

# Rural SMEs and the net zero agenda

**Authors:** Dr Maria Wishart, Professor Stephen Roper and Dr Effie Kesidou

**NICRE Research Report No 1:** April 2021

**Contact:** [maria.wishart@wbs.ac.uk](mailto:maria.wishart@wbs.ac.uk)

## Abstract

This report examines the environmental engagement of UK small firms in rural and urban locations, in light of the climate emergency and the associated imperative for businesses to contribute to national net zero emissions objectives. Using data collected from 804 small firms in England, Wales, Scotland and Northern Ireland, the paper explores and compares the environmental attitudes and practices of rural and urban-based small firms, and identifies key differences. We find that rural firms appear to focus more strongly on environmental issues than their urban counterparts, and that rural firms are influenced by different factors when it comes to reducing carbon emissions. On the basis of these findings, we propose a future research agenda to further advance understanding in this under-researched area.

## Acknowledgements and funding

This paper is published by the National Innovation Centre for Rural Enterprise (NICRE) which is funded by Research England to collaborate, research and co-design ideas and solutions to foster rural enterprise and unlock the potential of rural economies.

NICRE works with businesses, policy makers and other partners across the UK to take part in research and catalyse change.

It brings together the strengths of its founding university partners: Centre for Rural Economy and Business School at Newcastle University, Enterprise Research Centre at Warwick University and Countryside and the Community Research Institute at the University of Gloucestershire and Royal Agricultural University.

Founding research partners:



Funded in partnership with:



Founding business partners:



## Contents

<b>Executive summary</b>	<b>4</b>
<b>1. Introduction</b>	<b>5</b>
<b>2. Environmental practices in SMEs: the existing evidence</b>	<b>6</b>
2.1 SME engagement with environmental practices	6
2.1.1 Drivers	6
2.1.2 Barriers	7
2.2 SME diversity	8
<b>3. Empirical approach</b>	<b>8</b>
<b>4. Comparing rural and urban firms</b>	<b>9</b>
4.1 Baseline characteristics of the sample	9
4.2 Strategic approach	13
<b>5. Environmental attitudes and practices</b>	<b>15</b>
5.1 Use of environmental practices	15
5.2 External influences on environmental practices	20
5.3 Factors inhibiting environmental practices	24
<b>6. Conclusions</b>	<b>24</b>
<b>7. A future research agenda</b>	<b>25</b>
<b>References</b>	<b>26</b>

## Executive summary

In light of the climate emergency and the associated imperative for businesses to contribute to national net zero emissions objectives, we conducted the Business Futures Survey of around 1,000 UK small and medium sized firms during 2020q4. The survey provides strong evidence that despite the pandemic, sustainability is part of the strategic objectives of many UK SMEs, with over half of respondents to the ERC Business Futures Survey reporting 'reducing environmental impact' as a business priority. Over a quarter of firms said that 'reducing environmental impact' had become a more important priority since the COVID-19 crisis. Nearly three-quarters of firms said that they had taken steps to minimise the environmental impact of their business over the past year despite the COVID-19 crisis.

This report asks whether the environmental engagement of firms varies depending on their geographical location. Comparing the attitudes and practices of rural and urban-based SMEs, we found three main differences:

- 1. Rural firms are less likely to plan than urban firms.** Only 54% of rural firms in our sample said that they have a business plan, compared to 65% of their urban counterparts.
- 2. Rural firms appear to focus more strongly on environmental issues than urban firms.** 45% of rural firms said that they always consider the environmental implications of business decisions compared with only 37% of urban firms. 86% of rural firms said that they thought environmental impact should be part of the bottom line, compared with 79% of urban firms. Rural firms were also more likely to have an in-house Environmental Management System than their urban counterparts (36% vs 30%), and rural firms were more likely to have taken steps to reduce environmental impact, such as monitoring air pollution, investigating low carbon products and services and investing in environment-related R&D.
- 3. Rural firms are influenced by different factors when it comes to reducing emissions.** Rural firms rated three external factors – government grants, reducing costs and sector or supply chain voluntary agreements – as considerably more important in influencing their adoption of environmental practices than urban firms. Although for both rural and urban firms the Coronavirus pandemic was cited as the main constraint to the adoption of environmental practices, rural firms were more likely to point to administrative regulations as barriers to their efforts to adopt environmental practices than urban firms.

Our results indicate some material differences between rural and urban firms in attitudes towards, and the adoption of, net zero practices. Lower rates of business planning indicate that a significant proportion of rural firms take a different approach to running their businesses than their urban counterparts. Rural firms appear to be more open to adopting environmental management practices than their urban counterparts. And, the divergence between rural and urban firms that we observe in the influences and constraints on the adoption of environmental practices suggests that rural firms may have different motivations for adopting these practices. Our findings suggest that there are underlying differences between rural and urban firms which merit further investigation.

On the basis of these differences, we highlight several areas for future research, including:

- The link between different business models, management ambitions and the likelihood of adopting net zero practices for rural firms.
- The role of external stakeholders (e.g., customers, suppliers, regulators) and external factors (e.g., grants, funding availability) in driving net zero adoption in rural businesses.
- The ways in which rural business leaders' individual priorities set the agenda for net zero practices in their firm.

## 1. Introduction

The climate emergency provides an imperative for countries to move towards net zero greenhouse gas emissions, and the UK has sought to be a pioneer in this area, with the aim of encouraging others to follow (Institute for Government, 2020). The Climate Change Act of 2008 committed the UK to an 80% reduction in carbon emissions relative to 1990 levels, to be achieved by 2050, a target which was increased to 100% in June 2019. Achieving this target would make the UK a 'net zero' emitter. This net zero target is linked to the BEIS Green Jobs Task Force (BEIS, 2020a), which focuses on the transition to a high-skill, low-carbon economy, and to the Clean Growth Grand Challenge, one of BEIS's four high priority policy areas.

Businesses have an important role to play in attaining the national net zero targets. Identifying the enablers and constraints that firms experience in their efforts to adapt to net zero emissions, and understanding whether these factors vary by location, will be of interest to a variety of stakeholders. In the UK, SMEs account for more than 99 per cent of businesses, 61 per cent of employment and 52 per cent of turnover (FSB, 2020). The rural economy accounts for a sizeable proportion of these firms. In England, for example, rural firms account for 24 per cent of all registered businesses, 13 per cent of all those employed by registered businesses and nearly 16 per cent of value added (House of Lords, 2020). Understanding whether rural and urban firms differ in their approach to the net zero agenda will be relevant for policymakers, nationally and locally, developing place-based interventions to encourage the uptake of environmental practices.

This report explores issues surrounding the move towards net zero by drawing on a new dataset, which explores UK rural and urban firms' environmental attitudes and practices. We ask:

1. How do rural businesses compare to their urban counterparts in their approach, attitudes and progress towards sustainable business models?
2. What constraints and opportunities does net zero present to rural enterprises, and how does this differ from those experienced by urban firms?

This paper proceeds with a brief review of extant literature focusing on environmental practices in SMEs. We then describe our research method and sample, before presenting findings and discussing the implications for a future research agenda.

## 2. Environmental practices in SMEs: the existing evidence

Studies have found that the leaders of small firms often consider that their individual businesses have little impact on the environment (Gadenne et al, 2009; Parker et al, 2009; Scuotto et al, 2020). But, given that SMEs account for 99.9% of UK businesses (BEIS, 2020b) and are estimated to generate around 12 per cent of UK territorial emissions (CILS, 2020), it is clear that their collective impact is substantial. The majority of research into environmental engagement has tended to focus on large firms (Brammer et al, 2012; Kenington et al, 2020).

The relatively small body of work that has focused on SMEs' environmental engagement has considered a range of firm and sector-level enablers and constraints to the adoption of environmental practices, including firm awareness of, and attitudes towards, environmental issues. Key environmental practices are the reduction of pollution, the adoption of energy and resource saving technologies and management techniques, increasing efficiency, and material reuse, and minimising transport and logistic usage (Potrich et al, 2019). Studies have considered environmental practices in specific sectors (e.g., Cantele and Cassia, 2020; Tyler et al, 2018), different sizes of firm (e.g., Wong et al, 2020; Seroka-Stolke & Fijorek, 2020) and different countries (e.g., Scuotto et al, 2020; Dey et al, 2018). Literature with an agricultural focus has addressed the adoption of sustainable farming practices, however research with a broader focus on rural-based businesses is limited.

### 2.1 SME engagement with environmental practices

Previous research has identified a range of drivers and barriers to the adoption of environmental practices in small and medium sized firms.

#### 2.1.1 Drivers

Stakeholder pressure from both internal and external sources has been found to influence the likelihood of small firms to adopt a proactive environmental strategy, and the strategy implemented may differ depending on the stakeholder exerting the pressure and the size of the firm. In fact, pressure from some stakeholders, notably external regulators and internal senior managers and shareholders, exerts stronger influence than pressure from others (Seroka-Stolke and Fijorek, 2020). Country-level variation has been observed. For example, external pressures generally have been found to influence Italian SMEs more than internal ones when it comes to the adoption of environmental practices (Scuotto et al, 2020). Comparing firms in a developed and a developing country (the UK and India) Dey et al (2018) identify similarities and variations in SMEs' approach to and adoption of environmental management initiatives. In both locations, pressure from parent companies and customers has a similar effect, but for small firms in India, competitive pressures are more influential, and government legislation less influential, on their likelihood to adopt environmental practices, a divergence they attribute to cultural issues as well as to the size of the firm.

