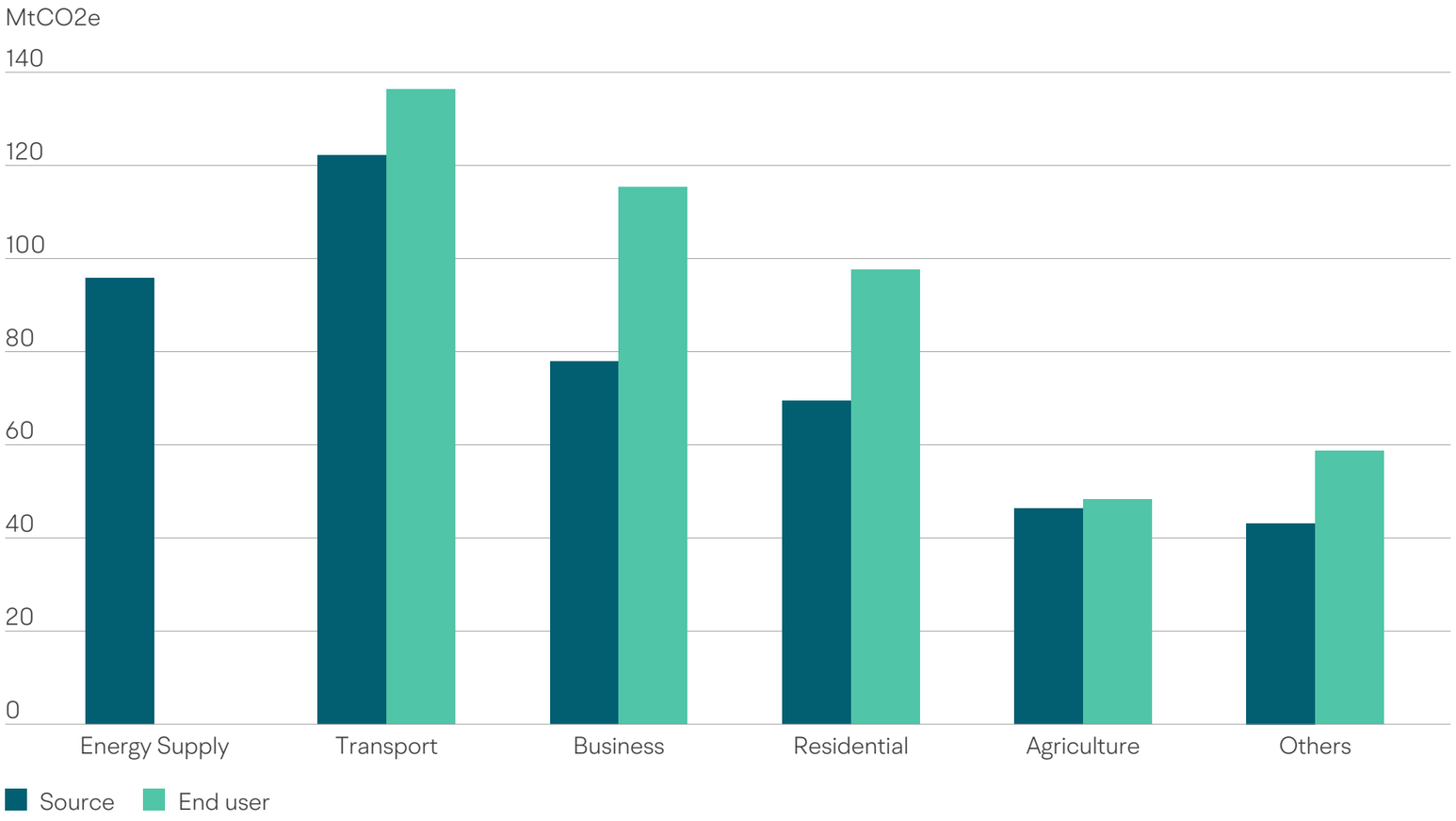
The Agriculture sector was responsible for 10% of UK GHG emissions in 2019. Emissions of methane (53%) and nitrous oxide (32%) dominate this sector.

There is some variation in the National Communications sector emissions estimates depending on whether one considers emissions on a source or end user basis. In 2019, it is estimated that 30% of GHG emissions were from Transport, making it the sector with the largest emissions on an end user basis (3% higher compared against a source basis). For reference, see Figure A2.1. Twenty-five per cent of end user emissions were from the Business sector (8% higher compared against a source basis), 21% is allocated to the Residential sector (6% higher) and Agriculture remains at 10% due to the fact that only a small proportion of emissions are as a result of energy use.

