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Carbon Neutral Islands 2040 sector readiness and skills assessment

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1 Executive summary

The Carbon Neutral Islands project is a Scottish Government commitment to support six Scottish islands (Islay, Raasay, Hoy, Yell, Barra and Great Cumbrae) to become carbon neutral by 2040.

We present evidence on the readiness status of island businesses to meet this challenge. Our focus is on the skills available within business to support decarbonisation, skills gaps and future requirements. Our research included a literature review along with online surveys and in-person interviews with key stakeholders on the islands.

1.1 Findings

- While most of the businesses interviewed across the six islands are willing and ready to engage with the Carbon Neutral Islands project, there is a lack of knowledge and skills.
- A minority of businesses actively track their carbon footprints. However, some businesses who are developing a strategic plan for decarbonisation do not always use their carbon footprints to guide their strategies.
- Time and cost are key barriers to businesses in tracking carbon footprints and developing a decarbonisation strategy. While most agreed that tracking carbon footprints and developing plans are important, half or more of the businesses in the renewable energy sector, agriculture, housing and trades sectors did not do this.
- Participants have a general understanding about carbon use in their businesses and a general awareness of how to measure it via calculator tools. However, most participants were less confident in their technical knowledge and how to implement changes. There are challenges around finding footprint calculators relevant to individual island-based businesses and guidance for plan development.

- There is a general lack of knowledge of the skills that are required for decarbonising businesses and how to develop these skills. Other key gaps include a lack of understanding of the technical options for decarbonisation. Our evidence indicates that agriculture, aquaculture and marine, the self-employed and logistics sectors require the most support over a wide range of skills.
- Current actions towards carbon neutrality are short term and generalised, such as selecting 2-year green energy tariffs. Barriers to longer-term carbon neutrality include costs of green technologies and a lack of qualified technicians within the islands for installing or maintaining equipment (e.g. heat pumps and solar panels).

1.2 Next steps

Our findings aim to support areas of possible action for consideration by the Carbon Neutral Islands (CNI) project team and appropriate Government agencies. The following steps would help address the skill gaps identified and support island businesses to decarbonise:

1. Develop a training programme for the CNI project Community Development Officers (CDOs) to enable them to provide island businesses with information resources and support knowledge and understanding. They could directly support businesses in the production of carbon actions plans. Since the production of this report, CDOs across all of the islands have undergone training including accredited qualifications in corporate standard carbon accounting, energy assessor training and other energy efficiency advisory training. It has been hugely valuable for the CDOs and the communities they serve. Roll out to other islands would significantly benefit them.
2. Develop island specific carbon planning tools such as carbon calculators. These should ensure relevant measures to each island and account for sectorial differences within each community.
3. Provide training for technicians, electricians, mechanics and other trades so they can provide installation and maintenance services to green technologies.
4. Develop sector specific roadmaps to carbon neutrality with short- and long-term targets, which aim to address key barriers identified in this report.
5. Run specific agricultural focused actions such as additional skills development support for crofters and small farms to understand and implement sustainable land management practises and conduct carbon audits, which are critical for securing some grants and funding.
6. Develop a coordinated support package for islands businesses with relevant government agencies and training providers. The level of support for businesses on Cumbrae has increased substantially to include Commercial EPCs, Display Energy Certificates, Carbon Audits and Businesses Energy Scotland funding support. There would be significant benefits to replicating this across the other islands.
7. Upgrade energy infrastructure in islands, to support the inclusion of greener technologies as part of businesses decarbonisation strategies.
8. Promote a circular economy, which would support reduction in waste and supply chain carbon emissions, aiding in businesses achieving net zero.

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2 Glossary

CDO	Community Development Officer from the Carbon Neutral Islands project
CNI	Carbon Neutral Islands project
SME	Small and medium enterprise
Net zero	The term 'net zero' for the Scottish Government means a balance between the amount of greenhouse gas emissions produced and the amount removed from the atmosphere in Scotland. The Scottish government aims to achieve net zero emissions of all greenhouse gases by 2045.
Carbon neutral	The definition of ‘carbon neutral’ for the Carbon Neutral Islands project is an island where the greenhouse gas emissions are in balance with carbon sinks (such as forests, peatlands, or active carbon removal technologies). This is very similar to ‘net zero’, and for the purposes of this project, the terms are used interchangeably.
Decarbonisation	The act of removing carbon emissions from daily activities, operations or practises.
Carbon footprint	The calculation of how much carbon a person, business, activity, or building emits.
Decarbonisation plan	A strategy informed by a carbon footprint to reduce the amount of carbon a business emits over a number of years. The aim is to reduce carbon emissions each year until the business reaches net zero.

3 Introduction

The Carbon Neutral Islands (CNI) project is a Scottish Government 'programme for government' commitment to support six Scottish islands (Islay, Raasay, Hoy, Yell, Barra, and Great Cumbrae) to become carbon neutral by 2040. It also aims to support other goals such as economic and skills development.

This project investigates the extent to which businesses, public sector organisations and other bodies within key sectors across the six islands have carbon neutral strategies. Sectors of interest include tourism, food & drink, retail, leisure, transport, aquaculture and marine, renewable energy, agriculture, media, self-employed, logistics, housing and construction/trades. We investigate what would be needed in order for businesses to adopt and implement a carbon neutral strategy.

We consider the skills required in order to deliver carbon neutrality in these sectors on the six Scottish islands. We also consider the nature and scale of the overall skills development that is required to help island businesses meet the goals of the CNI project, both in the medium term (to 2030) and longer term (to 2040). The key challenges and barriers, including sector-specific barriers, for island businesses in preparing to meet the goals of the Carbon Neutral Islands project are reviewed.

We undertook desk-based literature reviews on current sector readiness on a UK-wide scale and a review of local, Scottish and UK policy and how it supports island businesses. We used online surveys in an attempt to achieve broad participation across the six islands. In addition we visited the islands and conducted in-person interviews. A detailed methodology can be viewed in Appendix 1.

Key challenges we experienced undertaking this project were:

- **Securing participation** – Out of approximately 600 businesses identified and contacted through desk-based research, only 63 surveys were returned with an additional 29 interviews conducted across the six islands.
- **Statistical analysis** – due to the limited responses, detailed sectorial analysis was not possible. In some cases there were only 2 responders for a sector. Out of the 13 participating sectors, only 4 sectors had over 10 responders (see Table 1 - **Error! Reference source not found.**).
- There are a number of **crossovers between sectors** where a business is linked to a number of sectors such as tourism, retail and food. This makes statistical analysis between sectors more challenging because the distinction between them is unclear. This is reflected in the sector breakdown tables, where although there were 59 responders with 6 choosing not to answer, a number of responders selected multiple sectors their business fell into. There were also responders who operated more than one business and used the same survey to answer for all the businesses they operated. This increased the total number of sectors who responded to the questions from the expected 63 to 122. This makes comparisons difficult and potentially skewed data.

As a result, we were unable to present the level of robust findings that may have been possible with more substantial response rates. However, we are confident that the 10% sample achieved, combined with the in-person interviews and input from CDOs, means that we have representative evidence to support our findings.

We can't conclude on any substantial differences in the readiness and skills between some sectors as the response rate was insufficient.

4 Overview of island businesses

We found the following sector profiles within the islands:

- Tourism is a dominant sector across all islands (both within the CNI target islands and amongst the other UK islands more generally). This extends to supporting industries such as hospitality and distilleries.
- Independent trades are a vital sector on islands including construction and mechanical, however few have a significant online presence, meaning it was difficult to obtain accurate numbers of these businesses.
- Retail is a prevalent sector with most falling into the food and drink category. Local grocery stores often have a multipurpose function offering post offices and parcel pick up points, some gifts and locally produced goods. Dedicated retail shops are limited on the islands with smaller resident populations such as Hoy and Raasay, however larger population islands such as Cumbrae and Islay have a more diverse retail sector.
- Agriculture and aquaculture are also important sectors across the islands for economic revenue and employment, although not as large in number of businesses and scale of operations compared with rural and coastal mainland areas.
- Large commercial farms are less common on islands than on the mainland. However, there are a larger number of crofts located within the islands, owned by small holders who do not sell to larger supply chains and are more invested in selling goods/produce locally in small volumes or for private consumption.
- There have been challenges for aquaculture businesses such as restricted access to markets following Brexit and losses during the Covid-19 pandemic, meaning there has been a downturn in shellfish and the wider fishing industries.