Competitive pressure can encourage small firms to embrace environmental practices, which they may undertake as a route to gain competitive advantage, and manager perceptions of these external pressures are key to the likelihood of the practices being adopted (Tyler et al, 2020). Consumers have been found to have less influence on smaller firms than on larger ones when it comes to exerting pressure to adopt environmental practices, perhaps because high-profile boycotting activities present a reputational risk (Steroka-Stolke and Fijorek, 2020) but customer requirements have been found to drive eco-innovation - innovation that aims to reduce environmental impact – in a range of firms (Gadenne et al, 2009).

Legislation has been found to be a significant driver of the adoption of environmental practices in smaller firms, and the cost of compliance and time required to ensure compliance can mean that smaller firms are reactive rather than proactive in their approach (Brammer et al, 2012). Legislation is a more important driver in the adoption of environmental practices for SMEs when the environmental practices relate to processes rather than to products or services, and when the firm serves consumers rather than other businesses (Hoogendoorn et al, 2015; Gadenne et al, 2009).

Awareness of, and positive attitudes towards, environmental practices in SME leaders has been associated with firm-level adoption of them. For example, SME leader awareness of the economic benefits of implementing environmental practices like waste management and recycling have been positively associated with the adoption of such practices (Gadenne et al, 2009). Positive attitudes do not necessarily translate directly into the actual adoption of the practices but are likely to positively moderate the effect of external pressure to adopt them (Cantele and Zardini, 2020). This suggests that initiatives focused on raising awareness may well have a place in encouraging further adoption of such practices (Gadenne et al, 2009).

## **2.1.2 Barriers**

While most SMEs have some level of engagement with environmental initiatives, there is significant variation in the kinds of practices that they adopt, with smaller firms less likely to engage than medium sized firms. This lower level of engagement has been attributed to a number of barriers, including low environmental awareness, the costs of engaging with such initiatives, and limited business support to help them to identify and implement these practices (Brammer et al, 2012). Firm size has been found to be associated with the types of environmental practices that firms engage in, with larger firms more likely to engage in more costly activities like green product design and manufacturing processes, and smaller ones more focused on lower cost initiatives such as environmentally-friendly packaging and logistics. This divergence almost certainly reflects differing availability of resources to develop and implement initiatives (Wong et al, 2020) as well as a reluctance to divert the limited resources that they have towards initiatives which may increase their costs with no commensurate increase in income (Brammer et al, 2012).

A recent study focusing on the adoption of sustainable agricultural production in a number of European regions found some common constraints to the adoption of environmental practices, including lack of financial support, but also low levels of farmer knowledge and experience (Mills et al, 2020). Limited knowledge and technical capabilities have also been advanced as barriers to the adoption of environmental practices in smaller firms

more generally (Parker et al, 2009) which have been found to have a tendency towards overreliance on tacit knowledge that can restrict their absorptive capacity (Valentim et al, 2016). Thus, limited resources combined with the perceived lack of economic benefits from adopting such practices appear to be constraints for small firms in particular when it comes to the adoption of environmental practices.

## 2.2 SME diversity

Parker et al (2009) argue that literature examining the adoption of environmental practices by SMEs has been constrained by an excessive emphasis on the drivers and barriers to adoption, with insufficient focus on the diversity of small firms' business and environmental improvement aspirations. They argue that targeted interventions that take account of firm differences are required and offer a typology of four SME types based on their approach to environmental issues in support of their thesis: environment-driven, advantage-driven, compliance-driven and cost-driven. This heterogeneity means that a range of interventions will be necessary to engage all types of SME in environmental practices, and that it is unlikely that a one-size-fits-all solution to encouraging the adoption of these practices exists.

Although size, sector and national context-related differences in the adoption of environmental practices of businesses have been identified, the influence of a firm's immediate surroundings on its likelihood to adopt such practices has not yet been considered. With this in mind, this paper compares rural and urban-based firms' attitudes towards, and adoption of, environmental practices to establish whether any differences can be detected.

## 3. Empirical approach

The study uses a new dataset, generated during Autumn 2020. The data were collected using a questionnaire in which firms from a range of sectors and in both urban and rural locations were asked about a number of issues, including their strategic approach, their experiences of the Coronavirus pandemic and their environmental attitudes and practices. The questionnaire was applied using Computer Assisted Telephone Interviewing. 1019 private sector firms with between 10 and 249 employees were surveyed. Northern Ireland was over-sampled relative to the rest of the UK to provide a regionally representative sample with reasonable cell sizes. Of the 1019 respondents 804 firms (79 per cent) indicated that they were happy for their data to be matched with information from other administrative data sources<sup>1</sup>. Postcode data from these firms was matched with the urban-rural indicator relevant for their location, since this varies depending on the

---

<sup>1</sup> The proportion of respondents giving permission for data matching varied slightly between the devolved nations: England 533 firms of 733 respondents, 73 per cent; NI 138 of 178 respondents, 78 per cent; Scotland 60 of 69 respondents, 87 per cent; Wales 30 of 39 respondents, 77 per cent.

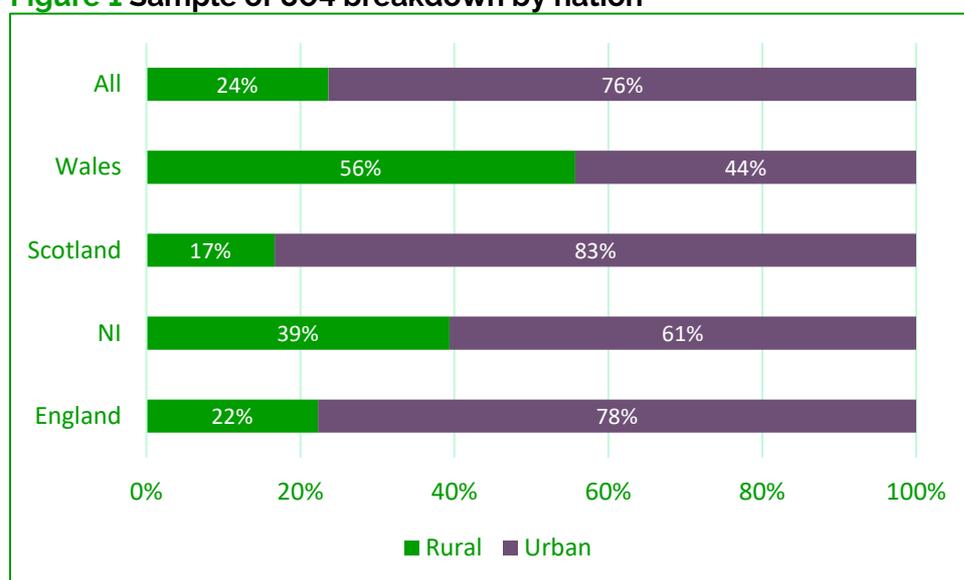
devolved nation in which they are located<sup>2</sup>, and these firms form the basis for the analysis in the remainder of this paper.

## 4. Comparing rural and urban firms

### 4.1 Baseline characteristics of the sample

Overall, as shown in Figure 1 around 1:4 firms in our group of respondents is rural but there is significant variation by nation. The rural proportion of firms is notably higher in Wales and Northern Ireland. There is, however, little variation in firm size between rural and urban firms (see Figure 2).

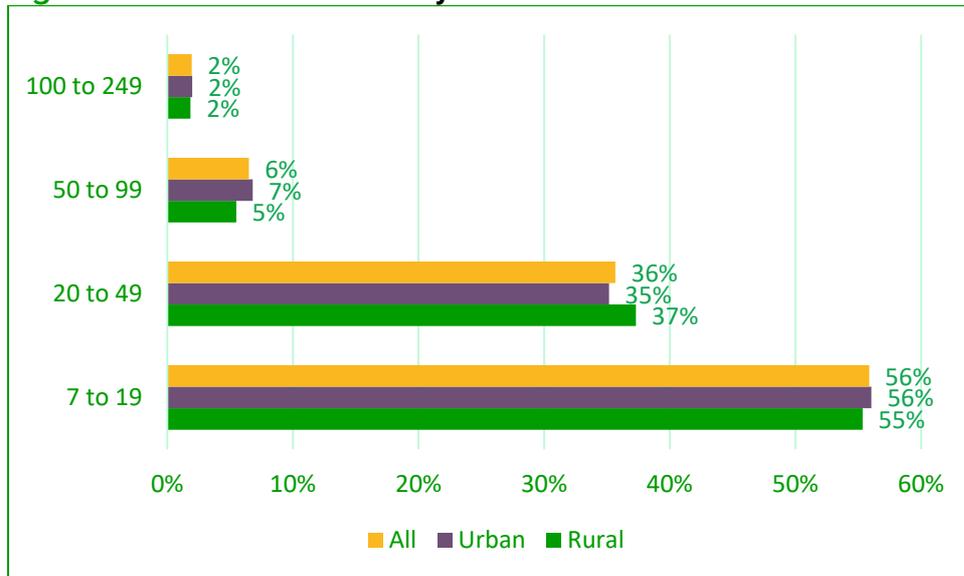
**Figure 1 Sample of 804 breakdown by nation**



Base: 804 firms. England 574, NI 138, Scotland 60, Wales 33

<sup>2</sup> In England, postcodes are assigned to the urban or rural category of the Output Area (OA) into which they fall and OAs are treated as 'urban' if the majority of their population live within settlements with a population of 10,000 or more. In Scotland, the urban/rural classification is consistent with the Scottish Executive's core definition of rurality which defines settlements of 3,000 or less people to be rural. In Northern Ireland, there is an eight-band categorisation of settlements ranging from Band A (Belfast Metropolitan Urban Area) to Band H (Small Village, Hamlet or Open Countryside) with bands A – E being classed as 'urban'.

