INSTALLER EXPERIENCES IN REMOTE AND RURAL COMMUNITIES

Tradespeople and companies share their experiences of the supply chain in the Highlands

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Highland Energy Community Partnership with CHANGEWORKS.

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Executive Summary

This report sets out the supply chain barriers to retrofit and potential solutions within the Highlands and Islands and is produced as part of the Highland Energy Community Partnership a National Lottery Climate Action Fund project. The report focuses on removing the barriers to retrofit for the partnership area, as developing access to, and engagement with, the supply chain is a key priority for the project.

Past projects[1] show that improving energy efficiency in the Highlands can be challenging. Local tradespeople and businesses play a central role in installing and maintaining measures such as insulation, solar PV and heat pumps.

Interviews were conducted with 25 businesses involved in energy efficiency, renewables and retrofit services across Scotland, including in Highland and Island locations such as Argyll and Bute, Colonsay, Islay and Shetland. 12 respondents (48%) described their business as being **based in the Highlands and Islands region**. Most businesses said they moved into energy efficiency, renewables and retrofit work by building on what they already did, like plumbing, heating or construction. Others moved into this area due to customer demand, through contracts and supply chains, or through funded programmes such as ECO and Area Based Schemes (ABS).

Respondents reported offering a range of services. These include installing **heat pumps** (20 respondents; 80%), **solar technologies** (19 respondents; 76%), and **insulation measures** (14 respondents; 56%).

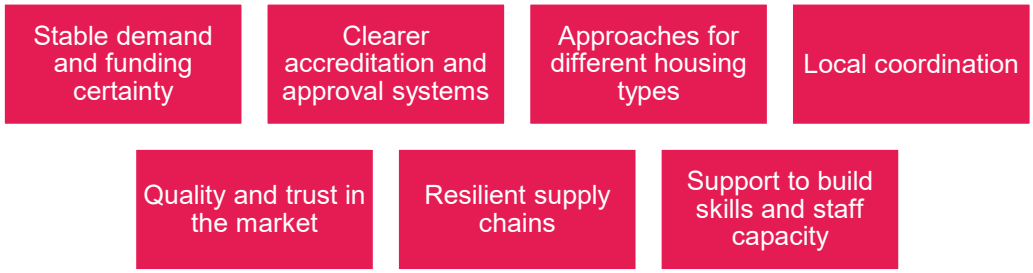
Businesses that were interviewed described a supply chain that is active, but under pressure. The report sets out the main barriers faced (section 2), training and skills (section 3), and what could help them increase their work in the Highlands and Islands (section 4).

Respondents described a set of practical changes that would help them scale up their work, alongside factors that currently limit delivery. These were grouped into five themes:

- Systems, standards and compliance
- Funding, cost and financial risk
- Coordination, logistics and place
- Customer confidence, trust and demand
- Delivery capacity and workforce

[1] A perfect storm: Fuel poverty in rural Scotland

Section 4 of the report sets out 7 opportunity areas identified by respondents. These include:



Many respondents described working at or near full capacity. Some said they could do more work if delivery was easier to plan and coordinate, particularly where funding was predictable, systems were clearer, and local coordination reduced duplication. A small number said they were not looking to expand further, even if conditions improved, because of concerns about maintaining quality or operating at a sustainable level.

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1. Introduction

Improving the energy efficiency of homes in the Highlands and Islands is dependent on a strong and skilled supply chain of local businesses and tradespeople. These businesses install and maintain retrofit measures such as insulation, solar PV, battery storage and low-carbon heating systems like heat pumps.

Based on Energy Performance Certificate (EPC) data analysed in 2026, the Highland Energy Community Partnership has information on 5,748 domestic property EPCs across the partnership area. Of these, **3,601 properties (63%) have an EPC rating of D or below**, and **863 properties (15%) have EPC ratings of F or G**. Analysis shows that 83% of homes were at an **EPC band C or below** inferring they would benefit from energy efficiency improvements. Further information on EPC ratings, what they mean, and how they are calculated can be found in the Scottish Government's *Energy Performance Certificates: Guide*[2].