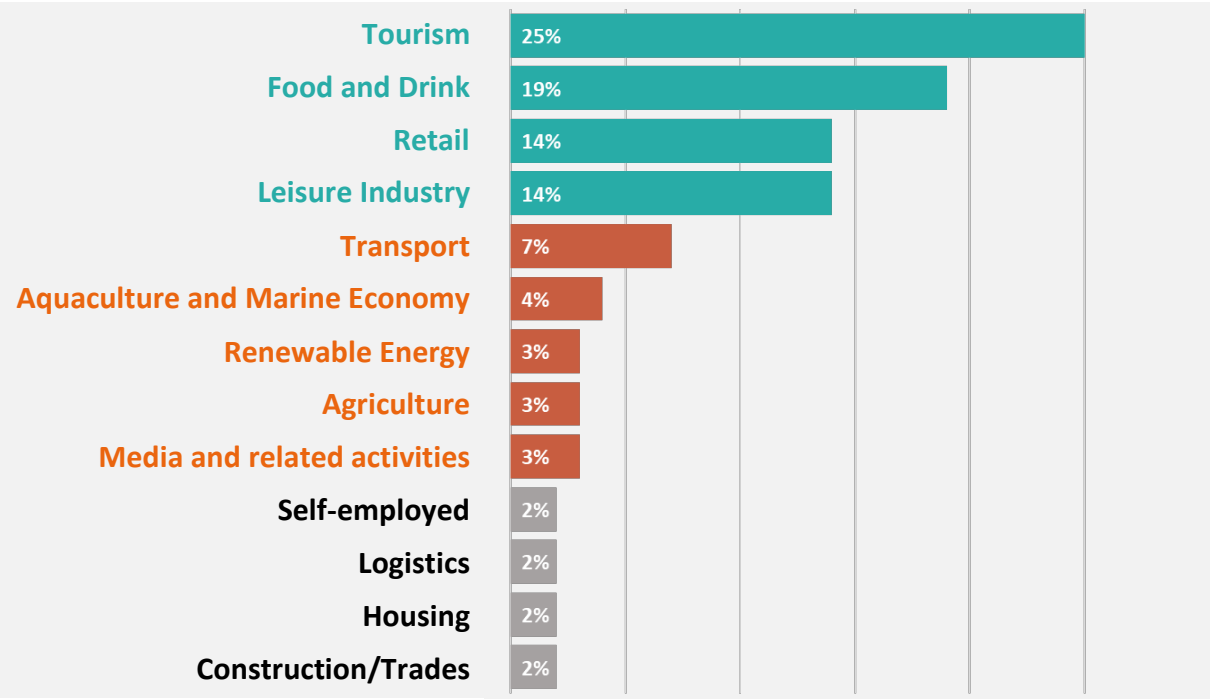

Figure 1 Sector distribution across all islands

Figure 1 shows the breakdown of the number of businesses identified across all the CNI islands. While each island showed a diverse range of businesses and were unique in many sector distributions, there was a significance of tourism and recreation businesses across all six islands. These industries include bed and breakfasts, hotels and other holiday accommodation, shops, grocers, galleries, cafés and theatres. Other sector businesses have a critical value to the islands e.g. aquaculture and agriculture can employ a considerable number of staff though there are few businesses. The transport sector reflects the size of the communities, with smaller populations having fewer transport businesses. Some island business operate several operations from a single main business (i.e. a farm may also be a B&B, or a bus operator may also be a mechanic etc.) which makes accurately calculating the numbers of businesses challenging.

5 Assessment of carbon neutral strategies across island businesses

5.1 Carbon reduction readiness

There were 63 responses to surveys and in person interviews. Full details and breakdown of responses can be found in Appendix B (Section 12.5). We found that around half of participants were aware of their businesses carbon footprint to some degree with less than 20% actively tracking it. Around 25% of participants have or are developing a decarbonisation strategy.

Most businesses do not currently track their carbon footprint. More businesses in the tourism, media and transport sectors actively track their carbon footprints than in the other sectors. However, the percentage of businesses in these three sectors actively tracking their carbon footprint is still under 50%.

Similarly, the majority of businesses regardless of sector are not currently producing carbon reduction plans. Those businesses that are tracking their carbon footprints are more likely to produce decarbonisation plans.

5.2 Barriers to developing a carbon strategy

Participants were asked about barriers to tracking their carbon footprints and developing a plan to decarbonise.

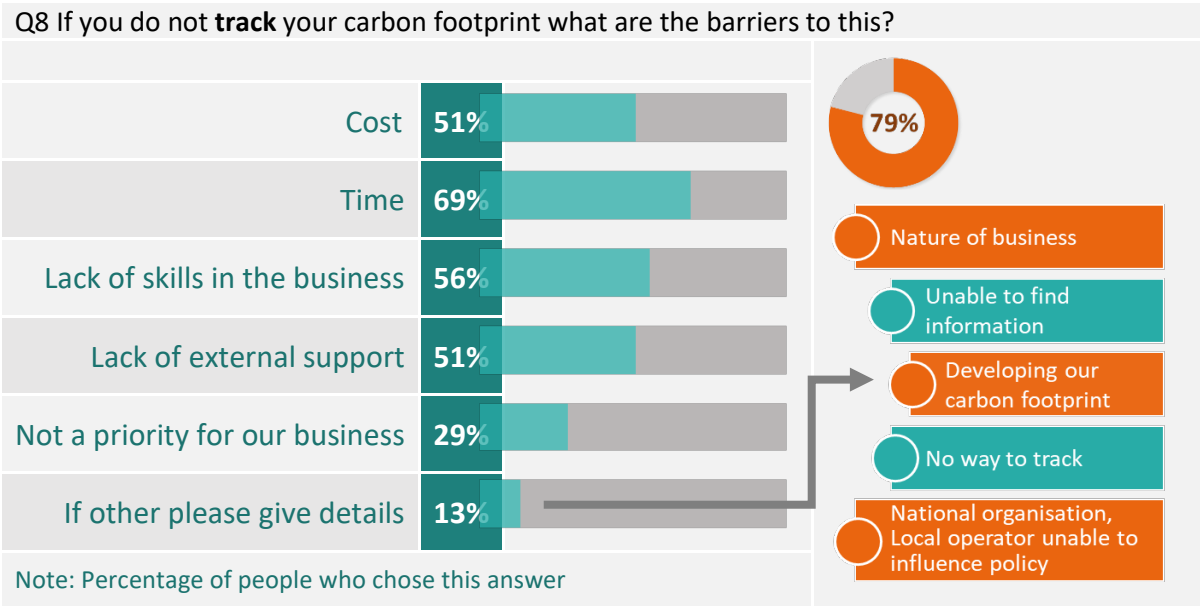

Figure 2: Overall barriers to carbon tracking

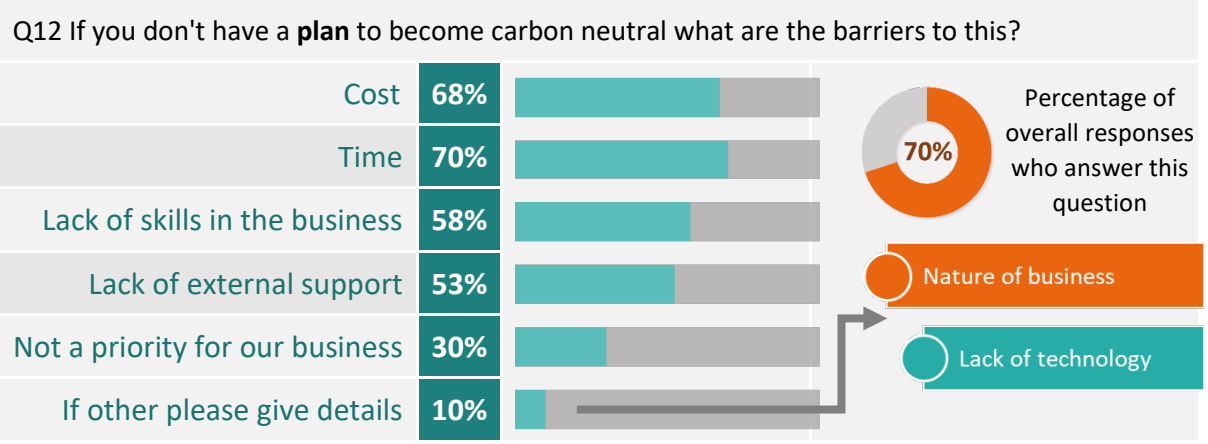

Figure 3: Overall barriers to plan production

5.2.1 Summary of overall responses

The majority (69-70%) said they did not have time to produce carbon footprint baselines. There was also some confusion and lack of understanding on how to do this and which tool out of the many options was right for them. There were also some issues raised with the appropriateness of standard carbon assessment metrics to island business, particularly farming. There is no clear advice on carbon recording tools, calculators and other baseline production options and explanation of how they differ, and which would be most appropriate for islands businesses. This complexity further dissuades businesses from looking into calculating their carbon footprint.

Responders stated that it would be helpful to outsource the carbon footprint and plan production. However, it is difficult to find and apply for the limited funding available for this. We understand that Highlands and Islands Enterprise are aware of this issue and are investigating the support they, or other agencies, could offer.

Responders stated that access to training and external support would be beneficial to allow business owners and operators to better prepare for a net zero transition. However, finding time for upskilling remains a key barrier.

5.2.2 Summary of sector analysis

Time and costs are the most common barriers to businesses in tracking carbon footprints and developing decarbonisation strategies. Most acknowledged that developing footprints and plans were important, but:

- 67% of businesses in the renewable energy sector indicated that developing a footprint was not a priority for their business. Half of businesses in other sectors including agriculture, housing and trades businesses also stated this was not a priority.
- Renewable energy sector place higher priority on developing a plan, with only 25% stating this was not a priority. We find that this sector puts more value in producing the plans than tracking footprints.
- Retail businesses indicated they placed more value in creating a footprint than a plan, as did logistics and leisure.

Prioritising internal resources for decarbonisation efforts is indicated to be challenging across all sectors with the third most identified barrier being the lack of skills and support needed to produce a carbon footprint or plan. Further detail is provided in Appendix B.

5.2.3 Overall Carbon Neutral Island barriers to developing a carbon strategy

Developing a decarbonisation plan is a complicated undertaking, requiring financial and supply records to provide a carbon footprint baseline and develop future actions to improve the carbon footprint. This can be a complex task with many businesses saying that they do not have the knowledge on how to create a baseline or where to find appropriate information to assist them.

Most businesses on the islands are micro scale (up to 10 employees), with many being sole ownership and minimal staff with seasonal increases. Larger businesses (still within SME definitions) are found on some of the larger islands such as Islay, Barra and Yell specifically within distilleries and Aquaculture industries. Producing a plan and looking for alternative options to reduce the carbon emissions is difficult for these businesses due to time pressures within the business.

Costs are also a large factor in preventing businesses being enabled to decarbonise, with many green technologies and alternatives remaining at a higher purchase cost than non-green options. A common example are EVs, while significantly more accessible now than 5 years ago, the purchase costs are still higher than equivalent combustion engine cars, with the investment return taking serval years to see the financial benefit. In contrast, from discussions with businesses owners we found that new clean heating systems can be a worthwhile investment. Although purchase prices may be higher, the overall running costs are lower compared to the high cost of oil which is the main source of heating in the islands, the investment can have favourable returns in a short period of time.

These barriers make it difficult to produce a decarbonisation strategy even though around 70% of participants would like to make it more of a priority.