Fig A2.1

Greenhouse gas emissions by National Communications sectors, source and end user basis, UK 2019

Source: Department for Business, Energy and Industrial Strategy



If we turn to the emissions estimates, on an SIC basis, this allows the reporting of GHG emissions against their relevant industry rather than their whole-economy sector.

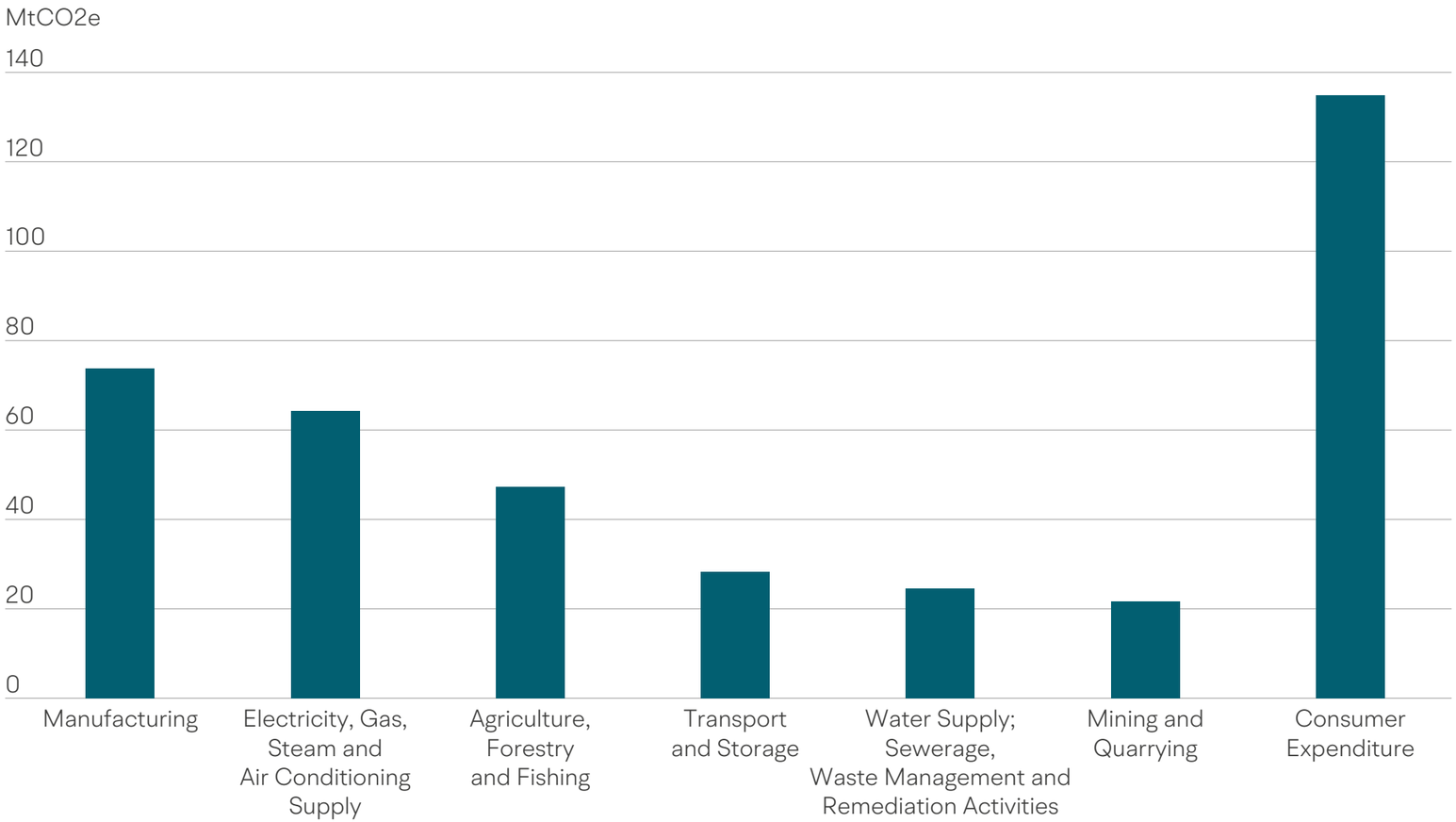
The estimates show that the Manufacturing industry was the largest emitter amongst the SIC codes at an estimated 73.7 MtCO2e (16% of the 2019 UK total). Second was Electricity, Gas, Steam and Air Conditioning Supply with emissions of 64.3 MtCO2e (14%) followed by the Agriculture, Forestry and Fishing with 47.3 MtCO2e (Figure A2.2).[75]

