

Net Zero Survey & Interviews: Methodology and Results

DORSET LOCAL SKILLS IMPROVEMENT PLAN
INSIGHTFUL RESEARCH TEAM

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Introduction

Within the UK, the government has set a target for all businesses to reach net zero carbon emissions by 2050. Thus, it is inevitable in the next two decades that businesses will need to acquire new skill sets to transition to net zero. So far during the sector-specific research, the net zero transition has been investigated in the psychometric survey and qualitative interviews. However, it was felt that greater insight was required to understand employers' perspectives on the transition to net zero. To investigate business preparedness in greater detail, further surveys and interview questions were developed. This report will be separated into 3 sections of analysis: multiple-choice question analysis, open-text question analysis, and interview analysis.

Multiple Choice Question Analysis

The aim of the multiple-choice aspect of the survey was to determine the importance of the transition to net zero for businesses at present, how much progress businesses have made, the challenges faced by businesses, and the potential solutions. Based on prior sector interviews and analysis, we hypothesized that there would be a difference in preparedness between small and larger businesses on the transition, such as that larger businesses would demonstrate greater levels of preparedness across different metrics. This section of the report will outline the findings of the multiple-choice questions and compare the responses between micro companies (0-9 employees) and larger companies (more than 9 employees).

Multiple Choice Analysis: Key Findings

Based on previous interviews it was hypothesized that larger businesses would demonstrate stronger overall preparedness for the transition to net zero. Results obtained offered partial support for this hypothesis.

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Results indicated that larger businesses had made significantly greater strides in the extent to which they had looked at the transition to net zero, had greater motivation for the transition to net zero, and were more financially prepared for the transition to net zero. However, while larger businesses indicated somewhat of a higher knowledge base than smaller businesses, statistical analysis demonstrated that this difference was not to the level of significance. Large and small companies had similar knowledge levels on what was required to meet the net zero transition and viewed the transition to net zero as being of similar importance. Likewise it was revealed that there were no differences between large and small businesses on whether they had previously measured their carbon footprint. However, it must be stressed that more than 65% of businesses indicated that they had either not currently measured their carbon footprint, or that they had little knowledge of how to do this.

Multiple Choice Question Methodology

Survey Development

The survey was created collaboratively by a team of 4 researchers and distributed online to employers in Dorset through the use of Prolific. The multiple-choice questions and the scale on which they were measured can be seen in table 1.

Question Number	Question	Scale
1	To what extent has your business currently started looking at the transition to net zero?	A great deal – A lot – A moderate amount – A little – None at all
2	Has your business measured its carbon footprint?	Yes – No – I don't know how to do this

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3	How important is the transition to net zero for your business right now?	The most important priority – A top priority, but not the most important – Not very important – Not important at all
4	How motivated is your business to lower its carbon emissions?	A great deal – A lot – A moderate amount – A little – None at all
5	How financially ready is your business to lower its carbon footprint?	A great deal – A lot – A moderate amount – A little – None at all
6	Does your business know what steps to take to become a net zero business?	Extremely aware – Very aware – Somewhat aware – Not so aware – Not at all aware

Table 1. Multiple choice questions asked in the net zero surveys. In the analysis responses have been converted to numerical values where 1 represents a response equivalent to “none at all”.

Statistical Analyses

All statistical analyses were carried out using Jamovi (The Jamovi Project(2022)) and R.

The first statistical analysis compared the responses to multiple-choice questions one, four, five, and six. These questions were answered on a 5-point scale and were treated as continuous data based on the findings of Norman G (2010)¹, Carificio J and Perla R.J (2007)², and Winter J.C.F and Dodou D (2010)³, which demonstrate the robustness of parametric tests. Before conducting a MANOVA test, the assumptions of multivariate normality, linearity and

¹ Norman G. (2010). Likert scales, levels of measurement and the “laws” of statistics. *Adv in Health Sci Educ*, 15, 625-623. <https://doi.org/10.1007/s10459-010-9222-y>

² Carificio J. & Perla R.J. (2007). Ten common misunderstandings, misconceptions, persistent myths and urban legends about likert scale and likert response formats and their antidotes. *Journal of Social Sciences*, 3 (3), 106-116.

³ De Winter J.C.F & Dodou D. (2010). Five-point Likert items: t-test vs Mann-Whitney-Wilcoxon. *Practical Assessments, Research & Evaluation*, 15 (11).

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homogeneity of variance were assessed. After failing to meet the assumption of multivariate normality, Mahalanobis Distances were calculated, and multivariate outliers were identified. The one-way MANOVA was then conducted based on the hypotheses $H_0 = \text{the means are equal}$ and $H_1 = \text{the means are not equal}$, excluding the multivariate outliers.