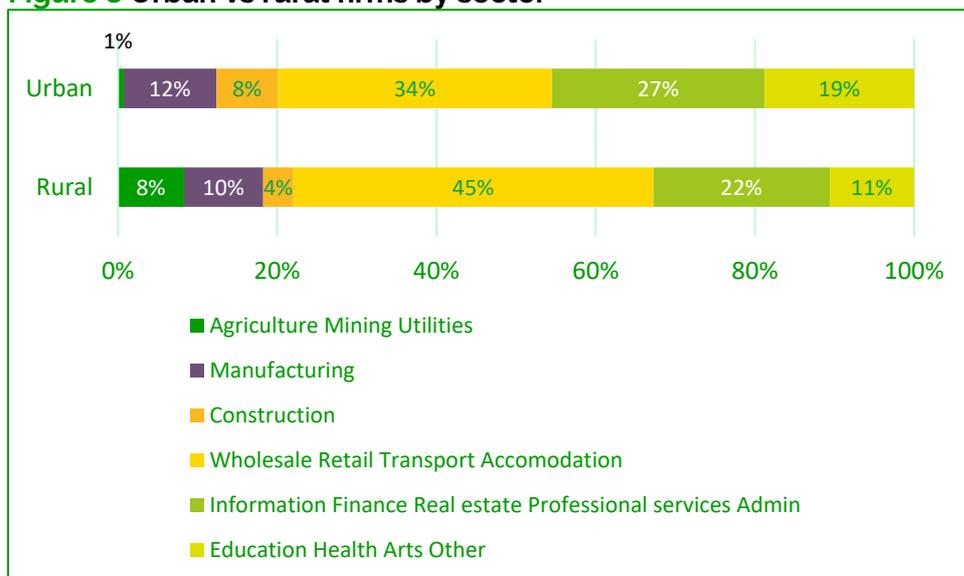
**Figure 2 Urban vs rural firms by size**



Base: 804 firms. 600 urban, 204 rural

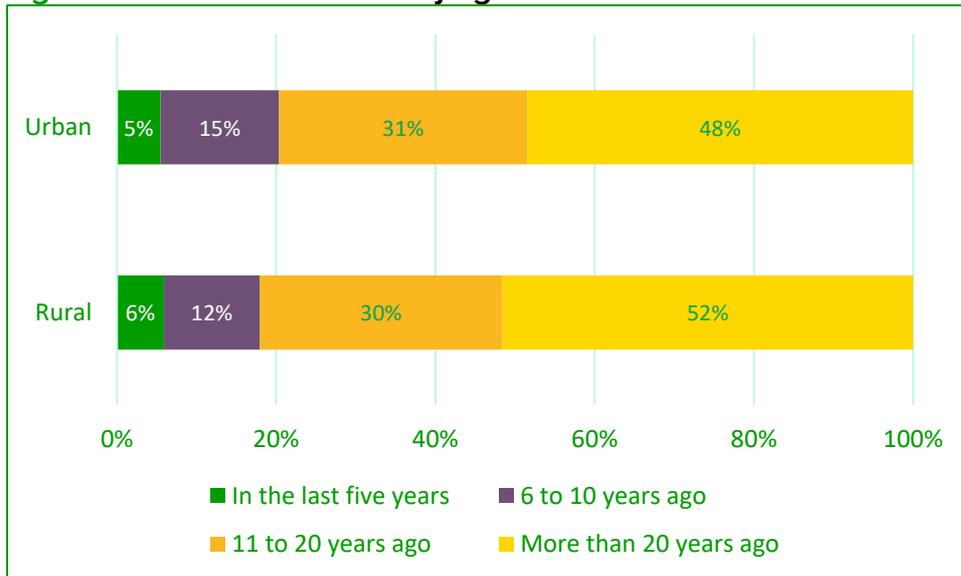
Rural firms in our sample differ in sectoral terms from their urban counterparts, and overall have a greater proportion of firms in the Agriculture/Mining/Utilities and Wholesale/Retail/Transport/Accommodation sectors (Figure 3). However, the age profile of urban versus rural respondents to the survey is similar (Figure 4). One aspect of behaviour where we do see a difference between urban and rural firms is in their propensity to export: rural firms in this sample are less likely to export than urban firms (23% vs 28%) (Figure 5). Urban firms are also more likely to have a business plan than rural firms (65% vs 54%) (Figure 6).

**Figure 3 Urban vs rural firms by sector**



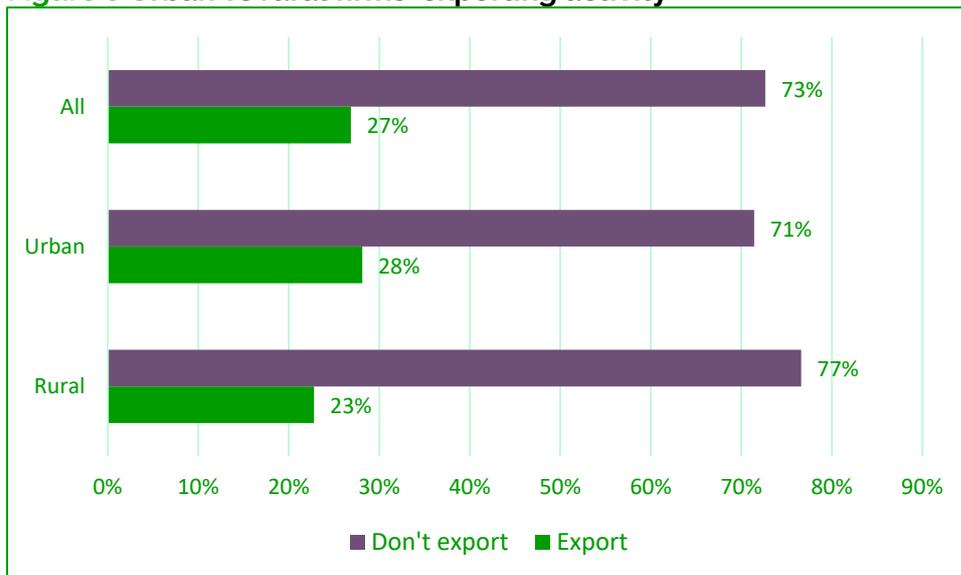
Base: 804 firms. 600 urban, 204 rural

**Figure 4 Urban vs rural firms by age**



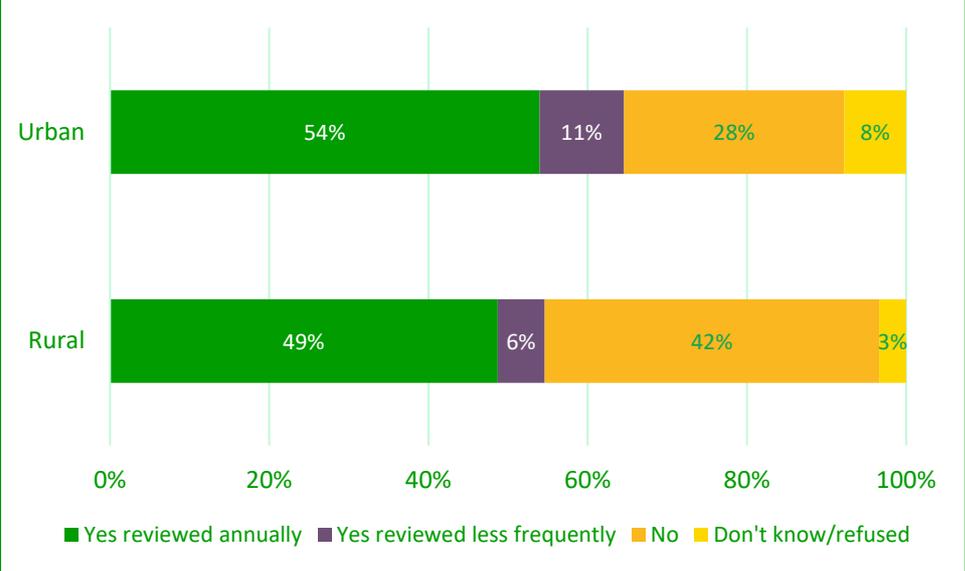
Base: 804 firms. 600 urban, 204 rural

**Figure 5 Urban vs rural firms' exporting activity**



Base: 804 firms. 600 urban, 204 rural

**Figure 6** Presence of a business plan, urban vs rural

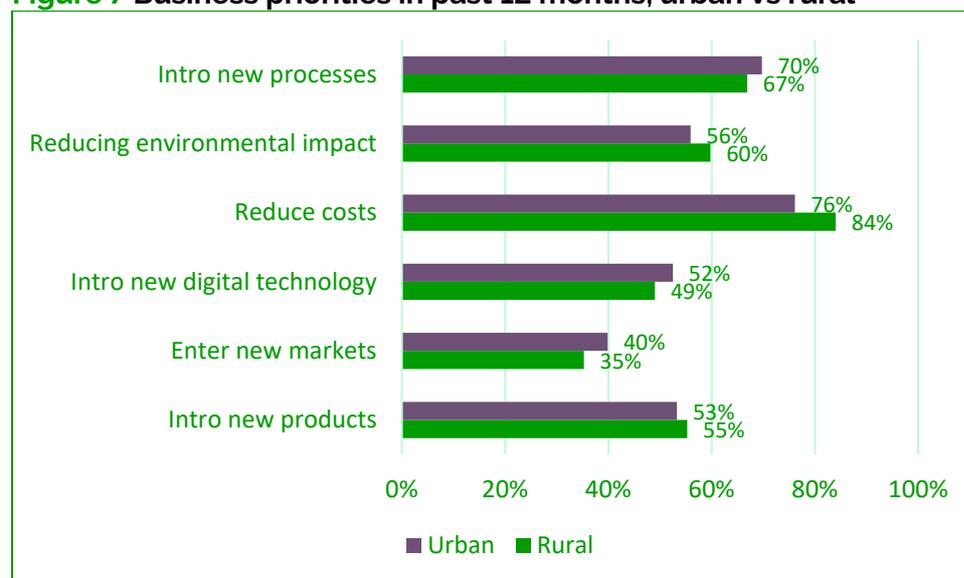


Base: 804 firms. 600 urban, 204 rural

## 4.2 Strategic approach

Overall, as shown in Figure 7, rural firms were more likely to have prioritised reducing their environmental impact and costs than urban firms in the preceding 12 months. Urban firms were more likely than their rural counterparts to focus on identifying new markets and introducing digital technology.