6 Assessment of business readiness

We reviewed the details of island business readiness to become carbon neutral. Full details from the surveys can be found in Appendix B (Section 0). While formal decarbonisation plans were in place for a minority of business sectors, most responders reported that they are actively taking steps to reduce their carbon use. The findings suggested that the number of employees (size of business) did not factor into decarbonisation strategies or readiness. There were some sectoral differences however, with businesses like distilleries, fish farms and agricultural businesses having a more developed carbon strategy, this is due to a necessity to either comply with operational conditions or access subsidies.

The majority of the participants indicated that they were taking some steps to becoming net zero ready. However, the largest proportion (87%) said that the action was recycling. This action alone is not sufficient to meet net zero targets. We found that other actions were high level such as reducing paper/plastic use, short term such as a 2 year green tariff and generalised with non-industry-specific actions. There are limited long term technical actions being planned or undertaken by individual businesses due to costs and lack of qualified technicians such as solar panel installers within the islands to construct and maintain the green technology equipment.

Recycling is the most common action taken by businesses to reduce their carbon footprint and conserve resources. The circular economy is important among island businesses and participants stated that they try to reuse and maintain resources due to limited access or costly waste disposal. There are added ferry costs for waste removal or recycling, with some smaller islands having a reduced recycling capability, with recycling centres often at capacity restricting further use.

A reduction in business travel has been as a result of move to IT based solutions nationally following Covid-19. Some of the more expensive decarbonisation options such as electric vehicles and micro energy generation are more of a challenge for relatively small island businesses.

We found from the in-person interviews that there is a strong desire within island businesses to support other local businesses and providers of goods to keep supply chains local. This is more challenging on smaller islands with more limited local products available to source.

While no formal decarbonisation plans may be in place for all business participants, most reported that they are actively taking steps to reduce their carbon use (Appendix B Section12.8). Of those that stated that they are not taking any steps to reduce their carbon footprint at this point, most are planning to do so in the future.

7 Key skills gaps

7.1 Overview of Carbon Neutral Islands businesses skill readiness and gaps

Having access to skills to understand how to reduce carbon emissions is essential to the net zero transition. All participants indicated they have a general 'basic level' understanding about carbon use in their businesses and stated they are aware of options to measure carbon use via calculator tools. However, when it came to technical knowledge and implementing changes, participants were less confident in their skills. Fewer than 1/3 of participants are confident in their technical knowledge to deliver technical and detailed decarbonisation actions (Figure 4).

Figure 4: Overall carbon skills and awareness

Only 22% of responders have actively sought external training to increase their skills and understanding of carbon reduction, with those who did undertake training using online webinars and internet sources (Figure in Appendix B). Many of these online training sources did not result in accreditation or certification, however a small number pursued a deeper level of understanding and completed certified courses.

7.1.1 Skills gaps and barriers across CNI businesses

Participants were asked what challenges and barriers they faced in gaining the skills needed to develop actionable decarbonisation plans and achieve the transition to net zero by 2040. The following responses provide a guide on where further support could be focused to support CNI businesses.

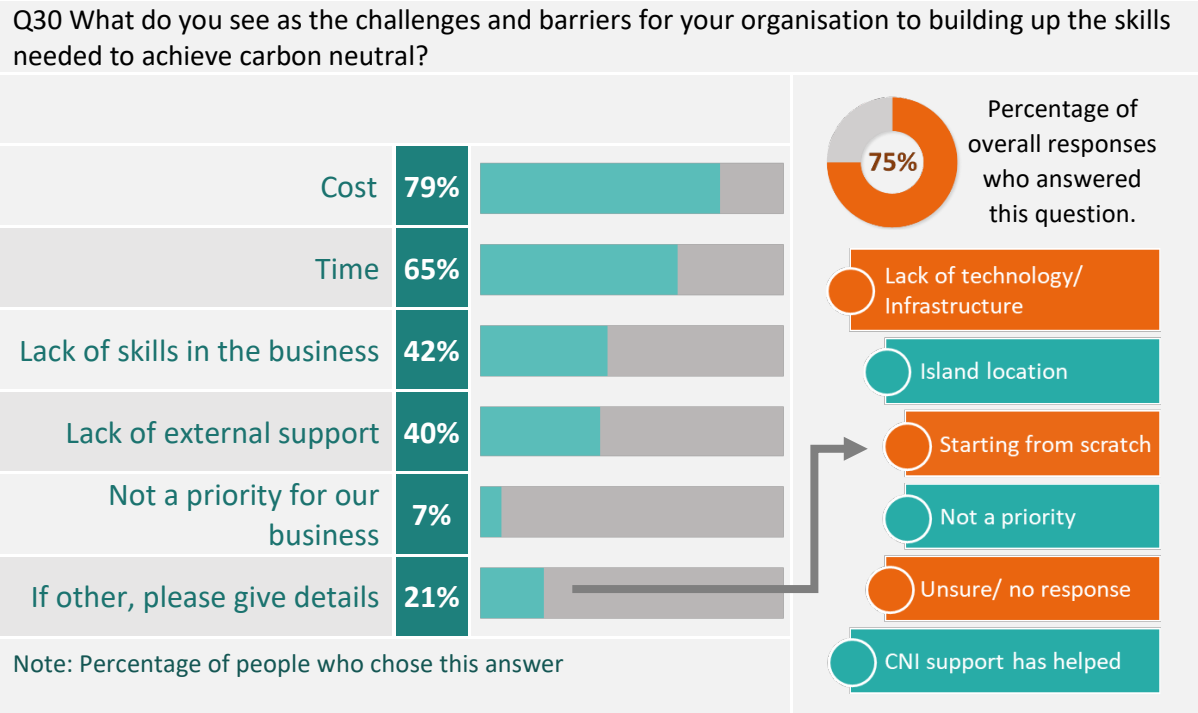

Figure 5: Overall barriers to skills acquisition

The prominent responses were again cost and time, similar to business planning. This was followed by not having the skills to increase this knowledge suggesting there is a skills gap to be filled.

7.2 Sector skills readiness and gaps

Due to limited returns from some sectors it is difficult to do a comprehensive comparison of net zero readiness and skills between sectors, only four participating sectors had responses from more than 10 businesses. However, it is possible to draw evidence to support conclusions on the general level of readiness of islands businesses on the whole.

7.2.1 Summary of analysis

The analysis has highlighted that there are substantial gaps in the skills required to support the route decarbonisation across most of sectors. The main gaps across all sectors include the lack of knowledge of what skills are required to meet net zero. Most of the businesses we spoke with did not know what skills they required to begin to address the challenge, such as the skills needed to produce a carbon footprint or a decarbonisation plan.

Businesses are also unclear on how to access relevant skills, many having significant time restrictions limiting their ability to research the skills or to develop them within the business. Another key issue is the lack of financial support or prioritisation to pay for

training or employ someone with this knowledge. We found evidence of a willingness to learn. Finding ways to signpost, fund and develop the relevant skills would be an important first step for policy makers. Developing these skills (see also Table 10 in Appendix B) within the islands would support the longer-term roll-out of decarbonisation plans across the island businesses. Within the CNI project (to 2040) there is the opportunity to create a skills development programme to drive the change required.

7.2.2 Current skills across different sectors

The majority of participants from 9 sectors out of 13 have indicated they do not know what skills are required to produce plans or deliver the actions within the plans (Table 7 in Appendix B). Those in renewable energy, housing, agriculture, and construction felt that they had a good understanding of skills requirements. Sectors such as renewables and housing have clear guidance on how to reduce carbon, hence a better understanding than most about what skills are required to plan for and action decarbonisation strategies.

While all sectors responded that they had a general understanding of carbon use within their business, only those working in the renewable energy sectors felt they had the technical knowledge and ability to understand and track carbon use within their business. This technical understanding makes it easier for these sectors to produce and implement plans to reduce carbon emissions. Our evidence suggests that there is a lack of the more specialist skills to implement carbon reduction actions across all sectors other than the renewables sector.

Few have undertaken training in carbon reduction skills, with the highest proportion of those who have had training within the renewable energy, aquaculture and transport sectors. Up to half of responders from these sectors stated they have actively sought training in these areas.

During interviews it was clear that although willing to learn, it was difficult to find the time or cost to be able to undertake training.

7.2.3 Skills gaps and barriers across sectors

We also asked about potential options to improve business readiness and understanding of the requirements to decarbonisation.

When it comes to developing skills to assist businesses in transitioning to net zero, it appears that there is a significant difference between the sectors in what skills they require to develop (although there were few participants for some sectors). Our evidence indicates that that agriculture, aquaculture and marine, the self-employed and logistics require the most support over a wide range of skills (Table 10 in Appendix B).

The main barrier identified by all businesses across all sectors to decarbonising was cost (Table 11 in Appendix B). Having time was also a key barrier for businesses in all sectors except transport and renewable energy.

Q29 What support does your organisation require to build up the skills needed to plan and deliver carbon reductions to reach carbon neutral?

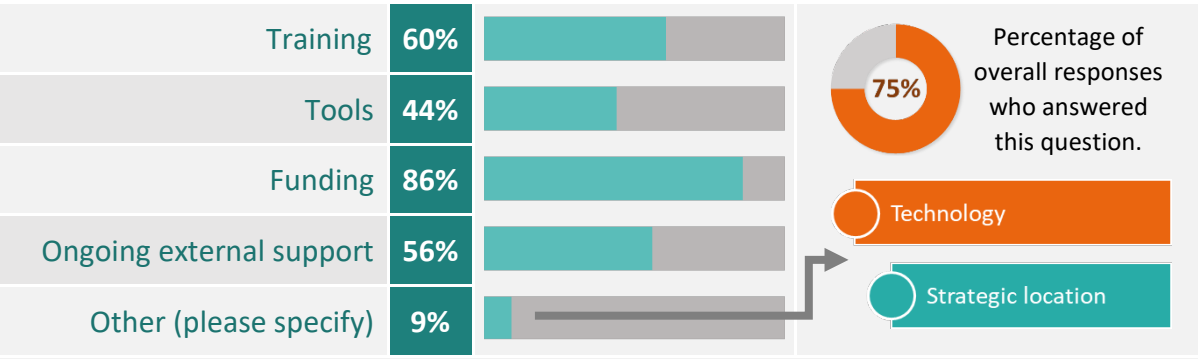

Figure 6: Overall skills support requirements

Lack of funding features highly in the barriers and challenges businesses face in decarbonising, along with the cost of time. There are funding routes for some businesses, for example Transport Scotland offers grant funding to help organisations install electric vehicle (EV) charging infrastructure on their premises (Find Business Support.gov, 2024). There is also the Scottish Governments SME Loan Scheme (Business Energy Scotland.org, 2024), which is designed to help businesses install new energy efficient systems, equipment or building fabric improvements (loans available up to £100,000). However, the landscape can be confusing and complicated, poorly signposted with highly competitive application processes. Most of the schemes tend to be nationally focussed and rarely take into account island issues such as ferry journeys and limited technical support locally. Information access on decarbonisation strategy advisory services is also an important opportunity. If information was clearer and readily available, businesses would have more confidence in their understanding and the skills needed to investigate green and low carbon alternatives as well as being able to produce carbon baselines and reduction strategies.