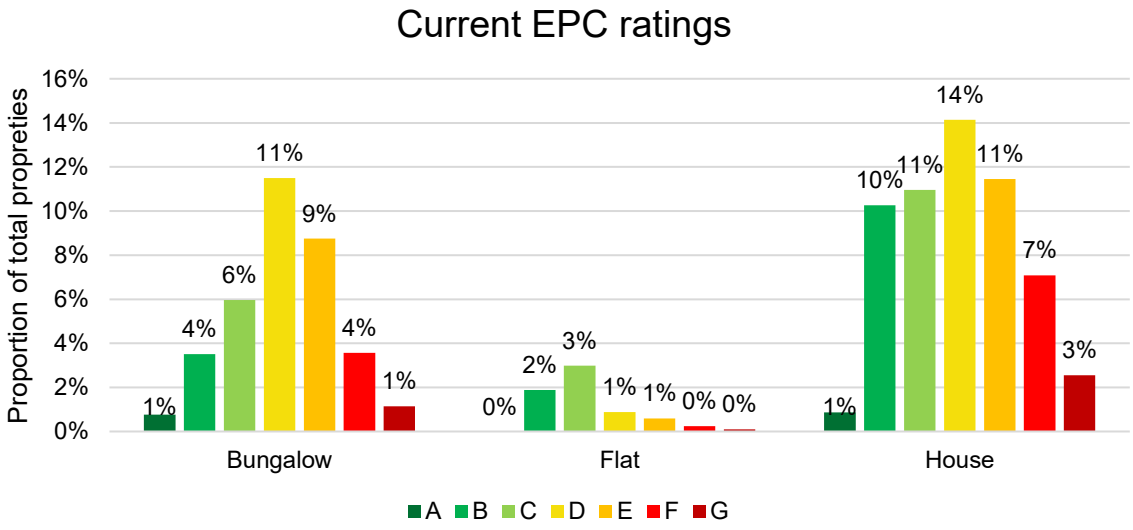


Figure 1: Current EPC ratings for most common property types (n=5,704)

The Scottish Government has set an ambition to maximise the number of fuel-poor households that reach the equivalent of an EPC B by 2040 as part of its wider commitment to reach net zero greenhouse gas emissions by 2045[3]. Meeting this ambition will require improving the energy performance of homes through retrofit measures such as insulation and low-carbon heating systems.

Installing and maintaining these systems depends on the availability of a supply chain. Community partners working with the Highland Energy Community Partnership regularly support and advise householders wanting to improve the energy efficiency of their home, and Home Energy Scotland provides households with access to funding for installations. However, this funding often requires installers to hold industry recognised accreditations such as PAS 2030, TrustMark or MCS

[2] Scottish Government. *Energy Performance Certificates: Guide*
[3] Scottish Government. *Energy Efficiency in Homes Policy*

certification. In the absence of accredited installers, householders may therefore find it difficult to access funding to enable retrofit measures.

The Highland Council delivers Energy Efficiency Scotland: Area Based Schemes (EES:ABS) across the region, in line with the Council's Local Heat and Energy Efficiency Strategy (LHEES). This involves carrying out energy efficiency improvements to eligible properties within defined areas. To plan and deliver schemes effectively, The Highland Council must assess whether there is sufficient interest from households in installing measures, as well as ensuring there is adequate supply chain capacity to carry out the work.

To help improve supply chain capacity and skills, the University of the Highlands and Islands - Inverness is considering potential future demand for training and apprenticeship opportunities linked to retrofit and low-carbon technologies. Regional organisations with a remit for workforce development and economic growth may also benefit from a clearer understanding of how retrofit work is affecting local trades and businesses.