**Figure 7 Business priorities in past 12 months, urban vs rural<sup>3</sup>**

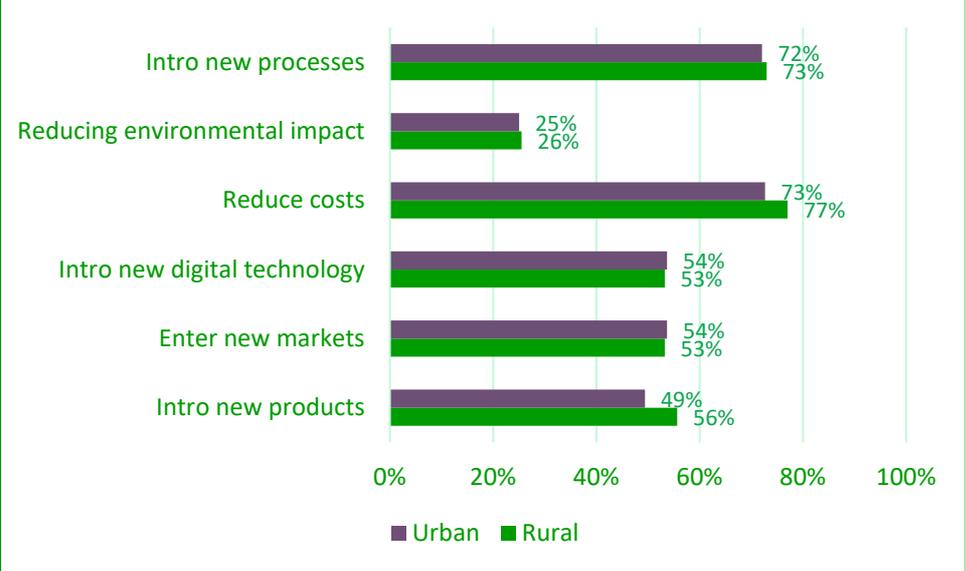


Base: 804 firms. 600 urban, 204 rural

When the survey was conducted in late 2020 we asked firms whether the COVID-19 crisis had made each of these priorities more or less important. Figure 8 shows the proportion of urban and rural firms who said that each of these priorities had become either 'more important' or 'much more important'. Reducing costs and introducing new processes are the most likely to have increased in importance while reducing environmental impact is the least likely to have increased in importance. There is no notable difference between the impact of COVID-19 on the strategic priorities of rural and urban firms.

<sup>3</sup> Figure 7 shows the percentage of firms that said each item had been a priority for their business in the preceding 12 months.

**Figure 8** Priorities with increased importance since COVID-19, urban vs rural



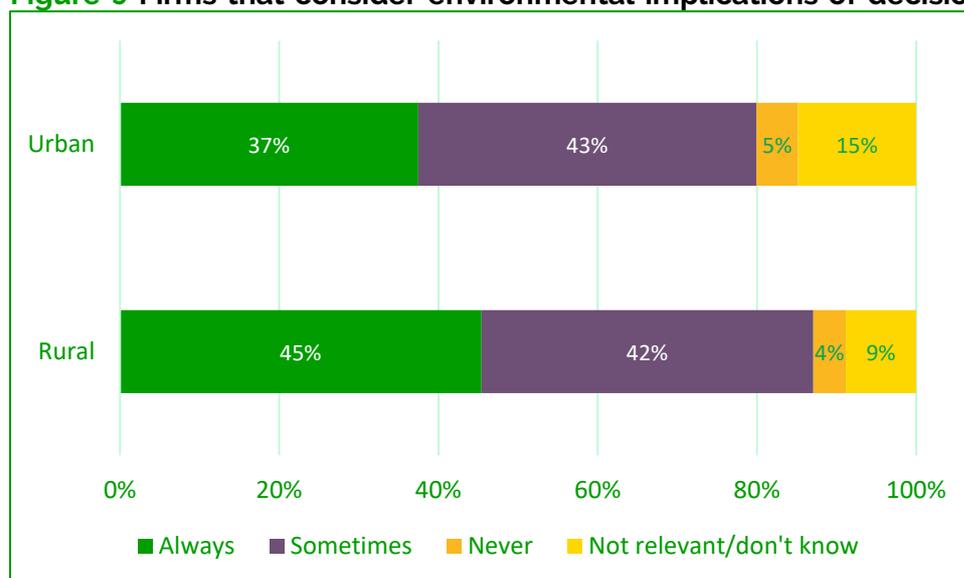
Base: 804 firms. 600 urban, 204 rural

## 5. Environmental attitudes and practices

### 5.1 Use of environmental practices

In the survey we asked firms how likely they were to take environmental factors into account in their business decisions. Rural firms are more likely 'always' or 'sometimes' to consider the environmental implications of their business decisions (Figure 9). Overall, 45% of rural firms say they 'always' consider the environmental implications of business decisions compared with only 37% of urban firms.

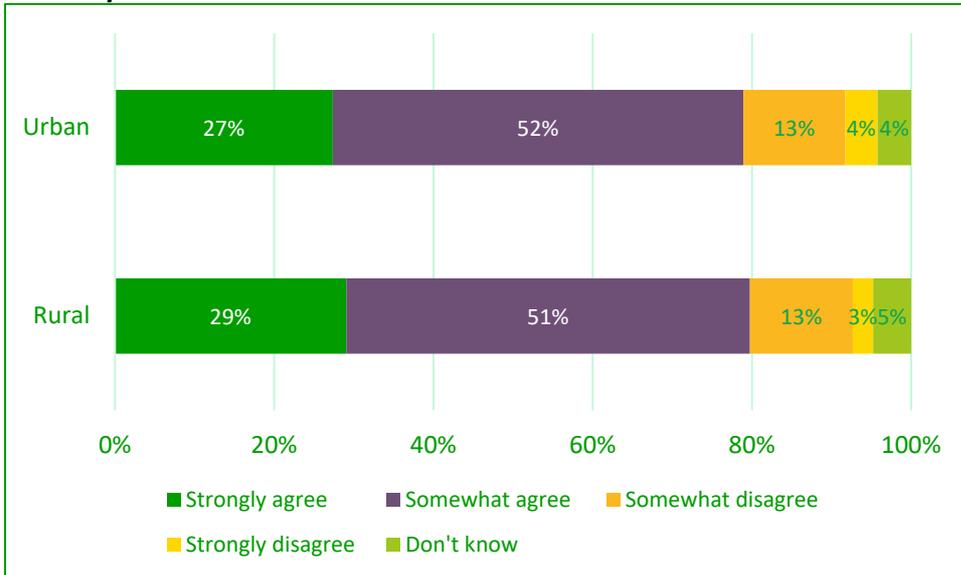
**Figure 9 Firms that consider environmental implications of decisions, urban vs rural**



Base: 804 firms. 600 urban, 204 rural

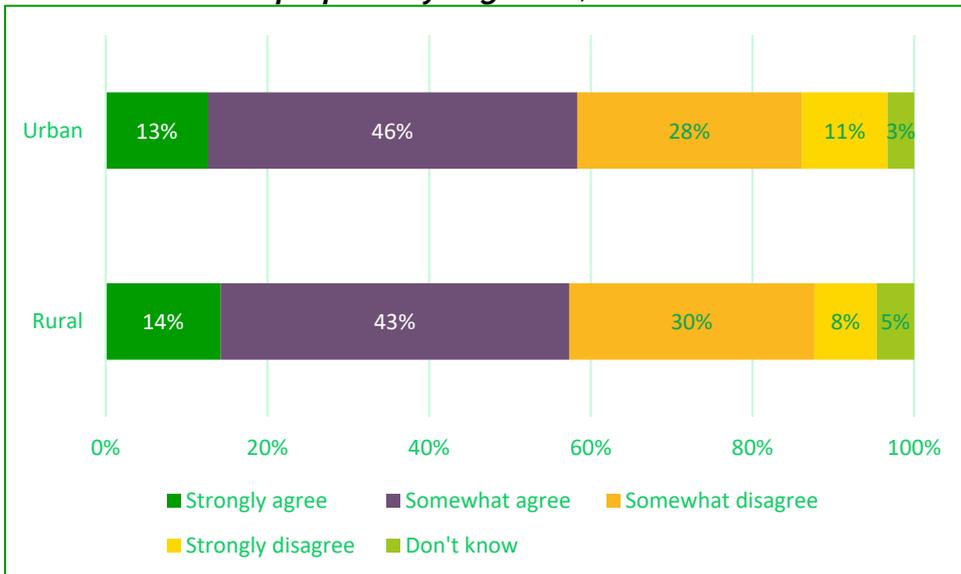
Despite this greater consideration of environmental impacts in decision making we found little difference between rural and urban firms' attitudes towards spending more to reduce their environmental impact (Figure 10) or prioritising the environment over profitability or growth (Figure 11). However, 86% of rural firms compared to 79% of urban firms agreed that environmental impact should be part of a business's bottom line (Figure 12).