8 Interview insights

These are the common challenges and opportunities raised by businesses through this research.

Opportunities:

- CDOs are a good resource – could they be trained to help produce plans?
- Training local trades in installation and maintenance
- Circular economy practices are important
- Land management important for businesses and communities in decarbonisation strategies

Challenges:

- Old building stock, hard and expensive to renovate/upgrade
- Infrastructure limitations for EVs and other green technologies
- Limited access to renewable and low carbon technologies
- Regulation restrictions hinder some effort, more flexibility through policy needed
- Decarbonisation plans for Agricultural businesses will be required for subsidy access, support not always available for small crofting and farms
- Lack of skills/knowledge to effectively strategize for transition – Toolkits/packs would be useful
- Wide scale dependency on oil for heating
- External supply chain carbon cost
- Lack of financial incentives/ expensive to decarbonise

8.1 Evaluation of challenges and barriers to CNI business net zero readiness

There were many common themes from the in-person interviews including: buildings; supply chains; agriculture; green technologies and infrastructure; and regulation and policy.

While not necessarily exclusive issues to island communities, these illustrate the particular challenges faced by island businesses. The significance and prevalence impact on the viability of implementing carbon downshifting within island based businesses. Each issue is explained further in the following sections.

8.1.1 Buildings

Older buildings, which are prevalent on the islands, face greater net zero challenges such as poor energy efficiency. This is due to buildings being poorly insulated, not having the capacity to have cavity wall insulation (stone built) and requiring extensive renovation to accommodate low carbon heating options. The ability to upgrade the older buildings is further exacerbated by the lack of trades able to do the renovations, cost of materials (these are significantly higher on Islands) and availability of materials as some suppliers do not offer carriage to some Scottish islands. This means that it is harder and more expensive to

upgrade these buildings to be more energy efficient. While not solely a business challenge as this is an issue for residential buildings as well, many businesses are located within old buildings. This was made evident during the island visits and during conversations with the consultees and CDOs. A typical challenge for island buildings is the need to change heating systems. There are no mains gas lines on any Scottish island except one, Stornoway, which has a small gas network servicing a portion of houses in the main town. This limits common options to reduce cost and carbon with a switch from oil. While there are low carbon alternatives, these can be expensive to install such as electric heat pump systems which often require a whole system upgrade due to lower heating levels or require importing of fuel such as biomass which is costly and has a high carbon footprint due to transportation.

8.1.2 Supply chains

Island businesses have a larger supply chain carbon footprint than mainland Scotland counterparts due to additional transportation. While mainland businesses may find varied supplier access within their locality, island businesses are restricted by suppliers willing to ship to island locations and inevitably additional transport costs.

8.1.3 Agriculture

Businesses identified that it can be challenging to apply national policy in local island environments, such as livestock grazing practises in fields and land management practises. This can be counterproductive to low carbon ambitions. For example, waste management is a significant challenge to island farmers, while there may be a range of commercial waste management options for mainland farms, island farms have fewer options. Waste must be transported by island farmers on ferries to mainland agricultural waste facilities which is financially expensive, carbon intensive and time consuming. There is a need to identify 'island proofed' waste management practises or investment in island agri-waste facilities.

Some farming practices are not recognised in farming carbon audits such as not ploughing a field after harvest for reseeding. While it is widely acknowledged by interviewees that a more carbon efficient land management practice is needed, farmers are not able to record this as a "carbon positive" decision.

8.1.4 Green technologies and infrastructure

Green technology can be more expensive than conventional energy and transportation technologies but can be very efficient in an island setting (e.g. wind turbines due to a good wind resource). Businesses that do wish to invest in renewable technologies can find it difficult to find installers and to get prompt maintenance and repairs as they are reliant on mainland technicians who often view islands jobs as low priority and charge higher costs.

Local authorities across Scotland are seeking to install more EV chargers and some islanders would like more investment from their local authorities and other government organisations to ease the individual costs for charges and installation.

Grid capacity is a significant issue across the UK, and particularly so on islands where grid infrastructure is aged and under increasing constraint. While there is a strong desire to

install microgeneration technologies such as solar and wind turbines, access to the grid is a challenge and also expensive.

8.1.5 Regulation and policy

While policy is a driving force behind net zero actions, for islands, policy and regulation can be a barrier for some businesses. By their nature, policy and regulations are uniform and broad reaching, not allowing for unique island characteristics. Regulations that may be appropriate for large and mainland businesses do not fully account for the differences of SME and island businesses. These UK and Scottish Government regulations can become barriers and restrict decarbonisation opportunities. An example raised by interviewees is the ability to utilise local produce and goods instead of having to import from large mainland suppliers. Regulation and policy does not allow the sale of locally produced food direct from the source. While it is understood the regulation is to ensure the quality and safety of food consumed, it is restrictive. Locally grown vegetables and fruit, eggs used to be a regular item on the shelves, supporting local farmers, crofters and other suppliers. Now, they are not allowed to buy direct from the grower and instead have to go through the larger distributor.

Another key restriction from regulation is the closure of island abattoirs due to regulatory cuts. The livestock must now be transported off island to be processed and returned back to the distributors. This increases costs for farmers, stress for the animals and increases the carbon footprint of the food products.

8.2 Evaluation of opportunities

Opportunities have been identified to assist businesses in achieving operational net zero by 2040. These opportunities include training; supply chains; and land management.

There are opportunities to help upskilling of business owners/operators as well as enabling them to utilise green technologies in their decarbonisation strategies. Each of these opportunities is explained further below:

8.2.1 Training

There are opportunities around training in various forms to aid in the net zero transition of island businesses. These opportunities would not only benefit the transition ambition, but also could increase island economic prosperity and could help reduce population decline often seen in smaller islands. Across many of the businesses and sectors that participated in this study, access to training and skills to understand and develop carbon footprints and decarbonisation plans was highlighted as important. A key finding is that there are opportunities to utilise the CDOs for the islands as contacts and signposters for training and support.

Training for island technicians, electricians, mechanics and other trades to install and service low-carbon technologies such as heat pumps, wind turbines, insulation and property retrofit would be beneficial to allow greater access to green technologies. Increased training for green technology skills would also benefit the island economy by attracting new businesses

and skilled employees to the island. Currently islands are more likely to be reliant on Scottish mainland-based company support for green technologies, reducing reliability and efficiency of support and delivery of new technology, as well as adding to cost.

8.2.2 Supply chains

Island businesses in most cases will strive to support other local businesses, sourcing goods where possible within the island. While there can be significant challenges around local supply chains, there are also opportunities to increase local production. For example, 'added value' food production, with crofters, farmers and bakers able to develop new products from 'home and locally grown' produce. However, this can also have a negative implication for carbon emissions. For example, distillers interviewed on Islay mentioned the recent trend of local growing of barley products for whisky production results in higher emissions from the smaller scale cultivation of the crop and transportation of fertiliser and seed to the island at high cost and high carbon footprint, compared to buying ready produced barley grain from a bulk distributor.

However, restrictions from Food Standards Scotland regulation prohibit the sale of local produce with many providers not having sufficient accreditations or certificates to sell their goods commercially despite having a good food and health standard. This impacts on the businesses ability to reduce carbon emission from their supply chains as part of their CNI net zero readiness. Reviewing Food Standards Scotland agency regulations for small food growers to consider allowing more access to local sellers would support the local economy, reduce carbon footprint of imported foods as well as tackle some food insecurity issues unique to islands. This includes issues such as disruption to ferry transport essential to food delivery regularly during adverse weather events. Costs, food has a significantly higher cost than on mainland Scottland due to increase transport costs being added to the consumer price. Quality and storage ability can also be affected due to longer transportation times, this is prevalent with fruit, vegetables and eggs. Access to locally produced goods would have many benefits to ease food insecurity and improve economic development opportunities for Scottish islands.

The closure of most island abattoirs has seen increased costs for farmers and higher carbon footprints for the product being exported and imported back to the island. The Food Standards Scotland abattoir database (Food Standards Scotland, 2024) lists only authorised slaughterhouses and processing plants located on Barra, Isle of Lewis, Isle of Mull, and Islay. The slaughterhouse in North Uist is scheduled to close later this year. Orkney lost its abattoir in 2018/2019. With 93 inhabited Scottish islands, this is a significant deficit to local communities. Re-opening these facilities would likely be a financial and regulatory challenge. However, there could have significant carbon and financial benefits to farmers, increase animal welfare and reduce costs to island consumers as well as offering additional employment opportunities to island communities.

8.2.3 Land management

Good land management is well known for carbon storage and ecosystem services benefits. There is an opportunity to train and promote large landowner businesses, such as estate

owners who operate shooting and fishing activities and farmers in alternative land management practises. Providing access to knowledge and skills could reduce the loss of carbon from standard practises such as ploughing, heath burning and over grazing. Further investment into island peat restoration would provide a useful carbon sink as well as offering more sustainable peat harvesting opportunities for businesses such as distilleries.

9 Conclusions

The ambition of the CNI project is for the six target islands to reach net zero by 2040, 10 years ahead of the UK target and 5 years ahead of Scotland as a whole. We focused on primary data collection through direct engagement with island businesses. This was enabled through direct involvement of the island-based Community Development Officers.