Workforce shortages in the retrofit sector have been recognised nationally[4]. In addition, there are many anecdotal claims about supply chain conditions, such as installers being unwilling to take on retrofit work or installation costs being too high. This report aims to move discussion from anecdote to evidence by capturing the experiences of businesses delivering retrofit and renewable energy services in the Highlands and Islands.

The research is based on interviews with 25 businesses delivering energy efficiency, renewables and retrofit services within the Highland Energy Community Partnership area. Businesses delivering work in the Highlands and Islands may be based out with the region, including in the Central Belt, and travel significant distances to carry out installations across remote and rural communities. Full methodology and details of interviewees are included in the Appendix, see section 6.

This report examines how these businesses became involved in retrofit, the barriers they face in delivering work, training opportunities available to them, and the conditions under which they could increase delivery capacity. Findings from this research will inform a later Highland Energy Community Partnership recommendations paper. The partnership will work with suppliers and installers to better understand the barriers they identified and explore potential solutions that could be put in place locally. These findings will be shared with regional and national organisations where appropriate.

Later sections of this report explore in more detail training needs, impacts on delivery capacity, barriers to delivery, their root causes - and opportunities to increase retrofit activity.

[4] National Retrofit Hub. *UK Must Commit to a 10-Year Retrofit Workforce Strategy*

2. Barriers to Delivery

This section describes the barriers installers and tradespeople report when delivering energy efficiency, renewable energy and retrofit work. It is based on interviews with businesses working in different parts of the Highlands and Islands and further afield.

Barriers described by installers are sets of issues that tend to come together, rather than separate, isolated problems. For example, a single job might simultaneously be affected by funding rules, the real cost of the work, who was available to deliver it, and how easy it was to coordinate in that location.

To reflect this, the barriers in this section are grouped into five broad themes. All the specific barriers raised in the interviews are included within them, providing insights into the “on the tools” experiences of respondents.

The five themes are:

- **Systems, standards and compliance** – issues linked to accreditation, standards, rules and guarantees.
- **Funding, cost and financial risk** – how funding processes, affordability and financial risk affect whether work goes ahead.
- **Coordination, logistics and place** – how work is organised across trades, materials, time and geography.
- **Customer confidence, trust and demand** – how customers understand retrofit, decide who to trust, and whether they proceed.
- **Delivery capacity and workforce** – the availability of skilled people and the impact of training, recruitment and retention.

Some issues cut across multiple themes (e.g. travel affecting cost, coordination and customer decisions). Each barrier is therefore discussed once under the most relevant theme, rather than repeated. Each subsection starts by showing how many respondents raised a particular issue. This is followed by a detailed description of the issue, what action was taken response, and how this affected delivery.

This shows how common different barriers are and what they look like in practice, while retaining the detail of installers experience.

2.1. Systems, standards and compliance

- Accreditation
- Paperwork
- Administration burden
- Guarantees
- VAT / Inspection issues
- Standards blocking traditional buildings