When combined, SIC codes emitting less than 5% of the total contributed 60.1 MtCO2e, 13% of total UK emissions while the remaining 30% of emissions (134.9 MtCO2e) are captured by Consumer Expenditure, a non-SIC sector which captures emissions associated with households and personal travel, as opposed to business activity. Overlaying the emissions data with SME business population data[76] we estimate that 14% of SMEs are classified as being within the top 6 emitting SIC codes, which (cumulatively) account for around 57% of UK business-driven emissions. At the other end of the spectrum, over half (54%) of SMEs are active in SIC codes emitting just over 3% of UK business-driven greenhouse gases overall.

Fig A2.2

Greenhouse gas emissions, SIC section basis, UK 2019

Source: Department for Business, Energy and Industrial Strategy



UK business greenhouse gas emissions by region and nation

There is a further gap in the data when it comes to estimating SME emissions based on their location. Nevertheless, BEIS makes local territorial emissions data available, which supports a better understanding of the variation of business emissions from a place-based perspective.[77]

Fig A2.3

Carbon dioxide emissions (MtCO2) by broad source category, Devolved Nations and English regions, UK 2019

Source: Department for Business, Energy and Industrial Strategy

	Agriculture	Industry (excl. Agri)	Commercial	Public Sector	Domestic	Transport	LULUCF (Net)	Total
South East	0.5	4.9	4.0	1.4	13.0	18.7	-2.0	40.5
North West	0.4	8.3	3.5	1.5	10.5	13.9	0.3	38.5
Yorkshire and the Humber	0.4	11.6	2.5	1.1	8.1	11.2	0.0	34.9
East of England	0.5	4.8	2.7	1.0	8.7	13.5	2.8	33.9
Scotland	1.2	6.8	2.8	1.3	8.5	10.2	0.2	31.0
West Midlands	0.4	5.8	2.5	1.1	8.2	12.1	-0.2	30.0
East Midlands	0.4	8.0	2.0	0.9	7.0	10.3	0.4	29.1
London	0.0	2.0	5.7	1.8	10.5	8.5	-0.1	28.5
South West	0.9	3.5	2.4	0.9	7.6	11.4	-0.8	25.8
Wales	0.7	10.4	1.4	0.6	4.8	6.3	-0.3	23.8
North East	0.2	5.5	1.1	0.6	3.9	4.5	-1.2	14.8
Northern Ireland	0.6	3.2	0.5	0.3	3.4	3.7	2.1	13.9

When Local Authorities are grouped together into English regions and Devolved Nations, the South East accounts for the most CO2 emissions with the North West in second (Figure A2.3). The significant emission contribution made by both these regions appears to be sector-driven, as they have relatively large Transport and Residential sectors. In fact, for 7 out of 12 English regions and Devolved Nations, Transport is the largest contributor to CO2 emissions ranging from a third of emissions to nearly half in those locations and accounts for 36% of all the UK's CO2 emissions. Around 25% of SMEs are based in the South East or North West with 11% of those working in the Transportation and Storage sector. In total, 6% of SMEs in the UK as classified as operating in the Transportation and Storage sector.

Transport does not lead the way in all regions though. A significant amount of industrial CO2 emissions, which accounts for 24% of the UK's CO2 emissions, are concentrated in a few areas. Yorkshire and the Humber and Wales have the largest amount of CO2 emissions from Industry. For Wales this accounts for almost half their CO2 emissions (46%). While it equates to just over a third (34%) of Yorkshire and the Humber's emissions this is lower than the North East (39%). Four of the Devolved Nations and English regions have the largest amount of their CO2 emissions coming from Industry and they also have the highest share of their large businesses operating in the Manufacturing sector.

It is important to note that this is only CO2 data. Several Devolved Nations and English regions have large agricultural sectors where the vast majority of GHG emissions take the form of methane and nitrous oxide. The Devolved Nations have the largest percentage of their SMEs working in the Agriculture sector. Scotland has 5% of its SMEs in the sector, Wales 8% and Northern Ireland 14%. Only 2% of SMEs based in England are in the Agriculture sector with the South West the region with the highest percentage of its SMEs in that sector (4%).