The second analysis compared the response to multiple choice question 2 between micro and larger businesses. A contingency table was constructed, and a chi-squared test was carried out with the null hypothesis of $H_0 = \mu_{\text{greater than 9}} = \mu_{\text{less than 9}}$ and $H_1 = \mu_{\text{greater than 9}} \neq \mu_{\text{less than 9}}$.

The final statistical analysis carried out compared the responses to question 3 by micro and larger businesses. A Mann Whitney U independent samples T-test was carried out under the assumptions of equal variances and non-normality and the hypotheses of $H_0 = \mu_{\text{greater than 9}} = \mu_{\text{less than 9}}$ and $H_1 = \mu_{\text{greater than 9}} \neq \mu_{\text{less than 9}}$.

Multiple Choice Question Results

Survey Response

202 individuals from across Dorset participated in the survey. 116 participants were from micro businesses and 86 were from larger businesses. Descriptive statistics can be seen in table 2 below.

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Descriptives

	Employee Count	Extent	Carbon Footprint	Importance	Motivation	Finances	Knowledge
N	greater than 9	86	86	84	86	86	86
	less than 9	116	116	116	116	116	115
Missing	greater than 9	0	0	2	0	0	0
	less than 9	0	0	0	0	0	1
Mean	greater than 9	3.10		2.54	3.28	2.76	3.01
	less than 9	2.57		2.40	2.88	2.31	2.78
Mode	greater than 9	3.00 ^a		3.00	3.00	3.00	3.00
	less than 9	2.00		3.00	2.00	2.00	3.00
Standard deviation	greater than 9	1.21		0.719	1.32	1.26	1.10
	less than 9	1.07		0.733	1.11	1.06	1.01
Variance	greater than 9	1.46		0.517	1.73	1.60	1.21
	less than 9	1.15		0.537	1.24	1.12	1.01

^a More than one mode exists, only the first is reported

Table 2. Descriptive statistics for Net Zero Survey multiple choice questions

Questions on Extent, Motivation, Finances and Knowledge on the Transition to Net-Zero

The first one-way MANOVA failed to meet the assumption of multivariate normality after a Shapiro-Wilk Multivariate normality test returned $P < .001$. Following this, Mahalanobis distances and their respective P values were calculated to identify outliers to be removed. P values $< .05$ were deemed significant resulting in 18 responses being removed as outliers, of which 11 were micro businesses and 7 were larger companies. The second one-way MANOVA, excluding outliers, met all assumptions shown by Box's homogeneity ($p = .809$), Shapiro Wilk multivariate normality test ($p > 0.05$), and a correlation matrix ($P < .001$).

Multivariate Tests

		value	F	df1	df2	p
Employee Count	Pillai's Trace	0.0484	2.28	4	179	0.063
	Wilks' Lambda	0.952	2.28	4	179	0.063

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Hotelling's Trace	0.0509	2.28	4	179	0.063
Roy's Largest Root	0.0509	2.28	4	179	0.063

Table 3. Multivariate MANOVA Results on Multiple Choice Questions for Extent, Motivation, Finances, and Knowledge for the transition to Net-Zero

The one-way MANOVA found weak evidence ($p=.063$) to reject the null hypothesis, indicating there is a difference in means between micro and larger companies.

Univariate Tests

	Dependent Variable	Sum of Squares	df	Mean Square	F	p
Employee Count	Extent	10.63	1	10.63	8.53	0.004
	Motivation	8.13	1	8.13	5.74	0.018
	Finances	6.26	1	6.26	5.69	0.018
	Knowledge	3.76	1	3.76	3.75	0.054
Residuals	Extent	226.85	182	1.25		
	Motivation	257.85	182	1.42		
	Finances	200.17	182	1.10		
	Knowledge	182.58	182	1.00		

Table 4. Univariate ANOVA Results on Multiple Choice Questions for Extent, Motivation, Finances, and Knowledge for the transition to Net-Zero

As is shown in Table 4, post-hoc univariate ANOVA showed a significant difference ($p<.05$) between mean values of extent, motivation, and finance when compared individually. Larger companies demonstrated greater levels of preparedness on these metrics for the transition to

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net zero. These findings are consistent with that of the previous sector interview analysis and are in support of our original hypotheses. There was only weak evidence ($p=.054$) for a difference in knowledge between micro and larger businesses, despite larger businesses demonstrating slightly higher levels of knowledge in the descriptive statistics.

Carbon Footprint Measurement

Contingency Tables

Employee Count	Carbon Footprint			Total
	I don't know how to do this	No	Yes	
greater than 9	24 (30.38%)	28 (35.44%)	27 (34.18%)	79
less than 9	24 (22.86%)	49 (46.6%)	32 (30.47%)	105
Total	48 (26.09%)	77 (41.85%)	59 (32.07%)	184

Table 5. Descriptive statistics for Carbon Footprint Measurement responses. Percentages presented are for the proportion of responses within each group.