**Figure 10** Agreement with the statement *Businesses should spend more to reduce their impact on the environment, urban vs rural*



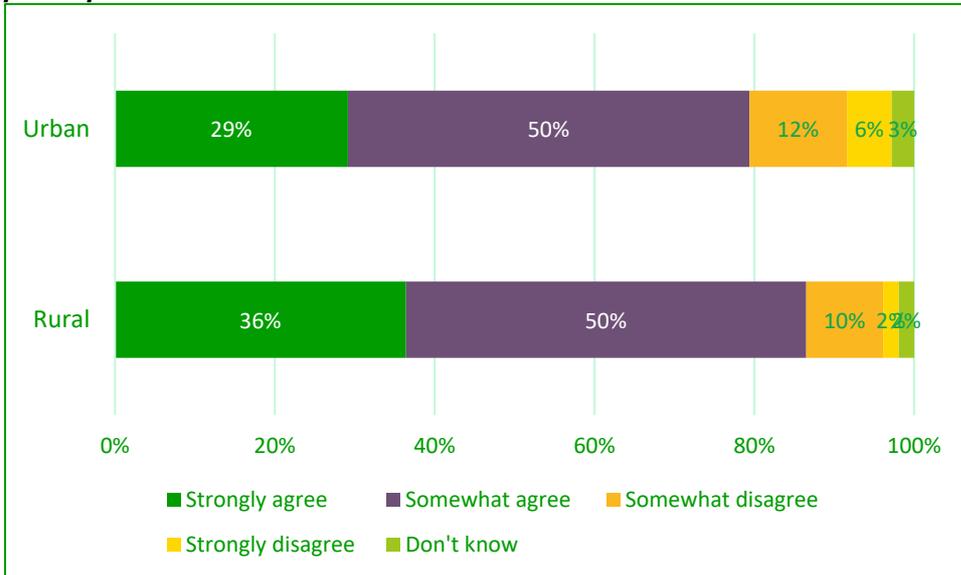
Base: 804 firms. 600 urban, 204 rural

**Figure 11** Agreement with the statement *Businesses should prioritise protecting environment above profitability or growth, urban vs rural*



Base: 804 firms. 600 urban, 204 rural

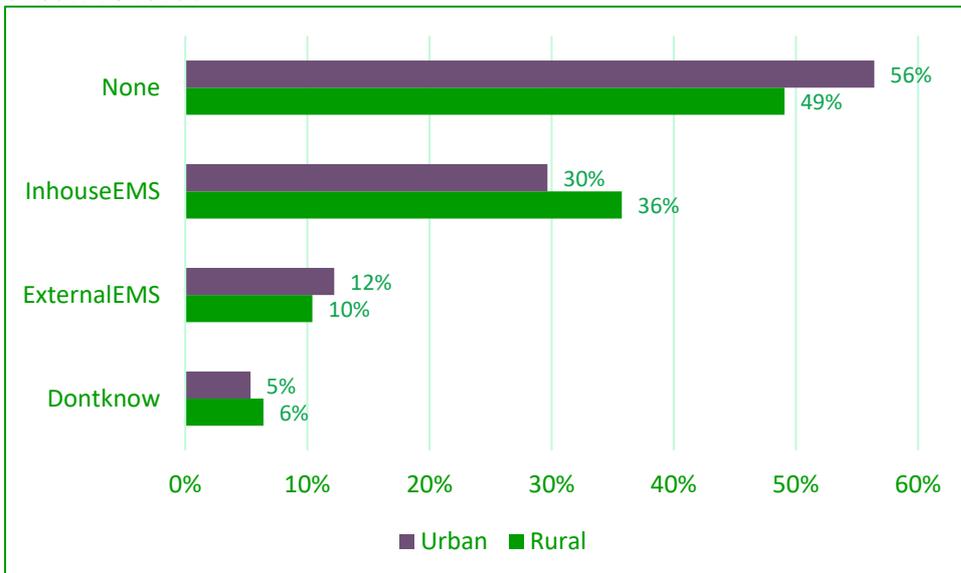
**Figure 12** Agreement with the statement *Businesses' environmental impact should be part of the bottom line*, urban vs rural



Base: 804 firms. 600 urban, 204 rural

A potentially important aspect of firms' environmental practices is whether or not they have implemented an Environmental Management System (EMS). 46% of rural firms said they had some kind of EMS compared to 42% of urban firms, and rural firms were more likely than urban firms to have an in-house EMS (30% vs 36%) (Figure 13).

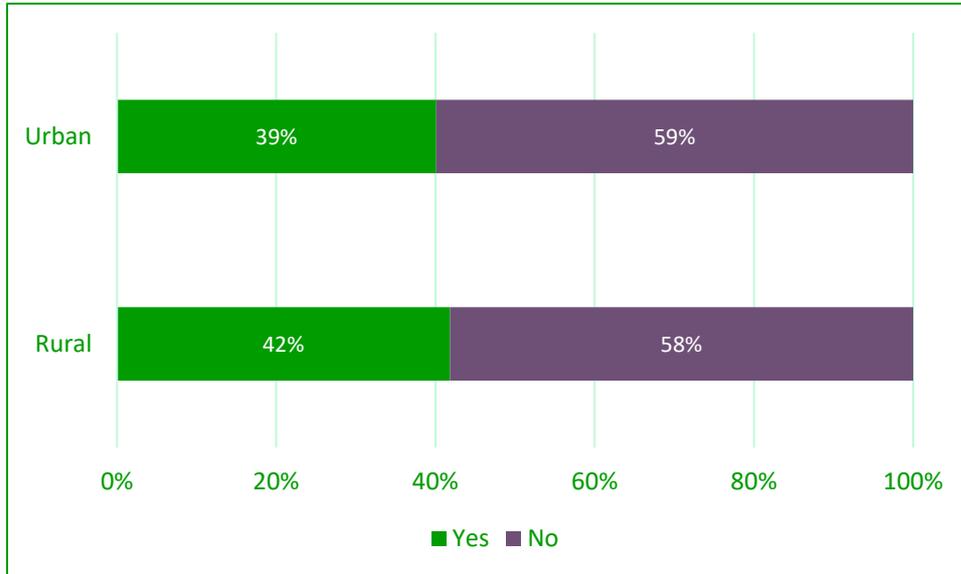
**Figure 13** Firms that had implemented an Environmental Management System by type, urban vs rural



Base: 804 firms. 600 urban, 204 rural

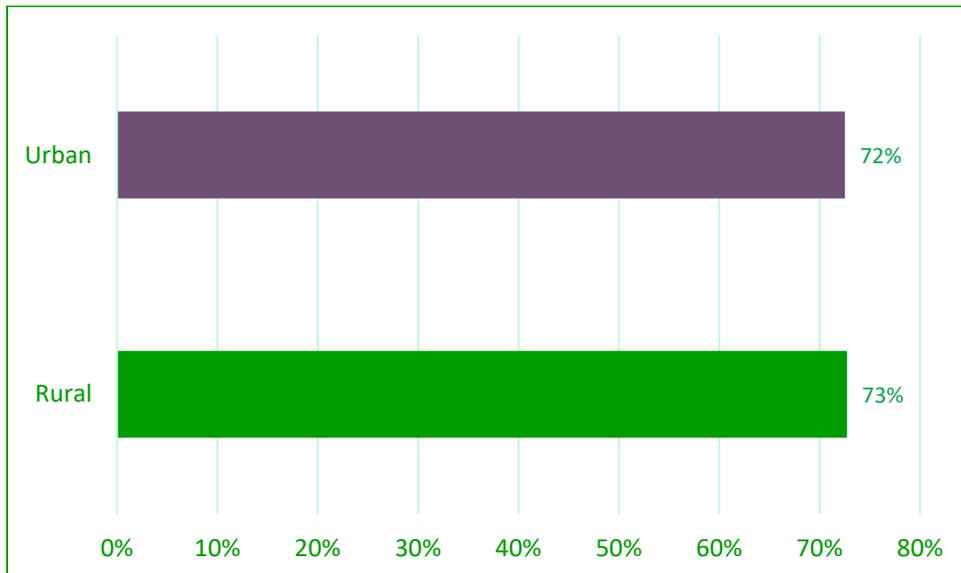
A slightly higher proportion of rural firms said that they also have a senior management lead for environmental issues (Figure 14). This appeared to make little difference to the proportion of urban and rural firms that claim to have taken steps in the past year to minimise their environmental impact, as shown in Figure 15.