SMEs' contribution to UK greenhouse gas emissions

Numerous studies have suggested that a small number of large companies are responsible for the vast majority of greenhouse gases emitted in recent history.

For example, the Climate Accountability Institute found that just 20 companies have collectively contributed 493 billion tonnes of carbon dioxide and methane, chiefly from the combustion of their products, equivalent to 35% of all fossil fuel and cement emissions worldwide since 1965 (global total of 1.41 trillion tCO2e).[78]

There is however a recognised knowledge gap in estimating SME contributions to GHG emissions. This could be a result of the lack of focus on SMEs in general when considering the environmental impact of businesses, but it could also be because it is not obvious that size alone would impact emissions. For example, a transport company with 10 staff and 10 diesel vans is likely to emit more greenhouse gases than a 20 strong arts company. Even within the same SIC code, a chicken farm with 100 staff would almost certainly emit less greenhouse gases than a cattle farm with 10 staff given cows produce significantly more methane, the biggest emission from the agricultural sector, than any other animal.

One consequence of this is that SMEs' contribution to emissions is unclear. There have been very few studies that have tried to quantify the split of industrial pollution by enterprise size, but of those that have, most have estimated SMEs to contribute as high as 60% to 70% of total industrial pollution.[79] This is on the basis that, even though the individual environmental footprint of SMEs is small, the sheer number of them leads to their impact being cumulatively greater (in these studies) than that of large businesses.

A wide-ranging study carried out by the European Commission in 2010 showed that SMEs contribute 64% of environmental impact within the EU, and sector variations are generally between 60% to 70%. For the UK the overall number was 53%, below the EU average.[80]

Further attempts at estimating SMEs' broader impact on the environment also point to the significant role played by smaller businesses. As noted by a recent OECD paper, research suggests that SMEs cause 43% of serious industrial pollution incidents in England and Wales and are responsible for 60% of commercial waste. The same study indicates that SMEs account for 54% of all energy consumption in the business sector, and 42% of energy use in non-domestic buildings, further suggesting that one third of UK SME expenditure on energy is wasted through inefficient practices.[81]

A Climate Change Committee Policy Advisory Group Report recently attributed 52% of UK private sector greenhouse gas emissions to firms with more than 500 employees and 48% to those with fewer.[82]

One further source that expressly considers firm size, in an area relevant to emissions, is the BEIS Business Energy Survey.[83] The statistical summary notes that 'there are many characteristics which impact the amount of energy a business consumes, but one of the key ones is the size of the organisation'.[84] This dataset looks at energy consumption from non-domestic buildings and breaks it down by size and sector.

This data reports the contribution of buildings occupied by businesses of different sizes to non-domestic building electricity consumption. Buildings occupied by Very Large businesses consume the most electricity (21 TWh), followed by buildings occupied by Medium sized businesses (16 TWh), with buildings occupied by Micro, Small and Large businesses consuming the least electricity (around 12 TWh each). The picture is a little different for gas consumption with medium sized businesses having the highest consumption (22 TWh) followed by Very Large businesses (21 TWh) and Large (20 TWh). Small businesses consume the least at 13 TWh.

However, this data comes with caveats. First, 58 TWh of electricity consumption and 56 TWh of gas consumption is missing business size information. This is the electricity consumption of 422,000 buildings of the 814,000 in the ND-NEED[85] electricity consumption sample with 2019 electricity consumption, and 167,000 buildings of 358,000 in the gas consumption sample, where information on the occupying business size is not available. Second, the sample is not representative of the business population, as it under-represents small businesses.