Table 5 outlines descriptive statistics for responses to whether a company has measured its carbon footprint. The Chi-Squared test did not provide sufficient evidence to reject the null hypothesis ($p=.274$) of the two variables being independent, indicating that there is no difference between micro and larger companies when it comes to measuring their carbon footprint.

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Importance of the Transition to Net Zero

Independent Samples T-Test

		Statistic	p	Effect Size	
importance	Mann-Whitney	3531	0.078	Rank biserial	0.138
	U			correlation	

Table 6. Mann-Whitney U T-Test Statistics comparing Importance of Transition to Net Zero with business size.

The Mann-Whitney U test met the assumption of equal variances (Levene’s test, $p=0.686$) and provided weak evidence ($p=0.078$) for the rejection of the null hypothesis that the mean importance of the transition to net zero is equal between micro and larger businesses. The effect size is relatively small with a rank biserial correlation of 0.130.

Conclusion

Overall, findings offered some support for the hypothesis that larger businesses would demonstrate better preparedness for the transition to net zero.

Currently, larger businesses indicated that they have looked into net zero at a greater extent, have greater motivation to meet the transition to net zero, and are more financially capable to meet the transition to net zero. These findings offer significant support for our hypothesis, and are replicable based on the information obtained through sector one-to-one interviews.

Additionally, little difference was found between large and small businesses on whether they had currently measured their carbon footprint, or on the level of importance placed on the transition to net zero. The majority of businesses either have very little knowledge of how to measure their carbon footprint or have currently not measured their carbon footprint.

Furthermore, while it was indicated that larger businesses held greater levels of motivation for the transition to net zero, there was no difference in the level of importance placed on it between large and small businesses. One interpretation of this finding could be that while

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smaller businesses hold the transition to net zero at a similar level of importance to larger businesses, they are less prepared and capable to meet the needs of the transition, particularly financially.

Net Zero Survey Open Text Question Analysis

The aim of the open-text questions was to gain a greater level of detail on businesses' capabilities in the present and future to meet the transition to net zero. Overall, 202 Dorset businesses across a multitude of industry sectors were recruited via prolific to provide their views on current and future steps in the transition to net zero. This section will detail the methodology and analysis of open-text questions, providing further detail on precise frequently occurring answers (codes).

Open Text Question Results Executive Summary

Open-text survey responses were obtained from employers across employment sectors, where a wide range of detailed responses were obtained on what challenges they have and will face, what steps they will have to take, and what industry changes and support will be required to meet the transition to net zero.

The most prominent challenge held by businesses was in relation to the financial demands of the transition to net zero with many businesses being concerned with the financial output that will need to take place to move forward in their processes. Businesses also indicated clear knowledge gaps on the transition to net-zero, where many businesses are unsure of what it will take to reduce their carbon emissions. Other important challenges were related to transportation issues, where many businesses will need to adapt to electric vehicle use due to being vehicle dependent in their processes. Furthermore, challenges around energy use and improving energy behaviours were deemed difficult.

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Many of the future steps outlined were general, collective steps. Included in this were improved behaviours surrounding energy efficiency and renewable energy use, more eco-friendly travel adaptation, and reductions in general waste. Finally, employers indicated clear areas of change and support that will be required to allow them to meet the transition to net zero. Where many expressed the challenge of the financial demands of the transition to net zero, grants and funding would be greatly desired, Furthermore, employers would be interested in the use of support schemes to have a greeter place of guidance that businesses can access to better guide them towards the correct steps to reduce their carbon footprint.

Open-Text Question Methodology

Question Development

Researchers contributed to the development of open-text response questions intending to obtain further detail on previous sector analyses on businesses' progress and needs in the transition to net zero. Four open-text questions were developed to attain this further understanding which were supported further through additional one-to-one interview engagements with businesses in Dorset. The four open-text questions can be viewed below in Table 7.

Question Number	Question
1	What are some of the challenges your business will face/are facing to meet the transition to net zero?
2	What skills should the new and current workforce be taught to push the transition to net zero forward in your industry?
3	What steps would your business need to take to become net zero (if you have started the transition to net zero please state the steps you have taken)

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4	What changes do you want to see in your industry to help with the transition to net zero?
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Table 7. Open-Text Questions used in the Net Zero Survey

Open Text Question Analysis

Analysis of open-text question responses was conducted on Atlas.Ti 22, the qualitative data analysis software. Documents for each question were created which included all responses. Inductive, granular coding was applied to the question responses, allowing for clear results to be obtained on the most frequent responses to each question.