**Figure 14** Firms with a senior management lead for environmental issues, urban vs rural



Base: 804 firms. 600 urban, 204 rural

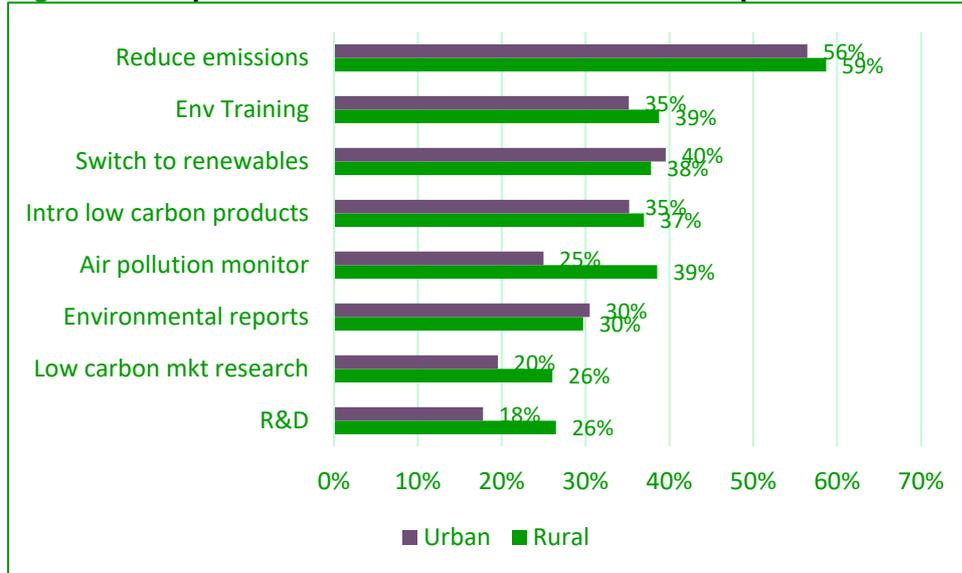
**Figure 15** Firms that have taken steps to minimise environmental impact in past year, urban vs rural



Base: 804 firms. 600 urban, 204 rural

Overall, however, we do see differences in the proportion of rural vs urban firms who have taken specific steps designed to reduce emissions. The difference is largest when it comes to monitoring air pollution, investigating low carbon products and services and investing in environment-related R&D (Figure 16). Rural firms are also considerably more likely to say that the steps they took to reduce emissions in the past 12 months were effective, with 78% saying they reduced emissions significantly (by more than ten per cent) or slightly (by up to ten per cent) compared to 65% of urban firms (Figure 17).

**Figure 16 Steps taken to minimise environmental impact, urban vs rural**



Base: 589 firms. 438 urban, 151 rural

**Figure 17 Effectiveness of steps to reduce emissions in past 12 months, urban vs rural**

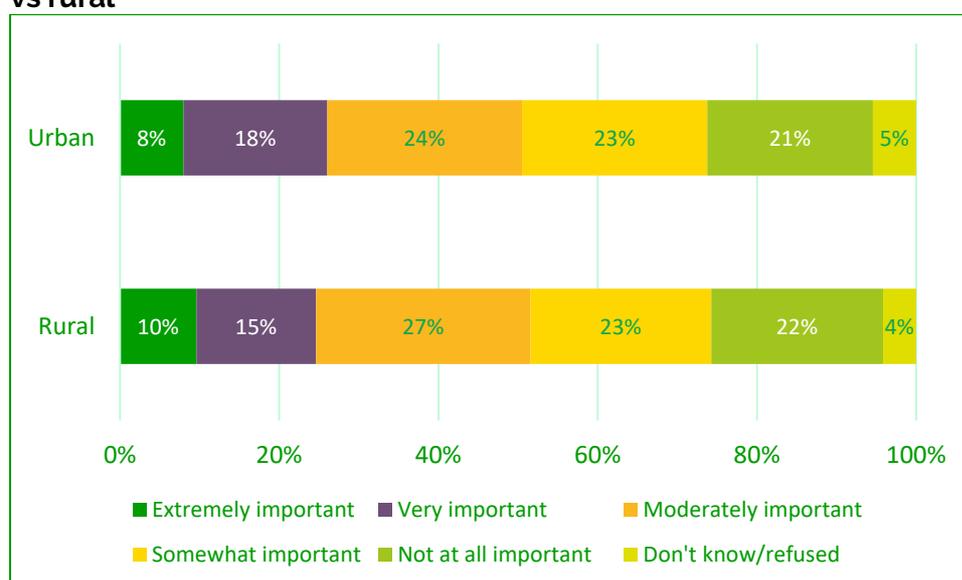


Base: 589 firms. 438 urban, 151 rural

## 5.2 External influences on environmental practices

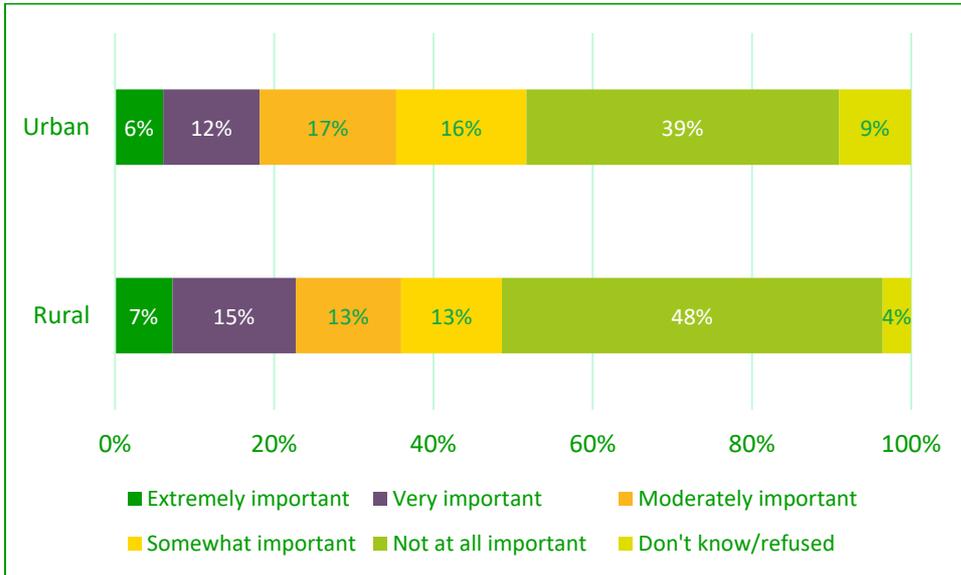
We asked respondents how important a range of external factors had been in influencing their firms' efforts to reduce carbon emissions over the previous 12 months. For a number of the factors – regulations, availability of external funding, customer demand, and improving image – we found no notable difference between rural and urban firm responses (Figures 18 to 21). However rural firms rated three external factors as considerably more important than urban firms. These were grants, costs and sector or supply chain voluntary agreements (Figures 22 to 24). It is possible that these differences may be related to the higher proportion of agricultural businesses in these areas.

**Figure 18** Importance of regulations in influencing efforts to reduce emissions, urban vs rural



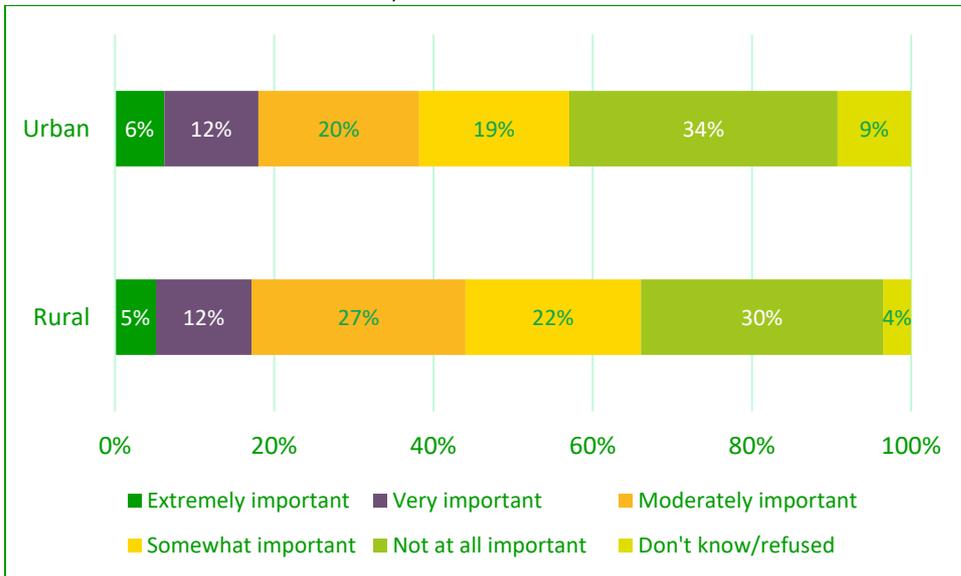
Base: 589 firms. 438 urban, 151 rural

**Figure 19 Importance of availability of external funding in influencing efforts to reduce emissions, urban vs rural**



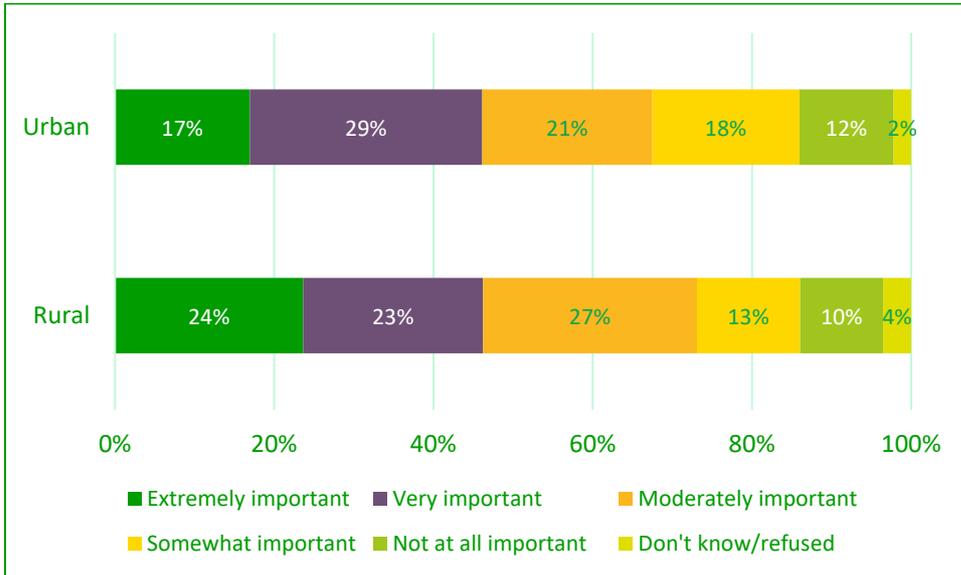
Base: 589 firms. 438 urban, 151 rural

**Figure 20 Importance of customer demand for low-carbon products in influencing efforts to reduce emissions, urban vs rural**