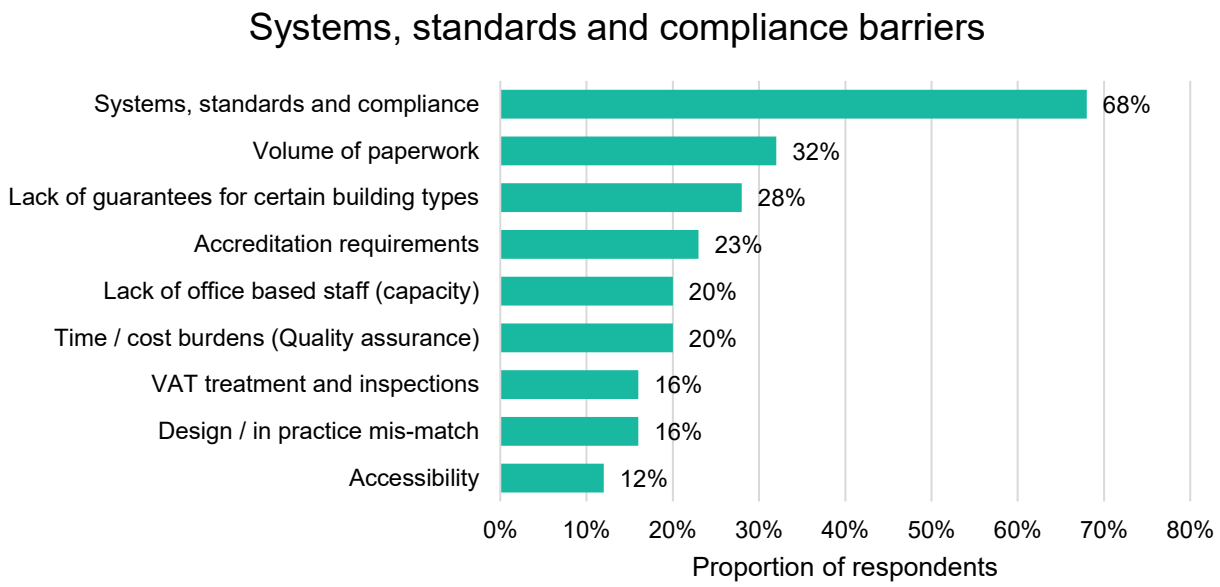


Figure 2: Systems, standards and compliance barriers (n=25)

17 respondents (68%) described **systems, standards and compliance requirements** as a barrier to delivering energy efficiency and retrofit work. These respondents were already carrying out skilled work in people's homes, including plumbing and heating installations, electrical rewiring, joinery, insulation as part of renovations, and full property refurbishments. They explained that moving into accredited retrofit work did not require learning new practical skills, as these were already within their capabilities. Instead, the requirements are around learning how to operate within a complex system of accreditation, paperwork, inspections and guarantees that determined whether they were able to offer certain measures at all.

Eight respondents (32%) described the **paperwork required under MCS and PAS2030** as directly limiting how much accredited work they could take on. These respondents were already delivering installations such as heat pumps or solar PV systems but explained that each job also required extensive written evidence alongside the physical installation. This included design calculations, photographs taken at different stages of the install, commissioning records and detailed handover documents for householders.

One installer described the scale of this requirement in practical terms:

> ***"For a heat pump, there can be around 20 separate pieces of documentation, and for a solar PV installation it's closer to 30. That's before inspections."***

Respondents explained that this paperwork was completed by the same people doing the installation work. They described finishing work on site during the day and completing documentation in the evenings or between jobs. In practice, this meant they took on fewer installations from householders using schemes which required certain levels of accreditation - even when customers were interested, because the administrative work reduced how much they could physically deliver.

Seven respondents (28%) described **standards and guarantees** as preventing work from going ahead on certain properties, particularly traditional and stone buildings. These respondents explained that, for some insulation measures, guarantees were required in order to complete accreditation and allow customers to access funding. Where guarantees were not available, work could not proceed.

Respondents described reaching the point where surveys had been completed and options discussed with householders but then being unable to move forward because approved materials or guarantees did not exist for that building type. In these situations, the barrier was not technical skill, but the absence of products and guarantees recognised by accreditation bodies.

One respondent summarised this situation simply:

> ***"We can do the work, but we can't get guarantees for stone buildings."***

Other respondents explained that where accreditation bodies could not recommend approved materials, they were unable to complete TrustMark-registered insulation work. As a result, customers could not access grant funding and projects stopped at the design or survey stage, despite interest from both installer and householder.

Six respondents (24%) described encountering **accreditation barriers** before they were able to quote for or begin specific retrofit measures. These respondents explained that the difficulty arose at the point where they wanted to expand the work they already did. Instead of a clear starting point, they described being told that a combination of qualifications, quality management processes and inspections were required, without an explanation of how these fitted together.