Open-Text Question Results

This section will detail the key findings from the open-text survey coding. To do this, the top 10-12 codes from each question will be highlighted and discussed in depth, highlighting the nuance of the responses provided by Dorset businesses. Full code frequency counts can be viewed by accessing the following link:

<https://docs.google.com/spreadsheets/d/1YukXh0NrTza4YiQD-DTOEWqGILqBPD0X/edit#gid=882992588>

Challenges for the Transition to Net Zero

Code	Freq
Financial/Resource challenge	78
Transportation challenge	26
Green Transportation	16
Collaboration	13
Respondent is unsure or hasn't looked into it yet	12
Green energy	11

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Education	10
Changes in supply chain	10
Not eligible/feasible	8
Energy Behaviours	7

Table 8. Most frequent responses for challenges businesses are facing to meet the transition to net zero

Financial/Resource challenge (78)

The most common challenge faced by businesses who responded to the survey was in the financial aspect of the transition. Many outlined that the cost of moving to more economical energy methods and more sustainable methods would be high. This would be particularly difficult for smaller businesses.

Transportation Challenge (26) and Green Transportation (16)

A key challenge facing businesses is the transition to using more electric vehicles in the workplace. Many workplaces are very reliant on vehicles of some sort, and the use of electric vehicles in the future will be necessary, however, some outlined concerns around the feasibility of using those in the current climate.

Collaboration (13)

Collaboration in all aspects of the business was deemed important. This was related to collaboration in staff within the business, collaborating with other businesses and partner companies in the sector, and collaborating with suppliers. Ensuring that views and goals within industries are aligned will allow for a more seamless transition.

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Green Energy (11)

In general, the cost of green energy is a concern for businesses. Green energy will be essential going forward in order to reduce emissions but transitioning to using solar panels, hybrid/electric cars, and other renewable energies will require significant financial output to achieve this.

Unsure (12) and Education (10)

Many companies have a lack of understanding of what needs to be done to achieve the transition to net zero and because of this, there is a need for more education and information from third parties to provide businesses with the knowledge on how to meet the transition.

Changes in supply chain (10)

Supply chains will be important when it comes to the transition. Many businesses are very reliant on supply chains, however, without more collaboration from those suppliers in reducing carbon emissions, some businesses could find it difficult.

Energy Behaviours (7)

A further challenge that businesses will face will be the adaptation of the workplace culture to adopt more net-zero efficient energy behaviours. These behaviours surround reducing energy consumption in the workplace, use of more sustainable products and services, and improving methods of how employees travel to work.

Skill Needs for the Transition to Net Zero

Code	Freq
Education	35

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Awareness	34
Energy Behaviours	31
Reduce waste	24
Respondent is unsure or hasn't looked into it yet	20
Training	19
Policies and processes	18
Recycling	16
Interpersonal Skills	14
Specialist/Niche skills	13

Table 9. Most frequent responses for net zero skill needs.

Education (35) and Awareness (34)

To meet the transition, knowledge, and awareness have been outlined as the most important areas. Businesses need more education to provide knowledge at both business and employee levels to help improve businesses' understanding of what needs to be done and how to reduce emissions. Within this, there is a need to improve understanding of different renewable energy sources and fossil fuels, knowledge on how to measure and track carbon footprints and improve awareness of the importance of net zero in the wider scope.

Energy Behaviours (31)

Like within the challenges businesses are facing, there will need to be more applicable behaviours on energy use within businesses to reduce energy consumption. Small aspects of the business such as switching off appliances when not in use, improving transport methods to and from work, and having more personal responsibility within the workplace on energy use were stated as small, but important changes needed within workplaces.

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Reduction in Waste (24) and Recycling (16)

Waste reduction was outlined to be an important aspect for businesses in general. In line with improving energy behaviours, there will need to be improvements in adhering to recycling to help reduce waste production in businesses.

Training (19)

Similar to the need for more education and awareness on how to meet the transition, businesses have outlined that they would need more training packages that would build up knowledge and skills that would help businesses to achieve the transition.

Policies and Processes (18)

Skills in being able to apply the most efficient processes within the business will be required, along with more knowledge on how to meet policy targets.

Interpersonal Skills (14)

Some businesses have outlined interpersonal skills to be key when it comes to meeting the transition to net zero. For example, businesses will require employees to have better teamwork, communication, adaptability, and critical thinking with the ability to challenge ideas and processes.

Specialist/Niche Skills (13)

A lot of the skills needed to meet the transition to net zero will be very niche, specialist skills that can be specific to a small number of businesses. Many of these skills were stated to relate to energy consumption and renewable energy use. However, some more specific skills for different businesses are related to building/construction practices and maintenance work.