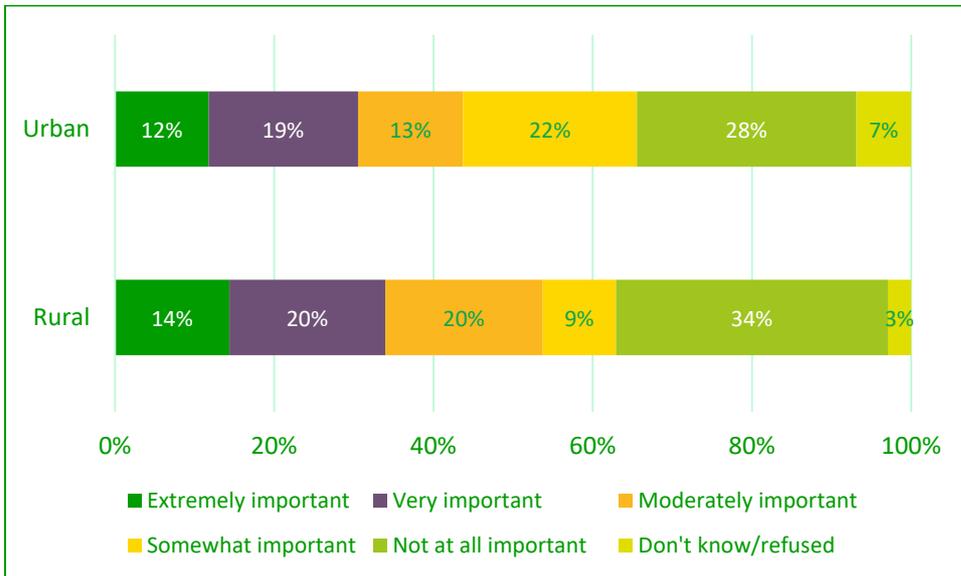
Base: 589 firms. 438 urban, 151 rural

**Figure 21** Importance of improving image in influencing efforts to reduce emissions, urban vs rural



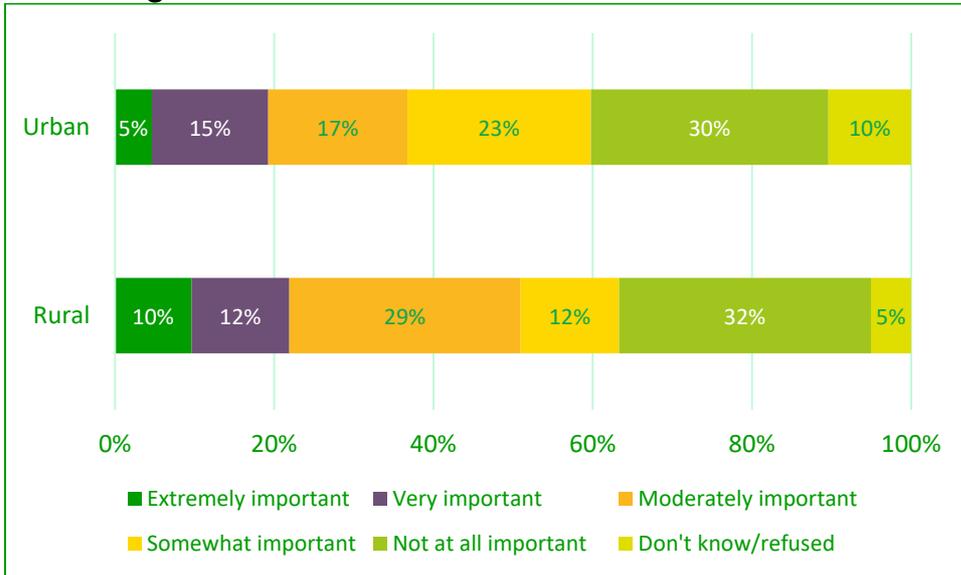
Base: 589 firms. 438 urban, 151 rural

**Figure 22** Importance of grants in influencing efforts to reduce emissions, urban vs rural



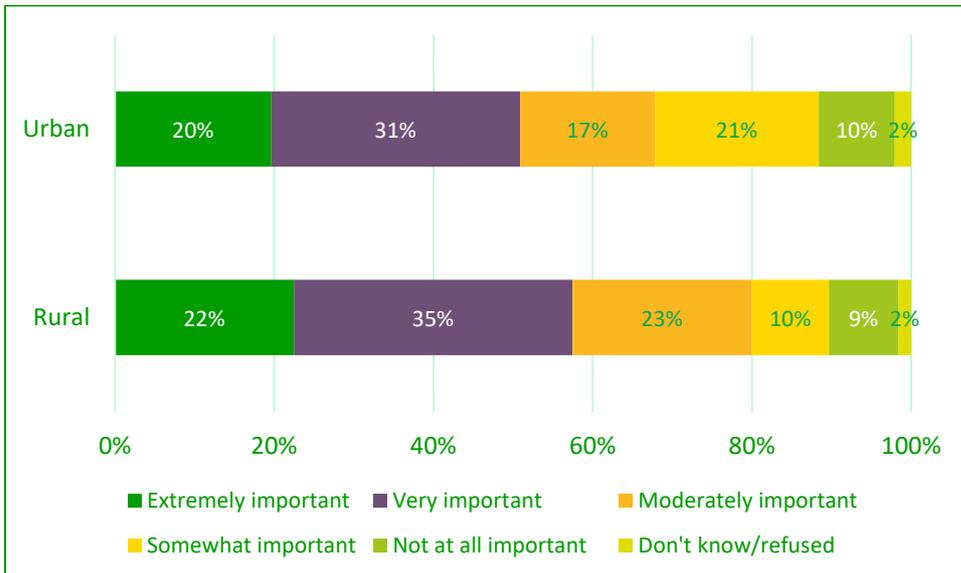
Base: 589 firms. 438 urban, 151 rural

**Figure 23** Importance of voluntary agreements within sector or supply chain in influencing efforts to reduce emissions, urban vs rural



Base: 589 firms. 438 urban, 151 rural

**Figure 24** Importance of reducing costs in influencing efforts to reduce emissions, urban vs rural

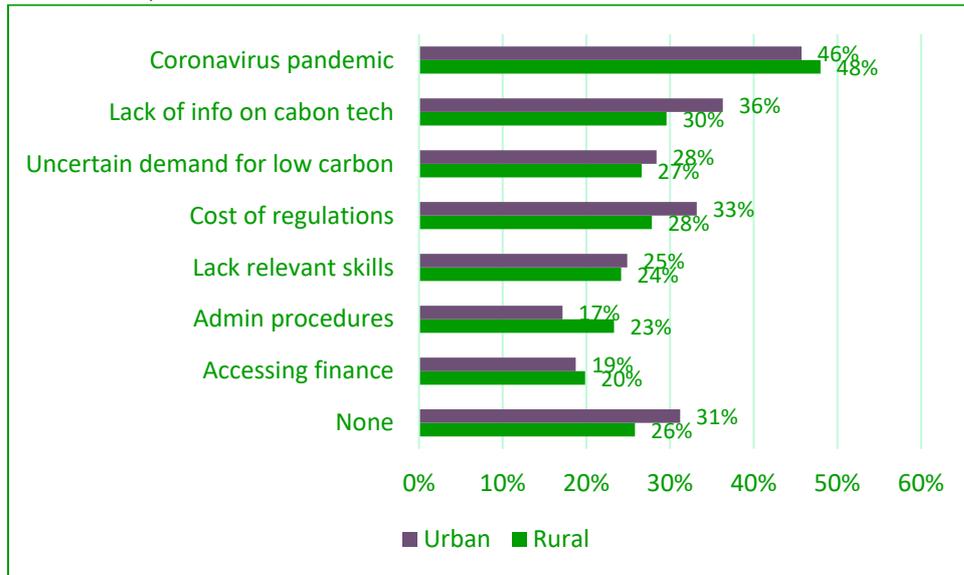


Base: 589 firms. 438 urban, 151 rural

### 5.3 Factors inhibiting environmental practices

As shown in Figure 25, for both rural and urban firms, the Coronavirus pandemic was cited as the most significant constraint to their efforts to reduce carbon emissions. A greater proportion of urban firms said that lack of information about carbon technology and costs inhibited their efforts, while rural firms were more likely than their urban counterparts to point to administrative procedures as a constraint.

**Figure 25 Factors that prevented or constrained firms' efforts to reduce carbon emissions, urban vs rural**



Base: 804 firms. 600 urban, 204 rural

## 6. Conclusions

Prior research has found associations between a variety of firm-level characteristics including sector, size and national context, and a firm's environmental engagement. Studies have also found variation in the effects of some external factors, such as stakeholder pressure and legislation, on a firm's environmental engagement, depending on its location. But few studies have interrogated the impact that the physical context of the firm may have on its likelihood to engage with the net zero agenda. We set out to establish whether any differences could be detected at an aggregate level between rural and urban-based firms' attitudes towards, and adoption of, environmental practices. We observed some differences between rural and urban firms' characteristics, notably in their adoption of business planning activities and their likelihood to export, as well as small differences in their business priorities. Although relatively small, these differences indicate that a significant proportion of rural firms may take a different approach to running their businesses than urban firms, which may well, in turn, influence the way that they approach environmental issues.