Overall island businesses are very willing to embrace the challenge to achieve carbon neutrality. They can see the benefits to them and the wider community and have a desire to engage and make progress. However, the challenges they face are significant and evidenced to be arguably greater than businesses based in mainland Scotland communities. The key message businesses conveyed through the interviews was having the ability to have island-focused solutions. This was enhanced by the overall support articulated for the CNI programme and in particular the CDO resource. There is a desire to enable further action through CDOs.

Our findings on three main research questions are as follows:

Do businesses have a carbon reduction plan or strategy?

Many businesses across all sectors have a desire to track their carbon footprints and develop decarbonisation plans. We found that there are significant barriers to acting on this desire. Cost and time are the most commonly identified barriers among island businesses. Skills and access to information are also a concern and a significant gap to enabling decarbonisation measures by businesses.

Do businesses have the skills to develop the carbon awareness and implementation of decarbonisation strategies?

The research identified that most businesses feel they lack specialist knowledge. Despite this, participants feel they have a good general understanding around carbon emissions in their business operations. They were keen to explore ways to reduce carbon but lack knowledge of how.

Significant gaps in the current skills across most SME island businesses included technical aspects on how to actively reduce emissions. There were also gaps in understanding suitability of green technologies and accessing information and funding to action decarbonisation initiatives.

Access to advice and the ability to develop skills in-house would be a significant benefit to many businesses.

What is required to support businesses to transition?

Key opportunities to close the skills gap and assist in the transition process are:

- Training local CNI CDOs to directly support the business community in accessing information and support to develop decarbonisation strategies. This could be via signposting to online resources or helping to develop a template decarbonisation plan for businesses to follow. Local representation is central to the decarbonisation efforts as they understand the unique nature of each island. There is a significant opportunity which could be progressed with HIE to sustain the role of CDOs and potential for income associated with fees for services provided, as HIE have provided funding for island CDOs previously.
- Training local trades in the installation and maintenance of green technologies is an opportunity to increase access to low-carbon alternatives as well as to open new economic opportunities for local supply chains. There is potential to establish a pan-island CNI trades network, enabled through CDOs, for sharing knowledge and resources.
- Many businesses are taking positive steps to reduce their carbon footprints and sustainable use of materials by utilising local supplies and services where possible. Increasing access to local services, skills and goods can significantly reduce carbon costs from external supply chains. Currently, islands are heavily reliant on external supply chains with larger carbon footprints and additional carbon from transportation. They also suffer from limited local purchasing options. This dependence on distant suppliers and supply chain insecurity is a unique feature of island business operation as well as general island living. Whilst there is unlikely to be a solution to this distance from market, there could be further attention given to procurement policy and support mechanism interventions which recognise these supply chain constraints for islands. Directly supporting and enabling the development of local supply chain and circular economy options would be beneficial as well as facilitating the pathway to net zero for islands.

10 Key recommendations

This section presents actions that could be taken to address the issues raised in our research.

10.1 Development of skills across the CNI sectors

There are opportunities around training in various forms to aid in the net zero transition of island businesses. These opportunities would not only benefit the transition ambition but could also improve island economic prosperity and reduce population decline often experienced on smaller islands.

Develop signposting to training options across island and sectors

Many of the businesses and sectors that participated in our study highlighted access to training and skills to understand and develop carbon footprints and decarbonisation plans as gaps. Some sectors want to upskill in-house with other preferring external skills being brought in e.g. from advisory services, so signposting to appropriate training and advice to allow them to do this would be beneficial.

Utilise the CDOs for the islands as contacts for training and support.

In addition, or as an alternative to the above, CDOs could provide more direct support to businesses. This could be encouraged either by further training CDOs in carbon footprint and decarbonisation plan development, or by CDOs being supported to direct businesses to relevant information and resources. This could also offer a routeway for the positions of CNI CDO to be sustainable through a chargeable service provided to local businesses. It would also provide stable employment in supporting decarbonisation.

Training for technicians, electricians, mechanics and other trades

Training for technicians, electricians, mechanics and other trades would allow island businesses greater access to green technologies. In order to be certified for installation and maintenance of these technologies, specific accreditation is often required. Responders stated that gaining these certificates and accreditations is complex and time consuming with minimal support. In many cases Tradesmen are small or even sole businesses that do not have the capacity to become accredited.

Currently islands are more likely to be reliant on Scottish mainland-based company support for installation or design of green technologies. This can be more difficult than for mainland counterparts due to more limited options, impose less competitive prices and have longer delivery times. Securing installation and maintenance on green technology is often extremely difficult in an island, with large delays, higher costs and limited options. Mainland contractors can have geographic exclusions that commonly exclude islands from access to standard services and prices. Addressing this constraint would have multiple benefits, not only by increasing access to low carbon technologies, but by increasing the skills on islands, expanding employment opportunities, and supporting apprenticeships to retain island residents.

10.2 Development of sector specific roadmaps

Cost and time have been identified as the most significant area where support is needed across the sectors. However, the priority needs across the sectors have some significant differences. Cost and time constraints were especially notable around seasonal businesses such as tourism and leisure whereas tools and training were more important to agriculture. Renewable Energy, Food and Drink, and Logistics sector responders stated they would like to have access to training to up-skill. Aquaculture, Retail, and the Leisure industry sector responders stated a preference for external skills being brought in (Appendix B Table 3). The remaining sector responders stated all the support options would be useful and had no

immediate preference or priority. This all means that a sector targeted approach may be useful in supporting island business.

It would therefore be important to develop specific sector roadmaps within an island context. This could include developing tools such as carbon calculators that account for the sector requirements as well as the island location. These tools would support baselining but should be linked to specific actions and support e.g. funding to help implement their plans. This sectoral approach is supported by the different priorities that were found between business such as:

- To achieve a net zero transition, the retail and food & drink sectors have indicated they would benefit from more assistance in decarbonising their supply chain and ability to use local produce and goods.
- The tourism, leisure and transport sectors would like more infrastructure and local trades assistance to allow for green technologies to be used such as EV chargers and microgeneration.
- Agriculture would like more support in developing their decarbonisation strategies and undertaking carbon audits.

10.3 Funding support landscape improvements

There are funds and investment opportunities that may be available for businesses to support decarbonisation efforts (BEIS, 2021). These funds can provide significant financial support and cover a variety of decarbonisation strategies. However, we found that businesses lack the knowledge to access these funds, and face time pressures to complete applications. We also found that there are no means of coordinating a funding search or application process.

These funding application processes are also often complicated with limited assistance offered. Many funds are also only accessible for large organisations or for specific sectors which do not reflect the significant number of SME businesses which account for over 35% of carbon emissions (Energy Saving Trust, 2022). The competitive nature of grants and investments also restrict the access to many who may qualify but do not have the expertise needed to successfully apply and secure funds. Interviewees felt that smaller businesses did not qualify for grants and funding due to a wide range of exclusions. This was especially prevalent among the trades, crofting and farming interviewees.

Finally, the overall capacity and scope of the funding is not sufficient to have impact for enough businesses.

There is the opportunity to address this for CNI islands through reviewing funding guidance and the application process to better reflect the challenges faced by island based SMEs which could be linked to the sector roadmap priorities would support a coordinated approach to meeting the 2040 targets.

The Islands (Scotland) Act 2018 and the 2019 National Islands Plan represent positive steps to support islands and may in time present a key route to address island impacts and

opportunities. However, these policy provisions are yet to be fully implemented across all programmes to support all island businesses more directly.

10.4 Specific agricultural focused actions

Agriculture has a significant part to play in the net zero target across islands with land use being a major carbon contributor. From our policy research it would seem that there are limited policies and strategies that offer practical actionable support for crofters and small-scale farmers. There can be a disconnect between land use and natural resource protection which may cause policy to become a barrier for those looking to reduce carbon emissions and turn to a more sustainable way of farming. This could include actions such as installation of renewable energy technologies (Solar, Wind or Anaerobic Digestor systems). The general strategic changes to agricultural policy/support mechanisms and subsidy for agriculture should have carbon reduction as a key aspect of framing but also account for island-specific challenges.

10.5 Upgrading of island energy infrastructure

Delivering upgrades to islands energy infrastructure is essential in the development and use of renewable energy and associated technologies. This will support island businesses to develop more long-term carbon reduction plans for example by allowing businesses greater access to grid to invest in wind, solar or battery technologies.

Islands are an ideal test bed for the use of mixed renewable energy (tidal, solar, storage and wind). However, the lack of grid capacity severely restricts the ability for companies to develop and test these technologies. It is difficult to gain connections even for domestic or commercial small scale renewable energy technologies.

Many islands suffer from energy insecurity due to grid infrastructure not being reliable and power cuts are common. While there is a nationwide push and promotion of increased renewable energy technologies, all consultees spoken to during the project made reference to significant grid restrictions faced. There is a need for grid infrastructure improvements to support decarbonisation via green technologies across the islands. Without upgrading and improving the grid infrastructure to accommodate more green technology connections, island businesses will struggle to benefit from decarbonisation via green technology.

10.5.1 Promotion of circular economy to reduce emissions from supply chains and waste as part of business decarbonisation strategies

The development of an island circular economy with emphasis on recycling, reuse and sharing of resources. Island communities have fewer recycling options meaning more waste going to general landfills. There are some islands where only reduced recycling is offered, and facilities often overfilled, for example on Hoy, a café owner mentioned this is why she tries to reuse rather than recycle. Many residents try to reuse and upcycle where possible while complying with regulations regarding disposal of waste products. Sharing of tools, some small plant and farming equipment is commonplace with island businesses willing to share and lend equipment where possible and if needed.

10.6 Next steps

There are several options highlighted throughout this report that will support island businesses to decarbonise. The key steps that would help are:

- Develop a training programme with the CDOs to enable them to enhance island businesses information routes and understanding. This could also ultimately be a resource to produce business actions plans.
- Develop island specific carbon planning tools such as carbon calculators. These should also account for sectorial differences.
- Develop sector specific roadmaps to carbon neutrality with short and long-term targets.
- Develop a coordinated support package for islands businesses with relevant government agencies and training providers.