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Future Steps Needed to Become Net Zero

Code	Freq
Green Transportation	45
Reduce waste	29
Energy Behaviours	25
Green energy	25
Reduce Travel	19
Ability to calculate emission/footprint	18
Changes in supply chain	18
Financial Consideration	16
Greener/Sustainable Materials	16
Recycling	15
Action plan	12

Table 10. Most frequent responses for steps needed to become net zero.

Green Transportation (45) and Travel Reduction (19)

The most frequent response for steps to be taken was in green transportation and more economically friendly transport methods. Again, included in this was the increased use of public transport, cycle-to-work schemes, and the adoption of electric vehicle use to reduce emissions from cars.

Waste Reduction (29) and Recycling (15)

Further important steps taken by businesses are in reducing waste and improving recycling habits. Many responses discussed reducing paper use and waste, and improving their attempts at reusing items when possible.

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Energy Behaviour (25) and Green Energy (25)

Similar to previous questions, improved energy behaviours and the use of green energy were deemed important steps. There is a need for more responsibility at both employee and business levels to improve energy habits to reduce energy usage. Furthermore, renewable energy sources and reducing reliance on fossil fuel use were deemed as important steps.

Ability to calculate carbon emissions/footprint (18)

There is a need for businesses to understand how to measure their own carbon footprint so that they can work on reducing emissions. Some businesses outlined that they do not know how to do this currently and would like guidance to help them to achieve this.

Financial Consideration (16)

The financial output for businesses to meet the transition to net zero has been outlined to be a major challenge facing businesses. The adoption of renewable energy sources and more eco-friendly travel could be particularly expensive for many businesses and many would currently struggle to afford aspects of the transition.

Changes in Supply Chain (16)

As noted previously, many businesses are very reliant on supply chains for purchasing products and materials. Thus, there will be a need for supply chains to adopt more eco-friendly practices and to produce more sustainable products for businesses. Collaboration within the industry for this aspect will be important.

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Green/Sustainable Material Use (16)

Similarly to the notion of reducing waste and improving recycling habits, many businesses outlined a major step to be the increased use of green and sustainable materials and products. Doing so will allow for reduced waste production in businesses and improve the possibilities of increased recycling.

Action Plan (12)

Many businesses will need a future action plan to be put in place to outline all of the key steps involved in reducing emissions and meeting the transition to net zero. Where many businesses lack knowledge on how exactly to achieve the transition, this action plan will be key for allowing progress to be made.

Industry Changes Needed to Meet the Transition to Net Zero

Code	Freq
Support Schemes	34
Grants/Incentives/Funding	29
Respondent is unsure or hasn't looked into it yet	18
Third party or Government	17
Green Transportation	16
Collaboration	15
Policies and processes	15
Green energy	12
Reduce waste	12
Changes in supply chain	11
Reduce Travel	11

New technology	9
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Table 11. Most frequent responses to industry changes needed to meet the transition to net zero.

Support schemes (34)

Most frequently, businesses outlined a need for more government support to help them achieve the transition to net zero. Where there are a lot of challenges involved in the difficulty and a lack of knowledge on what needs to be done, increased government support schemes would help to alleviate concerns and challenges.

Grants/Incentives/Funding (29)

Where the financial aspect of the transition to net zero was outlined to be one of the key difficulties facing businesses, they have outlined a need for more grants, incentives, and funding to allow the transition to be more feasible.

Green Transportation (16)

Again, a key area noted was in electric vehicle use. Businesses would like electric vehicle use to become standard across their industry within the next 10 years, while more facilities for electric vehicle charging would be needed to facilitate needs.

Collaboration (15)

Businesses would like to see more collaboration within their industry. They would like more collaboration with other businesses in their industry to approach the challenge of the transition to net zero together. Aligned values within industries will be key in allowing for an easier transition.

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Policies and Processes (15)

Many employers outlined that they would like more advice on the policies involved with the transition to net zero and also more changes to processes within workplaces. Some employers outlined that they would like environmental processes and goals to be given more priority. Specifically mentioned were changes in transport processes, building processes, and reductions in processes that are harmful to the environment.

Green Energy (12)

An important change outlined by employers was that they feel more companies in their industry will need to adapt and invest in using more green and renewable energy sources. Fossil fuel use needs to be reduced in order to significantly reduce carbon footprint.

Waste Reduction (12)

Some employers have expressed that some employers in their industry generate a large amount of waste in their processes, thus there will need to be a more rounded approach in their industry to reduce waste production in the businesses.

Changes in Supply Chain (11)

Supply chain changes will be important for businesses and this aspect will supplement the need for more collaboration in their industries. Businesses would value more supply chains in their industries offering sustainable alternatives, while others have outlined that more businesses need to buy locally instead of buying from overseas.