We found differences between rural and urban firms' attitudes towards, and engagement with, environmental issues. Rural firms are more likely to say that they think about environmental issues, with 45% of rural firms saying they always consider the environmental implications of business decisions compared with only 37% of urban firms. Similarly, 86% of rural firms compared to 79% of urban firms felt that environmental impact should be part of a business's bottom line. These findings suggest that rural firms are more likely to have a positive approach to environmental issues than their urban counterparts.

Rural firms also appear to differ in the steps they take to reduce emissions. 46% of our sample of rural firms said they had some kind of Environmental Management System (EMS) compared to 42% of urban firms, and rural firms were more likely than urban firms to have an in-house EMS (30% vs 36%). Our data also shows that a greater proportion of rural firms than urban firms said they had monitored air pollution (39% rural vs 25% urban), investigated low carbon products and services (26% rural vs 20% urban) and invested in environment-related R&D (26% rural vs 18% urban). 78% of rural firms said that the steps they had taken had reduced emissions significantly (by more than ten per cent) or slightly (by up to ten per cent) compared to 65% of urban firms. This indicates that rural firms in our sample are more engaged with, and invested in, environmental practices than their urban counterparts and are leading the way when it comes to integrating environmental priorities into their business models.

Rural firms appear to be motivated by different external factors when contemplating the adoption of environmental practices, rating three specific external factors as considerably more important than urban firms for influencing their environmental agendas. These were grants, where 54% of rural firms thought it was at least moderately important compared to 44% of urban firms, reducing costs (80% vs 66%) and sector or supply chain voluntary agreements (51% vs 37%). Rural firms were more likely than urban firms to cite administrative procedures as a barrier to their efforts to adopt net zero practices, indicating a possible resources or skills issue. Policies and measures to address these specific constraints will need to be designed to reach rural firms.

Although the net zero agenda appears currently to be more embedded in rural firms than in urban firms, there is still a long way to go to achieve widespread and sustained adoption of net zero practices. Our findings indicate some underlying differences between rural and urban firms in terms of attitudes and business models. These differences suggest that it may be appropriate to take account of firm location (e.g., urban or rural context) when developing policy and initiatives to encourage wider adoption of net zero practices.

## 7. A future research agenda

Among both urban and rural firms, the adoption of environmental practices remains limited with less than half of all enterprises embracing many environmental practices (Figure 18) and routinely considering the environment when taking business decisions (Figure 11). While COVID-19 has inevitably shifted firms' focus away from the climate emergency these results emphasise the potential value of future research which could support and encourage firms to more actively embrace environmental practices. The

differences we observe between urban and rural firms also highlight a number of areas for future research with a locational focus. We suggest future studies could address:

1. **The link between different internal processes and business models and the likelihood of adopting net zero practices among rural firms.** We have identified some differences in the way that rural and urban firms run their businesses, and some differences in their adoption of net zero practices. Research examining whether there is a link between business model differences and the adoption of net zero practices is an obvious next step.
2. **The ways in which external stakeholders drive net zero adoption in rural businesses.** External stakeholder pressure is well documented in the literature (e.g., Seroka-Stolke and Fijorek, 2020), but research has not yet extended to a study of the differences between external stakeholders and the adoption of environmental practices in rural firms.
3. **The ways in which rural business leaders set the agenda for net zero practices in their firm.** Prior studies (e.g., Gadenne et al, 2009; Cantele and Zardini, 2019) have found a connection between leaders and net zero practices in their firms. Does this hold for rural firms?
4. **The ways in which external factors work to influence rural firms in their adoption of net zero practices.** We have identified some differences between rural and urban firms but a more in-depth understanding of the ways in which these external influences work for rural firms would allow for more detailed policy recommendations to encourage further adoption of net zero practices.
5. **Whether different rural firm types can be discerned on the basis of their approach towards, or readiness for, net zero adoption.** Parker et al's (2009) study advances the notion of four typologies of firm based on their approach to environmental issues. Is this typology relevant for rural firms or should a specific rural breakdown be developed?

## References

BEIS. (2020a). UK government launches taskforce to support drive for 2 million green jobs by 2030. Retrieved from <https://www.gov.uk/government/news/uk-government-launches-taskforce-to-support-drive-for-2-million-green-jobs-by-2030> Last accessed: 12 March 21

BEIS. (2020b). Business population estimates for the UK and regions 2020: statistical release: Composition of the 2020 business population. Retrieved from <https://www.gov.uk/government/statistics/business-population-estimates-2020/business-population-estimates-for-the-uk-and-regions-2020-statistical-release-html> Last accessed: 12 March 2021

BEIS. (2021). Policy paper The Grand Challenge missions. Retrieved from <https://www.gov.uk/government/publications/industrial-strategy-the-grand-challenges/missions> Last accessed: 12 March 2021

Brammer, S., Hojmosse, S., & Marchant, K. (2012). Environmental Management in SMEs in the UK: Practices, Pressures and Perceived Benefits. *Business Strategy & the Environment* (John Wiley & Sons, Inc), 21(7), 423-434.

Cantele, S., & Cassia, F. (2020). Sustainability implementation in restaurants: A comprehensive model of drivers, barriers, and competitiveness-mediated effects on firm performance. *International Journal of Hospitality Management*, 87, 102510.

Cantele, S., & Zardini, A. (2020). What drives small and medium enterprises towards sustainability? Role of interactions between pressures, barriers, and benefits. *Corporate Social Responsibility & Environmental Management*, 27(1), 126-136.

Dey, P. K., Petridis, N. E., Petridis, K., Malesios, C., Nixon, J. D., & Ghosh, S. K. (2018). Environmental management and corporate social responsibility practices of small and medium-sized enterprises. *Journal of Cleaner Production*, 195, 687-702.

Federation for Small Business. (2020). SMEs and the Economy. Retrieved from: <https://www.fsb.org.uk/uk-small-business-statistics.html> Last accessed: 12 March 2021

Gadenne David, L., Kennedy, J., & McKeiver, C. (2009). An Empirical Study of Environmental Awareness and Practices in SMEs. *Journal of Business Ethics*, 84(1), 45-63. doi:10.1007/s10551-008-9672-9

Hoogendoorn, B., Guerra, D., & van der Zwan, P. (2015). What drives environmental practices of SMEs? *Small Business Economics*, 44(4), 759-781.

Institute for Government. (2020). UK Net Zero Target. Retrieved from <https://www.instituteforgovernment.org.uk/explainers/net-zero-target> Last accessed 12 March 2021

Kenington, D., Chiu, L. F., Janda, K. B., & Ruyssevelt, P. (2020). Encouraging energy efficiency in United Kingdom independent retail? The case of the butcher, fishmonger and cycle-shop. *Energy Research & Social Science*, 62.

Mills, J., Ingram, J., Dibari, C., Merante, P., Karaczun, Z., Molnar, A., . . . Ghaley, B. B. (2020). Barriers to and opportunities for the uptake of soil carbon management practices in European sustainable agricultural production. *Agroecology & Sustainable Food Systems*, 44(9), 1185-1211.

Parker, C. M., Redmond, J., & Simpson, M. (2009). A Review of Interventions to Encourage SMEs to Make Environmental Improvements. *Environment and Planning C: Government and Policy*, 27(2), 279-301.

Potrich, L., Cortimiglia, M. N., & de Medeiros, J. F. (2019). A systematic literature review on firm-level proactive environmental management. *Journal of Environmental Management*, 243, 273-286.

Scuotto, V., Garcia-Perez, A., Cillo, V., & Giacosa, E. (2020). Do stakeholder capabilities promote sustainable business innovation in small and medium-sized enterprises? Evidence from Italy. *Journal of Business Research*, 119, 131-141.

Seroka-Stolka, O., & Fijorek, K. (2020). Enhancing corporate sustainable development: Proactive environmental strategy, stakeholder pressure and the moderating effect of firm size. *Business Strategy and the Environment*, 29(6), 2338-2354.

Tyler, B., Lahneman, B., Beukel, K., Cerrato, D., Minciullo, M., Spielmann, N., & Discua Cruz, A. (2018). SME Managers' Perceptions of Competitive Pressure and the Adoption of Environmental Practices in Fragmented Industries: A Multi-Country Study in the Wine Industry. *Organization & Environment*, 33(3), 437-463.

Valentim, L., Lisboa, J. V., & Franco, M. (2016). Knowledge management practices and absorptive capacity in small and medium-sized enterprises: is there really a linkage? *R&D Management*, 46(4), 711-725.

Wong, C. W. Y., Wong, C. Y., & Boon-itt, S. (2020). Environmental management systems, practices and outcomes: Differences in resource allocation between small and large firms. *International Journal of Production Economics*, 228, 107734.

Other publications are available on NICRE's website [www.ncl.ac.uk/nicre](http://www.ncl.ac.uk/nicre). The views expressed in this review represent those of the author and are not necessarily those of NICRE or its funders.

For further information about NICRE:

Email: [nicre@newcastle.ac.uk](mailto:nicre@newcastle.ac.uk)

Web: [www.ncl.ac.uk/nicre](http://www.ncl.ac.uk/nicre)

Twitter: @NICRErural