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12 Appendices

Appendix A Methodology

This project was undertaken using a range of methodologies and resources. The following sections detail the method used to complete each phase and task.

12.1 Phase 1

Phase 1 was to investigate and understand the baseline for current business readiness and the support that is available in a general sense. We also wanted to identify the sector landscape across the CNI islands to allow a comparison between the National sectors and island sectors.

To achieve these goals the tasks proposed consisted of:

- Desktop research to identify the businesses and relevant organisations on each Island
- Graphical analysis of island business distribution
- Policy review of support for decarbonisation, islands and small businesses
- Desk based literature review of wider sector readiness

12.1.1 Business Identification and Analysis

We identified businesses using desk-based research, using online local databases such as commercial directories and cross referencing as best as possible using other online sources such as social media and individual businesses websites to verify current operational status. We recorded results in a CNI target businesses database which was issued to the CDOs for a sense check. CDOs were able to provide invaluable guidance to this stage of the process to refine and target business contacts.

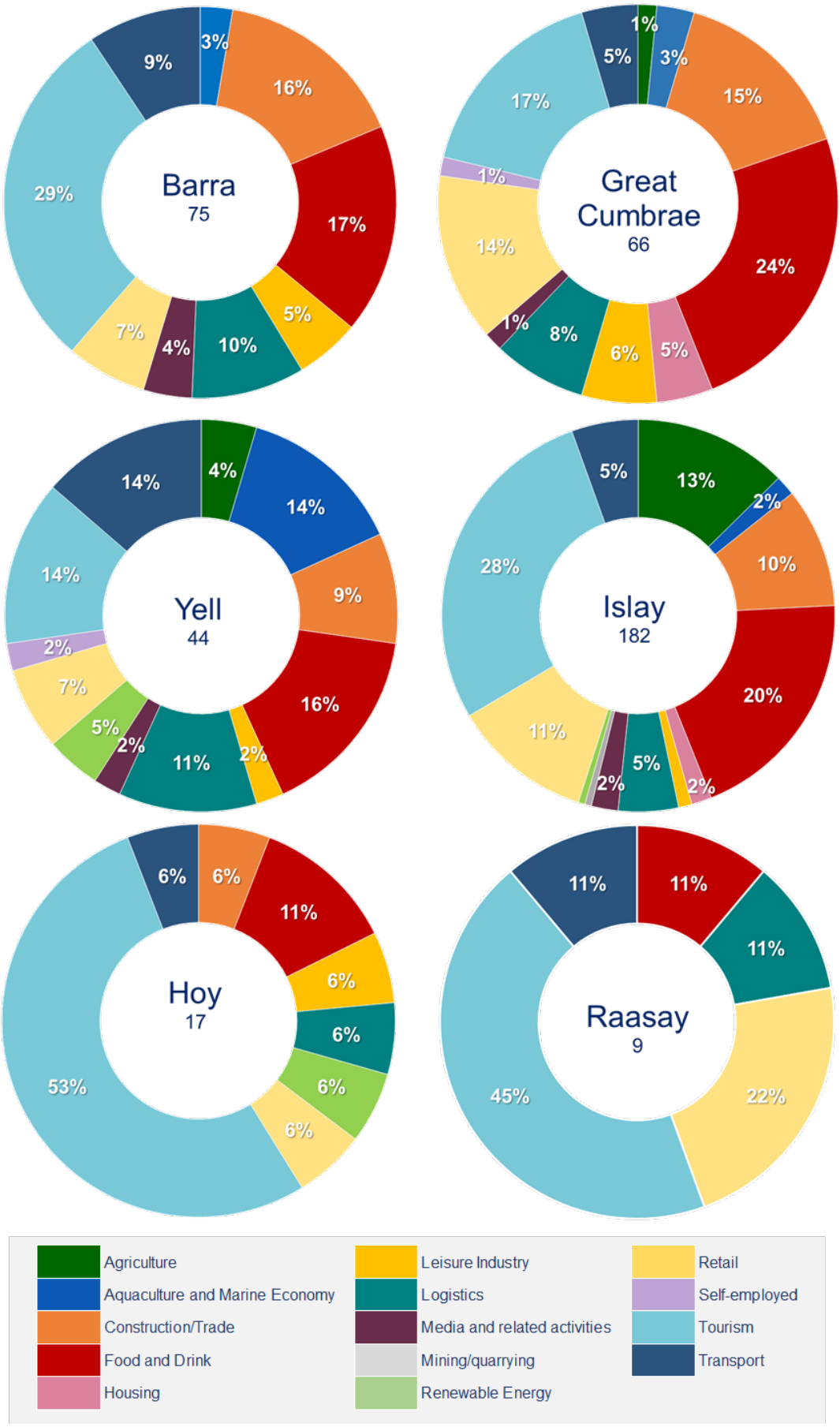


Figure 7: Businesses across the islands

12.2 Phase 2 – Engagement Methodology

To allow for maximum outreach, an online survey was created using Survey Monkey for wide spread distribution to the island businesses. The survey comprised of 31 questions that addressed a range of topics that related to the research questions. Readiness, Skills and Needs. The survey was compiled and issued following GDPR privacy standards and all information used in the production of the report has been anonymised.

The surveys were hosted on an online platform and participants were emailed the link to access the surveys. The platform allows for some basic analysis of survey results which was then refined and formatted to create the graphics in section **Error! Reference source not found.**.

Where interviews were held, the interviews were summarised and key comments were selected that best represented the research questions posed in the project, summarised and represented in a graphical way to be clear and concise.

Sectoral comparisons were assessed by filtering and carefully selecting the most relevant questions that provide evidence based data for the questions presented by the project. A table presentation was selected as the most visually appealing way to show how ready the businesses are and what support they require to decarbonise.

12.3 Phase 3 – Report production

To compile the data obtained from phase 1 and 2 of the project, we used MS Excel to convert narrated data from interviews into data points for statistical analysis and summarisation. The data accessible from the Survey Monkey online platform was also very useful in providing a clear analysis with multiple filters and analytic tools to aid in the production of statistical graphics.

Selection of the key survey questions to be included in the report were based on the relevance to the key research questions. The full survey was important to gain a full understanding of the awareness and skill level of the participants, however not all were critical to include. We reviewed the 31 survey questions and highlighted those that provided the most detailed information around skills, training, challenges and opportunities. The final question selection was reduced to 10 for the general island findings and 15 for the sector comparison section.

The interviews were well organised by the CDOs and provided a deeper understanding on how the businesses owners felt about support for island net zero transition, how big a priority it was for them and what could encourage them to do more. From the interviews, we discovered that a number of common themes around challenges, opportunities and needs linked the islands and businesses. While there were subtle differences in the themes, the core issues were the same which lends credibility to the small sample when seen across the 6 islands and all interviewees.

12.4 Reflections

12.4.1 Challenges in Methodology

Undertaking engagement on a wide scale across various islands is difficult and there has been less participation than we expected. It is essential to have strong connections within the community to promote and encourage participation. CDO connections was very helpful within the islands in getting responses but with limited time available wider engagement was a challenge during island visits. The survey completion rate varied between as low as 3 on Hoy to a maximum of 15 for Yell with the others ranging around 8-12. Interviewees numbered around 3-6 people per visit with the exception of Islay where only 1 in person interview was arranged, however there were phone interviews following the visit.

Online surveys while useful and easy to issue to multiple contacts, rely on the willingness of the recipient to complete them. This reliance has meant that only a small section of island businesses were captured in the survey data, with gaps in the sectors and business sizes. It was hoped that a wide range of sectors and businesses sizes would participate to give a clear picture of the challenges, opportunities and needs of island businesses. This was not the case and the result is that we have significant gaps in data and inconclusive evidence on the current net zero transition readiness on islands.

12.4.2 Lessons Learnt

For engagement reliant projects, it is essential to identify strong community leaders and any steering groups and open discussion early with them on how best to engage with and encourage wide participation. Opportunities to communicate directly with a large number of business owners that were in steering groups were missed. Had we more directly engaged with them in person, perhaps we could have gained more cooperation from a valuable resource.

Visits to the islands were useful and critical in conducting the in person interviews, however time was limited and therefore organising interviews difficult. It may be more productive to contract local residents to undertake the engagement tasks following a set methodology provided by the Project Manager.

The online surveys were useful and provided good data and analysis tools. On reflection, the survey was too long and some questions repetitive and unclear to the participant. While all the questions provided key insight into the carbon related operations of the businesses the final number used in the report was 10-15 out of the 30 and questions asked during the interviews would have been useful to have in the survey to allow for statistical analysis.

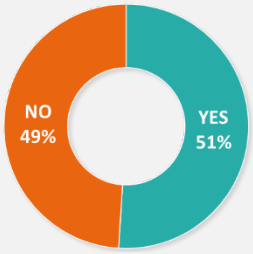
Appendix B Detailed results

Our analysis is based on responses to questionnaires and in-person interviews.

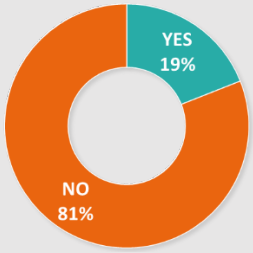
12.5 Overall CNI readiness

As shown in Figure , around half of the participants are aware of their businesses carbon footprint to some degree, less than 20% are actively tracking it. There is a slight increase in those who are developing a decarbonisation strategy with around 25% stating they have or are developing a plan for their business. We have assumed for this analysis that any non-responding participants do not track their carbon footprint or plan to develop a decarbonisation strategy.

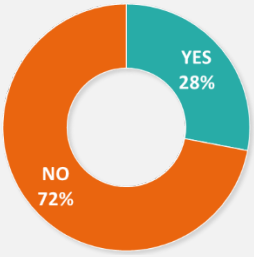
Q5 Are you aware of your organisation's carbon footprint?