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Reduce Travel (11)

Similar to the reduction in waste and increased use of electric vehicles, some businesses outlined a need for reduced travel overall in their business. Suggested were needs for more local and remote working opportunities as opposed to traveling to central offices and to adapt to utilising more online meetings to reduce face-to-face interactions which cause travel.

New Technology (9)

Businesses have outlined a need for investment and the use of new technologies that can improve clean and sustainable practices. Specifically mentioned were ideas of using renewable energy technologies and technologies for measuring trends and data in businesses' carbon production to allow for better guidance when more needs to be done.

Conclusion

Overall, the open-text responses gained clear insights into employer perspectives on the challenges, steps needed, and changes required that would allow them to become carbon neutral.

Findings indicated a wide range of challenges to overcome, most prominently the financial demands and the lack of knowledge held by businesses on how to meet the transition to net zero. Many employers expressed a desire to improve in several aspects of their business through the use of more eco-friendly travel methods, becoming more energy efficient, and improving general waste production. Businesses stated that many of these general, cross-sectoral aspects will be important steps to continue to take.

However, businesses did outline several key areas of support that will be required to help them achieve the transition to net zero. Specifically, government support was the most prominent area. Businesses demonstrated a need for more support schemes to be put in place

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to offer guidance and help for businesses on the transition to net zero, while grants and funding were deemed as significant areas that would provide great help for businesses, particularly those who stated that the financial demands of the transition to net zero would be particularly difficult.

Net Zero Interview Analysis

Following the completion of the analysis of the net zero surveys, further one-to-one engagements with employers were conducted. The aim of these interviews was to build on the findings gained through the survey to add key detail from the thoughts of employers. Overall, 9 interviews were conducted with Dorset businesses, with researchers being satisfied that saturation had been achieved with little novel interview content being reported after the sixth interview. This section will detail the methodology and findings of these interview engagements.

Net Zero Interview Analysis Executive Summary

One-to-one interviews with employers focused on the transition to net zero resulted in a wide range of clear, overarching themes to be developed detailing where businesses currently are in the transition to net zero, how much they know about the transition to net zero, what challenges and concerns they hold, and what future steps and support they will need to meet the transition.

Many businesses are currently in the very foundational stages of the process. Many of the current steps taken are low-cost basic initiatives such as waste and transport reduction. While many businesses indicated a clear motivation to make progress with reducing their carbon footprint, it is clear that most businesses currently lack the knowledge levels required to fully put important practices in place. While in the future different skill needs could be important to allow businesses to meet the transition, the lack of knowledge on the initiative limited businesses on how much they knew about skill needs for the transition.

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As was found in the open-text survey, many businesses hold concerns about the financial demands of the transition, and the feasibility of meeting those. Furthermore, where knowledge levels are lacking, businesses felt that the lack of centralized sources to find reliable information on the transition to net zero was a major challenge that they are facing. They feel that a key solution to improving the feasibility of the transition would be the introduction of a centralised government source to provide clear information and roadmaps on what steps will have to be taken.

Interview Methodology

Interview Question Development

Following the completion of the survey analysis, researchers worked together to develop questions that would add further detail to the survey findings that were obtained. The interview questions developed were intended to be used as a rough guide during interviews to steer employers' discussions in the right direction to keep within the scope of the project. A guide of the interview questions has been outlined in the linked document below.

<https://docs.google.com/document/d/1-3qPcqr05cWJChcugPigfdtC1LWW1ex8OG5JJZG3H5M/edit>

Interview Analysis

Analysis of interviews was conducted following two phases: Codebook Application and Theme Generation.

For the purpose of analysing the interview transcripts, a short codebook was developed that would allow for relevant quotations from the transcripts to be separated into relevant, coherent groups for further dissection. The codebook which was applied and descriptions of each code category can be viewed below in table 12.

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Code Category	Description
Steps Taken/Current Stage	Information regarding the current stage that businesses are in for the transition to net-zero, and what steps they have undertaken.
Knowledge Levels	Information regarding knowledge levels, or lack thereof, on different aspects of the transition to net zero.
Skill Needs	Information regarding specific skill needs that would allow businesses to meet the transition to net zero.
Challenges and Concerns	Information regarding challenges and concerns that businesses have experienced or expect to experience in the transition to meet net zero.
Future Steps Needed	Information regarding the future steps that businesses will require to help them achieve the transition to net zero.
Solutions/ Support Needed	Information regarding any solutions or further support required that would allow businesses to meet the transition to net zero.

Table 12. Codebook code categories and descriptions for what each category represents.