Endnotes

1. BVA BDRC (2021), 'SME Finance Monitor, Q2 2021'
2. See for example Enterprise Research Centre, (2020), 'State of Small Business Britain 2020'; OECD (2021), 'No Net Zero without SMEs; Exploring the key issues for Greening SMEs and Green Entrepreneurship, OECD SME and Entrepreneurship Papers' (forthcoming); OECD (2019), 'OECD SME and Entrepreneurship Outlook 2019'.
3. IPCC (2021), 'Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change'
4. Per IPCC (https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf)
5. https://www.wri.org/insights/ipcc-climate-report
6. As phrased in HM Treasury, 'Net Zero Review: Interim report', December 2020, p.2, available at: https://www.gov.uk/government/publications/net-zero-review-interim-report
7. See https://www.theccc.org.uk/publication/sixth-carbon-budget/. The Climate Change committee is an independent, statutory body established under the Climate Change Act 2008, whose purpose is to advise the UK and devolved governments on emissions targets and to report to Parliament on progress made in reducing GHG emissions and preparing for and adapting to the impacts of climate change.
8. NERC EDS Centre for Environmental Data Analysis (2021), 'Summary for Policymakers of the Working Group I Contribution to the IPCC Sixth Assessment Report - data for Figure SPM.8 (v20210809)'
9. We have arranged the data on an aggregate North, Midlands, South and Devolved Nations basis in order to ensure sufficient sample sizes.
10. Based on aggregating regional and national data in Table 9, Business Population Estimates, https://www.gov.uk/government/statistics/business-population-estimates-2020
11. Central estimates shown, within an estimated range between 2.1m-2.4m for carbon nimble; 1.9m-2.2m for carbon complacent; 0.46m-0.66m for carbon correcting; 1.0m-1.2m for carbon exposed. Extrapolated from the Business Population Estimates 2020, published by the Department for Business, Energy and Industrial Strategy.
12. https://www.gov.uk/government/statistics/business-population-estimates-2020/business-population-estimates-for-the-uk-and-regions-2020-statistical-release-html
13. Based on an analysis of UK greenhouse emissions data by SIC sector (see Annex 2)
14. Enterprise Research Centre, (2020), 'State of Small Business Britain 2020'
15. Ibid
16. British Chambers of Commerce (2021), 'Net zero & Covid-19 reopening survey'
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18. See, for instance: https://prod-drupal-files.storage.googleapis.com/documents/resource/public/GBF%20SME%20research.pdf
19. This area was only applicable to a subgroup of survey respondents (manufacturing businesses) and therefore proportions of SMEs taking action were calculated as a percentage of the respondents eligible for questions in this action area.
20. Enterprise Research Centre, (2020), 'State of Small Business Britain 2020'
21. Climate Change Committee (2020), 'The road to Net-Zero Finance'
22. Central estimates shown for the number of businesses that have accessed external finance for net zero actions (700,000) and say that they would be likely to access this in the future (1.3 million). Estimates are, respectively, within a range between 600,000 and 800,000, and 1.1 million and 1.5 million. Extrapolated from the Business Population Estimates 2020, published by the Department for Business, Energy and Industrial Strategy. Additional assumptions were used to estimate the overall size of the SME population that would be likely to access finance to support net zero actions in the next 5 years (22%). Since the related survey question was only asked to SMEs that were planning or considering taking net zero actions at the time of asking, we assumed that those that were not planning or considering such actions at the time of asking would ultimately have similar propensity to access external finance. This is based on the fact that more than double this proportion (45%) of SMEs say they already use external finance, and roughly the same proportion (21%) would be happy to access more in order to grow (see BVA BDRC (2021), 'SME Finance Monitor, Q2 2021').
23. BVA BDRC (2021), 'SME Finance Monitor, Q2 2021'
24. See for example: BEIS (2019), 'Green Finance Strategy' and Climate Change Comittee (2020), 'The road to Net-Zero Finance'
25. See for example: OECD (2021), 'No Net Zero without SMEs; Exploring the key issues for Greening SMEs and Green Entrepreneurship, OECD SME and Entrepreneurship Papers' (forthcoming)
26. https://data.gov.uk/dataset/9568363e-57e5-4c33-9e00-31dc528fcc5a/
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28. https://www.ons.gov.uk/economy/grossvalueaddedgva/datasets/nominalregionalgrossvalueaddedbalancedperheadandincomecomponents
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30. World Business Council and World Resources Institute (2015), 'The Greenhouse Gas Protocol' (see: https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf)
31. https://www.gov.uk/government/statistical-data-sets/gas-and-electricity-prices-in-the-non-domestic-sector#history
32. https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2021
33. This is broadly consistent with the findings of the Department for Business, Energy and Industrial Strategy's Building Energy Efficiency Survey 2014-15, which suggests that overall electricity and non-electrical consumption account for 53% and 47% of energy consumption in business premises respectively (see: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/565748/BEES_overarching_report_FINAL.pdf)
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35. European Investment Bank (2020), 'EIB Investment Survey 2020'
36. Carbon Trust (2021), 'SMEs and energy efficiency'

37. BPI France (2020), 'How do French small and medium enterprises approach the climate emergency?'
38. OECD (2018), 'Key drivers of green and inclusive growth'
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