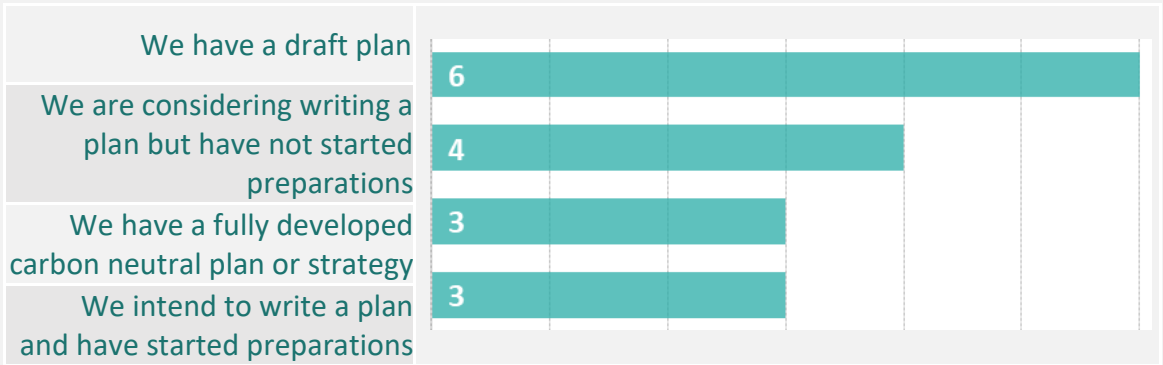
Q6 Do you track your organisation's carbon footprint?



Q10 Do you have a plan to become carbon neutral or are you developing one?



If yes, which option best describes your current stag of planning?



Note: Number of responses

Figure 7: Carbon reduction readiness

12.6 Sector analysis of carbon strategy development

12.6.1 Sector readiness

Sectors are compared although there were no participants for some e.g. waste and mining. Some participants skipped some survey questions. Table 1 shows the percentage of businesses in each sector tracking their carbon footprints.

(Responses Skipped 6)	Responses	Yes	No
Renewable energy	4	25%	75%
Housing	2	0%	100%
Food and drink	21	17%	83%
Aquaculture and marine economy	5	20%	80%
Tourism	26	26%	74%
Retail	15	18%	82%
Agriculture (including crofting), land use and forestry	4	0%	100%
Transport	7	40%	60%
Self-employed	3	0%	100%
Logistics (related to any of the sectors above)	3	0%	100%
Leisure industry (music, arts, theatre, active tourism)	16	14%	86%
Construction and Trades	2	0%	100%
Media and related activities	4	50%	50%

Table 1: Q6 Do you track your organisation's carbon footprint?

	Responses	Yes	No
Renewable energy	4	25%	75%
Food and drink	2	24%	76%
Aquaculture and marine economy	20	40%	60%
Tourism	5	29%	71%
Retail	24	18%	82%
Agriculture (including crofting), land use and forestry	15	0%	100%
Transport	4	25%	75%
Self-employed	6	0%	100%
Logistics (related to any of the sectors above)	3	0%	100%
Leisure industry (music, arts, theatre, active tourism)	3	36%	64%
Media and related activities	16	50%	50%

Table 2: Q10 Do you have a plan to become carbon neutral or are you developing one?

	Training	Funding	Advice on new supplies and supply chain	External support
Renewable energy	75%	100%	75%	50%
Food and drink	85%	85%	100%	85%
Aquaculture and marine economy	40%	80%	60%	80%
Tourism	55%	85%	70%	65%
Retail	73%	73%	82%	82%
Agriculture (including crofting), land use and forestry	0%	0%	100%	0%
Transport	40%	100%	40%	40%
Self-employed	50%	50%	100%	50%
Logistics (related to any of the sectors above)	100%	100%	67%	67%
Leisure industry (music, arts, theatre, active tourism)	36%	71%	50%	64%
Media and related activities	67%	100%	100%	100%

Table 3: Q19 What would help you to consider taking action to reduce your carbon footprint?

12.6.2 Sector barriers to developing a decarbonisation strategy

Responses were separated into sectors to identify any differences that were present between the business types. Few responding businesses were actively tracking their carbon footprints, but only renewable energy sector participants indicated this as not a priority. Many businesses identify time and cost as the main barriers with agriculture and logistics strongly indicating that barriers are cost, time and lack of skills equally. Media sector businesses responded that lack of skills is the main barrier, whereas renewable energy states that cost is the main barrier for them. With tourism, time is the main factor given most are small or sole operator business with significant seasonal pressures.

	Responses	Cost	Time	Lack of skills	Lack of external support	Not a priority
Renewable energy	3	100%	67%	33%	67%	67%
Housing	2	50%	100%	50%	50%	50%
Food and drink	18	44%	66%	50%	44%	22%
Aquaculture and marine economy	4	50%	25%	75%	50%	25%
Tourism	23	48%	61%	52%	52%	17%

Retail	13	54%	77%	61%	61%	23%
Agriculture (including crofting), land use and forestry	4	50%	100%	50%	25%	50%
Transport	4	100%	75%	75%	75%	25%
Self-employed	3	33%	67%	67%	33%	33%
Logistics (related to any of the sectors above)	3	100%	100%	100%	67%	33%
Leisure industry (music, arts, theatre, active tourism)	14	43%	57%	64%	57%	29%
Construction/Trades	2	50%	100%	50%	50%	50%
Media and related activities	2	50%	68%	100%	50%	0%

Table 4: Q8 If you do not track your carbon footprint what are the barriers to this?

	Responses	Cost	Time	Lack of skills	Lack of external support	Not a priority
Renewable energy	4	100%	50%	25%	50%	25%
Housing	2	50%	50%	50%	50%	50%
Food and drink	17	59%	76%	52%	59%	23%
Aquaculture and marine economy	4	75%	75%	75%	50%	25%
Tourism	20	70%	70%	60%	60%	25%
Retail	12	75%	83%	83%	83%	42%
Agriculture (including crofting), land use and forestry	3	67%	67%	33%	33%	33%
Transport	5	80%	40%	40%	60%	20%
Self-employed	3	67%	67%	33%	33%	33%
Logistics (related to any of the sectors above)	3	100%	100%	100%	100%	67%
Leisure industry (music, arts, theatre, active tourism)	10	80%	70%	60%	60%	40%
Construction/Trades	2	50%	50%	50%	50%	50%
Media and related activities	2	100%	100%	100%	100%	50%

Table 5: Q12 If you don't have a plan to become carbon neutral what are the barriers to this?

12.7 Decarbonisation actions by businesses

The following provides the evidence on current actions being taken by the participating CNI businesses in general from the 6 islands.

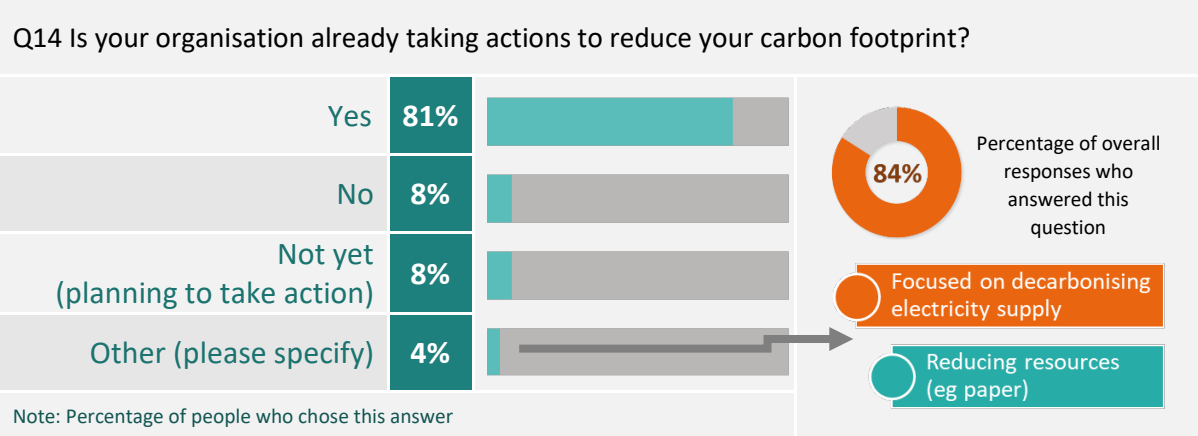


Figure 8: Overall decarbonisation action readiness

The majority of participating businesses are actively taking steps to reduce their carbon footprint, however, as shown in Figure , these actions are largely recycling.