Following the application of the codebook to the interview transcripts, two researchers rigorously analyzed quotations for each category in order to generate clear, overarching themes which highlight the most important thoughts held by employers in the transition to net zero. Both researchers wrote individual reports which were then compared and combined to finalize the analysis of the interview engagements.

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Interview Thematic Analysis Results

This section will detail analysis and key themes that have emerged from net-zero focussed interviews. Themes will be split into 6 separate categories: Steps taken/Current stage, Future steps needed, Knowledge levels, Challenges and concerns, and Solutions/Support Needed.

Overall, the interview findings offered significant support for the survey findings, suggesting wide-ranging replicability of findings for all sectors when it comes to dealing with the transition to net zero.

Steps Taken/Current Stage

This section will detail the steps that businesses have currently undertaken, and what stages they are currently at in the transition to net zero. Important to note, is that it is very clear that the majority of businesses are still in the foundational stages of the transition, but most are making efforts to put practices and behaviours in place.

Motivation

Many businesses outlined a clear motivation and desire to achieve the transition to net zero. Employers clearly demonstrated that the transition to net zero is important within their thought processes and decision-making, where some outlined that becoming net zero and more eco-friendly would provide a more positive outlook of the business to the general public. However, while motivation is high, many businesses outlined concerns with the feasibility of the transition in the current stage.

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Low Cost, Basic Initiatives

Currently, most businesses are in the early stages of reducing their carbon emissions. The most frequently mentioned initiatives, currently in place, were energy efficiency, remote working, looking at supply networks/chains, travel considerations and promoting recycling and waste reduction. These methods are all low or zero cost and most businesses are yet to make any drastic changes to their structure or processes. Some employees feel these measures are only loosely implemented or encouraged and not upheld.

Knowledge Levels

General Lack of Knowledge

A key finding was the general lack of knowledge within businesses for the transition to net zero. As mentioned above, many businesses have undertaken a lot of very general steps to reduce carbon emissions, but they lack specific knowledge on the further changes they will have to put in place to achieve net zero. Additionally, within many businesses, it is only senior management or specific employees with knowledge of net zero strategies, making the implementation of new policies and a cultural shift more challenging. This aspect feeds into skill needs, where many do not see the issue as a matter of skill needs, but instead, it is the knowledge and awareness aspects of net zero that are currently important and need to be improved.

This finding has shown to be extremely consistent throughout the project with sector interviews, surveys, and net zero focused interviews, highlighting a clear concern when it comes to businesses fully developing plans to meet the transition to net zero.

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Carbon Auditing

Businesses' knowledge of carbon auditing is varied but generally low. Only 2/9 interview participants had measured their carbon footprint and 3/9 explicitly stated they didn't know how to go about getting it measured. There is currently very little support in this area and this needs improving.

Skill Needs

Knowledge and awareness is more important than skills.

A key finding is that the majority of businesses don't currently regard specific skill needs as important for the transition to net zero. Instead, it is the knowledge and awareness of net zero that will be important going forward. Businesses need more people who have clear and specific knowledge of how best to improve their practices to reduce their carbon footprint. As knowledge levels increase and specific plans are implemented, businesses are likely to become more aware of their specific skill needs and deficits.

Environmental Officer/Monitor

Some businesses are already employing 'Environmental Officers' or equivalent roles but there is a demand for this business area to expand. A key responsibility of these individuals will be effectively monitoring progress and driving the transition to net zero forwards.

Leadership

There was an indication that there would need to be better levels of leadership at the management level of businesses to effectively guide the transition.

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Challenges and Concerns

During interviews, many employers held significant concerns about the challenges they are likely to face to achieve the transition to net zero. This section will detail the most prominent concerns held by employers.

Financial Demands

Many businesses hold concerns about the financial demands of the transition to net zero. It was outlined that initial costs in adopting renewable energy and solar panel use would come with a significant outlay for businesses which would impact day-to-day operations that could be deemed as more important for the success of the business. The financial aspect can be off-putting when it comes to allowing some businesses to fully commit their resources to reduce their carbon footprint. This is evident in the fact that most businesses have only started implementing zero or low-cost strategies.

Lack of a Centralised Source of Structure/Guidance

Many businesses felt that a lack of centralised sources, such as a government support scheme, is limiting their ability to improve practices. Due to this, it was outlined that businesses feel that they are being left to deal with the transition by themselves and that there is no structure or guidance available on how best to reduce their carbon emissions.

Difficult to find reliable information

Some employers outlined that while there can be a lot of information out there on the transition to net zero, they have expressed that it is difficult to know which information can be reliable to follow. Information finding was described as a “minefield”, where it can be very easy to follow incorrect advice. The lack of available, reliable information is having an impact on the challenges around the lack of knowledge and awareness of the transition to net zero.