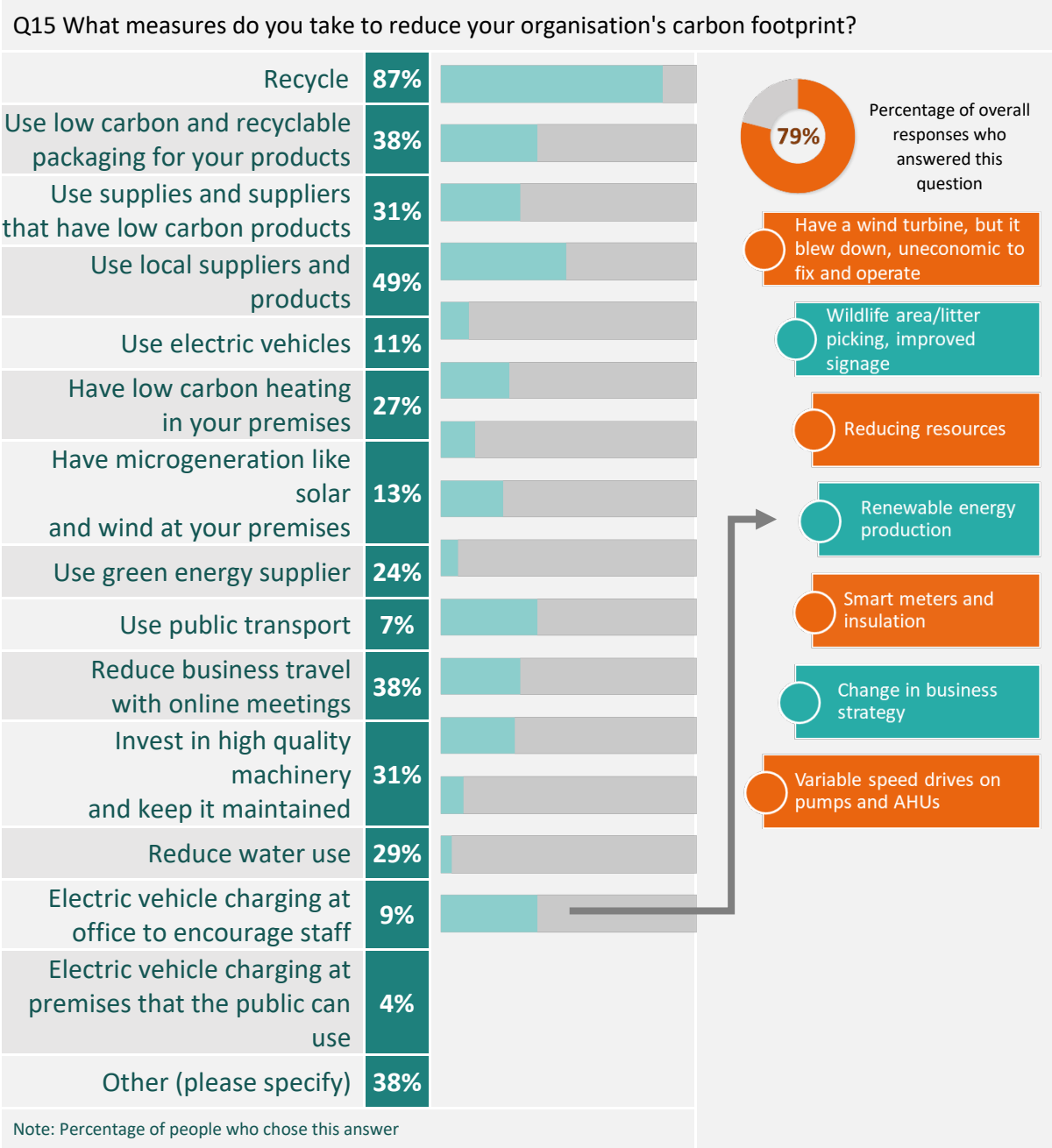


Figure 9: Overall decarbonisation actions

12.8 Sector actions to decarbonise

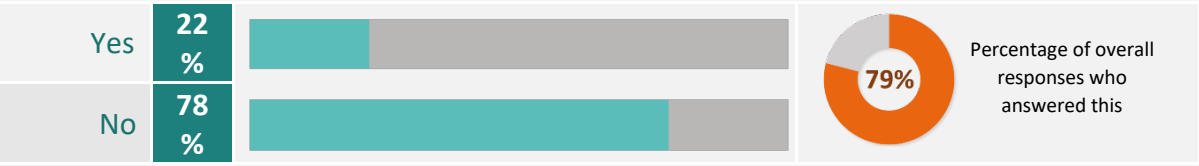
The following table shows the differences across the sectors from the participating CNI businesses in terms of the level of activity presently underway.

Q14 Is your organisation already taking actions to reduce your carbon footprint?				
	Responses	**Yes**	**No**	**Not yet, planning to take action**
Renewable energy	**4**	**100%**	**0%**	**0%**
Housing	**2**	**50%**	**50%**	**0%**
Food and drink	**16**	**87%**	**0%**	**13%**
Aquaculture and marine economy	**5**	**100%**	**0%**	**0%**
Tourism	**23**	**86%**	**9%**	**5%**
Retail	**13**	**77%**	**0%**	**23%**
Agriculture (including crofting), land use and forestry	**3**	**33%**	**33%**	**0%**
Transport	**6**	**100%**	**0%**	**0%**
Self-employed	**3**	**67%**	**0%**	**0%**
Logistics (related to any of the sectors above)	**3**	**33%**	**33%**	**33%**
Leisure industry (music, arts, theatre, active tourism)	**15**	**80%**	**7%**	**14%**
Construction/Trades	**2**	**50%**	**50%**	**0%**
Media and related activities	**4**	**100%**	**0%**	**0%**

Table 6: Sector actions to decarbonise

12.9 Skills training to help decarbonisation

Q23 Has anyone in your organisation taken part in skills training to help your business decarbonise?



Q24 If yes, what type of training?

- Grass Management. Environmental Champion Training.
- Course with Business Energy Scotland - online course.
- Business Energy Scotland Course
- GHG accounting training from the GHG management institute, SCANN training, action plan writing training.
- Our entire business focus is on decarbonising electricity supply
- Business owner's daughter did her bachelor's dissertation on the carbon footprint of the company's operation.
- IEMA in Environmental Management, PAS 2060 and ISO14001 training
- Joined webinars, ECOLOGY, Scottish Enterprise & Business Gateway.
- Some CHI and CDO training.
- Certified green champion online course Business Energy Scotland
- Informal personal training from previous business, conferences and online webinar.

Figure 8: Overall skills and training

Q23 Has anyone in your organisation taken part in skills training to help your business decarbonise?

	Responses	Yes	No
Renewable energy	4	50%	50%
Housing	2	50%	50%
Food and drink	20	20%	80%
Aquaculture and marine economy	5	40%	60%
Tourism	26	23%	77%
Retail	16	25%	75%
Agriculture (including crofting), land use and forestry	4	50%	50%
Transport	7	43%	57%
Self-employed	3	33%	67%
Logistics (related to any of the sectors above)	3	0%	100%
Leisure industry (music, arts, theatre, active tourism)	16	19%	81%
Construction/Trades	2	50%	50%
Media and related activities	3	33%	67%

Table 7: Uptake of skills training to help business decarbonisation by sector

Q25 Do you feel you have a good understanding of the skills your organisation will need to plan and deliver actions to reduce your carbon footprint to reach carbon neutral?

	Responses	Yes	No
Renewable energy	4	75%	25%
Housing	2	100%	0%
Food and drink	20	20%	80%
Aquaculture and marine economy	5	40%	60%
Tourism	26	27%	73%
Retail	16	25%	75%
Agriculture (including crofting), land use and forestry	4	75%	25%
Transport	0	43%	57%
Self-employed	3	33%	67%
Logistics (related to any of the sectors above)	3	0%	100%

Leisure industry (music, arts, theatre, active tourism)	16	31%	69%
Construction/Trades	2	100%	0%
Media and related activities	3	33%	67%

Table 8: Understanding of skills to reach carbon neutral within different sectors

Q26 What skills do you already have in your organisation to help deliver carbon reduction?

	Responses	General understanding of where carbon is used	Knowledge of how to assess the carbon footprint	Technical knowledge to do bespoke carbon calculation	Knowledge of how to write a decarbonisation plan	Management and administrative skills to implement carbon reductions	Technical and specialist skills to implement carbon reductions
Renewable energy	3	100%	100%	100%	100%	100%	67%
Housing	2	0%	0%	50%	50%	0%	0%
Food and drink	11	90%	27%	9%	9%	9%	9%
Aquaculture and marine	2	100%	50%	50%	50%	50%	50%
Tourism	14	93%	57%	29%	29%	36%	7%
Retail	9	78%	33%	33%	22%	33%	11%
Agriculture	3	0%	33%	33%	33%	0%	0%
Transport	5	80%	33%	20%	20%	20%	20%
Self-employed	1	0%	0%	100%	0%	0%	0%
Logistics	0	0%	0%	0%	0%	0%	0%
Leisure industry	9	89%	33%	22%	22%	22%	22%
Construction/Trades	2	0%	0%	50%	50%	0%	0%
Media and related activities	2	100%	100%	50%	50%	50%	0%

Table 9: Existing carbon reduction skills within sectors

Q27 What skills do you need to develop in your organisation in order to deliver carbon reduction?							
	Responses	General understanding of where carbon is used	Knowledge of how to assess the carbon footprint	Technical knowledge to do bespoke carbon calculation	Knowledge of how to write a decarbonisation plan	Management and administrative skills to implement carbon reductions	Technical and specialist skills to implement carbon reductions
Renewable energy	2	50%	50%	50%	50%	50%	100%
Housing	2	0%	0%	0%	0%	50%	50%
Food and drink	17	47%	82%	65%	71%	53%	65%
Aquaculture and marine	3	100%	100%	100%	100%	100%	100%
Tourism	24	50%	62%	58%	62%	41%	54%
Retail	15	47%	73%	60%	53%	27%	47%
Agriculture	4	25%	25%	50%	25%	50%	50%
Transport	5	40%	80%	40%	40%	40%	60%
Self-employed	3	100%	67%	67%	67%	67%	100%
Logistics	3	100%	100%	67%	100%	67%	67%
Leisure industry	13	54%	67%	62%	46%	38%	38%
Construction/Trades	2	0%	0%	0%	0%	50%	50%
Media and related activities	3	33%	33%	67%	67%	33%	67%

Table 10: Skills needed within sectors to deliver carbon reduction

Q30 What do you see as the challenges and barriers for your organisation to building up the skills needed to achieve carbon neutral?

	Responses	Cost	Time	Lack of skills	Lack of external support	Not a priority
Renewable energy	4	75%	25%	0%	0%	0%
Housing	2	100%	100%	0%	0%	0%
Food and drink	18	78%	72%	55%	50%	6%
Aquaculture and marine economy	5	60%	60%	40%	40%	20%
Tourism	24	75%	62%	46%	46%	8%
Retail	14	71%	78%	64%	64%	0%
Agriculture	4	75%	100%	25%	0%	0%
Transport	6	67%	33%	17%	33%	0%
Self-employed	3	100%	100%	67%	33%	0%
Logistics (related to any of the sectors above)	3	67%	67%	67%	67%	0%
Leisure industry (music, arts, theatre, active tourism)	14	85%	78%	50%	50%	14%
Construction/trades	2	100%	100%	0%	0%	0%
Media and related activities	3	67%	69%	33%	33%	0%

Table 11: Challenges and barriers to building up skills to achieve carbon neutral

If you require the report in an alternative format such as a Word document, please contact info@climatexchange.org.uk or 0131 651 4783.