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Unavoidable Carbon Emissions

For some companies the main challenge is that they have unavoidable carbon emissions. One example of such a company is a ferry operator relying on marine diesel. For companies like this to reach net zero, technological advances are needed within their industry as well as the financial capability to implement them.

COVID-19

COVID-19 has been the main priority of many businesses so transitioning to net zero has taken a back seat.

Future Steps Needed

Outlined in this section will be the clear future steps that businesses have outlined to be needed to allow them to lower their carbon footprint and to progress forward with achieving the transition to net zero.

Renewable Energy Adoption

The area deemed most important by employers was the adoption of renewable energy sources. Particularly with the rise in energy costs, energy efficiency, and renewable energies are areas that businesses feel could significantly benefit both not only their abilities to reduce their carbon footprint, but also to benefit their own business practices. There was the suggestion that in the long- run, sustainable energy sources will have very positive impacts on cost reduction.

Electric Vehicle Use

Where many businesses rely heavily on vehicle use day-to-day, increased electric vehicle use and improved feasibility of electric vehicle use were deemed as important aspects that will need to be achieved to help businesses reduce their carbon footprint.

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Plastic Reduction and Alternatives

While the majority of businesses have currently undertaken steps to reduce paper use and improve recycling habits, many businesses outlined a desire for less plastic reliability from the source. They would like more reductions in plastic use, and for more alternatives in plastic to be attainable.

Culture Change

Within many businesses, there has been the realisation of the need for a culture change. It will be important for more employees within the business to get on board with initiatives on improving behaviours surrounding net zero, and a culture change will be required to improve general perceptions of the change and why it is important.

Individual Ownership

Participants felt that individuals needed to take more ownership of their role in reducing carbon emission. The idea that one person can't have an effect was thought of as harmful and the idea that many individuals collectively can have a big impact was something that participants wanted to push.

Solutions/ Support Needed

During the one-to-one interviews, businesses outlined very clear needs for support and possible solutions that would improve their abilities to meet the transition. This section will detail the most prominent responses for those needs on what could be done.

Government Support

Employers have suggested that government input will be necessary to achieve the transition to net zero. Currently, businesses have very little government support to aid them in the transition to net zero, however, they feel that having a centralised source of information, guidance, and investment will significantly improve businesses' capabilities for the transition.

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Furthermore, this aspect was suggested to be important for encouraging more businesses to place the transition higher in their priorities.

Funding

Businesses require more government funding initiatives to start making real progress towards the net zero target. Currently it is not financially viable to take on expensive upfront costs required to implement new technology.

Evidenced-based Guidance

Some employers outlined a need for evidence-based guidance from the government to be available. This aspect would allow employers to see how effective undertaking different practices of reducing their carbon emissions, such as renewable energy usage, could be. Furthermore, evidence-based guidance could be important for alleviating concerns about financial demands. If clear data was provided on the long-term benefits of using solar power financially, it was suggested that more businesses would be likely to commit to adopting solar power and renewable energy use.

Net Zero Roadmap

Additionally, where there is a lack of knowledge and clear guidance on the transition to net zero, many employers have suggested that they would benefit from a clear roadmap or exemplar net zero business plan that they would be able to follow to reduce their emissions more effectively. At present, there is no clear map or information to demonstrate to businesses how they can become net zero.

Training and Education

Training and education will be vital. There is a need to provide businesses with more knowledge and awareness on different methods of reducing carbon emissions, and to clearly align business ideas on what they need to put in place in the future to drive towards the transition to net zero.

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Collaboration/Networking Opportunities

Aspects surrounding collaboration and networking with other businesses were found to be fairly important areas for businesses. This can be related to the need for improved relationships with supply chains to purchase more sustainable products and materials, but also increased collaboration with other similar businesses to share and improve net zero practices.

Conclusion

Overall, it is clear that businesses are in the foundational stages of the transition to net zero. Many of the steps that have currently been taken are entry-level, basic initiatives that are relevant to most people when it comes to improving sustainability behaviours.

One clear finding was the lack of knowledge held overall by businesses on what they need to do to meet the transition to net zero. Businesses are aware of basic initiatives such as energy efficiency and waste reduction, however, they lack knowledge on the more in-depth specifics and next steps, and this lack of knowledge severely limits how much progress can be made. Skill needs are currently not deemed important by businesses for the transition to net zero when compared to the need for more awareness and knowledge.

To solve this, businesses outlined a desire for centralized sources of reliable information that can provide clear evidence-based guidance and step-by-step roadmaps to show businesses how to effectively meet the transition to net zero. Interviewees stressed that government support will be important within this, where from the perspectives of the employers, very little support has been provided thus far.