One respondent, a joiner already working on renovations in existing homes, described wanting to begin installing internal wall insulation as part of that work. They explained that before they could offer this measure, they were told they needed to complete an SVQ, put a quality management system in place and undergo inspection. This information was not presented as a clear pathway. They described spending time trying to work out what was required while continuing with paid joinery work. As a result, they postponed taking on insulation jobs and continued with general renovation work, despite having the practical skills to deliver the measure.

Another respondent described a similar experience when looking to expand into heat pump installations. They explained that accreditation was not a single hurdle to clear, but an ongoing process that ran alongside site work and quoting. In practice, this meant spending evenings and unpaid time preparing documentation, with no guarantee that the work would go ahead once the paperwork was completed.

Five respondents (20%) described the **compliance burden** as particularly difficult for small businesses and sole traders. These respondents explained that they did not have office-based staff and managed paperwork from vans, kitchens or temporary site spaces. In this context, time spent on compliance paperwork directly replaced paid installation time.

One respondent described this clearly:

> ***"The MCS paperwork burden is very difficult for smaller companies or sole traders who mostly operate out of their vans."***

Other respondents described adapting to this by employing part-time administrative support specifically to manage accreditation paperwork and inspections. This added fixed overheads to their business, changing the balance of whether taking on accredited work was financially worthwhile.

Five respondents (20%) described **a tension between maintaining quality standards and keeping the system workable for small businesses**. These respondents emphasised that quality assurance was important for protecting householders and preventing poor workmanship. At the same time, they described current compliance systems as complex and time-consuming, particularly when layered on top of existing workloads. In practice, this meant having to weigh the benefits of quality assurance against the time, cost and uncertainty involved in staying compliant.

Four respondents (16%) described **VAT treatment and inspection requirements** as adding further friction to accredited retrofit work. These respondents explained that inspections were required at set stages of work, and that inspection fees and inspector availability were outside their control. This meant coordinating site visits around inspection schedules, with delays holding up completion and payment.

Respondents also described VAT as difficult to navigate. While some retrofit measures are zero-rated, others are not, and applying the correct VAT treatment adds further administrative work. In some cases, respondents described needing to reclaim VAT after installation, tying up cash and adding paperwork to jobs that were already complex. One respondent explained that this uncertainty affected the quoting stage, as inspection costs and VAT treatment had to be factored in before knowing whether work would proceed.

Four respondents (16%) described a **mismatch between standard design requirements and the buildings they regularly worked on**. These respondents explained that requirements such as heat loss calculations or assumed insulation performance did not reflect the condition or construction of older housing stock. They described reaching the design stage of projects where calculations could not meet required thresholds on paper, even though they believed practical improvements were possible. As a result, projects stalled before installation could begin.

Three respondents (12%) described **accessibility issues within compliance processes** as a barrier. These respondents explained that accreditation relied heavily on written evidence, form-filling and digital document management. One installer struggled with these requirements because they were not accessible or inclusive enough:

> ***"The bureaucracy around MCS and PAS2030 is not dyslexic compatible. A lot of tradespeople find it very difficult to do the paperwork."***

Other respondents described related accessibility barriers without using the term "accessible" explicitly. They explained that compliance assumed confidence with written material, time for reading and writing, and familiarity with online systems. Where this support was not available, they relied on family members or paid help to complete paperwork or delayed entering accredited retrofit work altogether.

Work most often paused before installation began in the situations described in this section. Respondents described time being spent navigating accreditation, paperwork, inspections and guarantees, followed by decisions to delay, narrow or avoid certain measures altogether. Where work did not proceed, this happened before costs were agreed or funding was accessed, feeding into the financial risks and decisions described in the next section.

2.2. Funding, cost and financial risk

- Funding design
- Payment delays
- Affordability gaps
- Installer financial risk
- Customers abandoning work due to cost

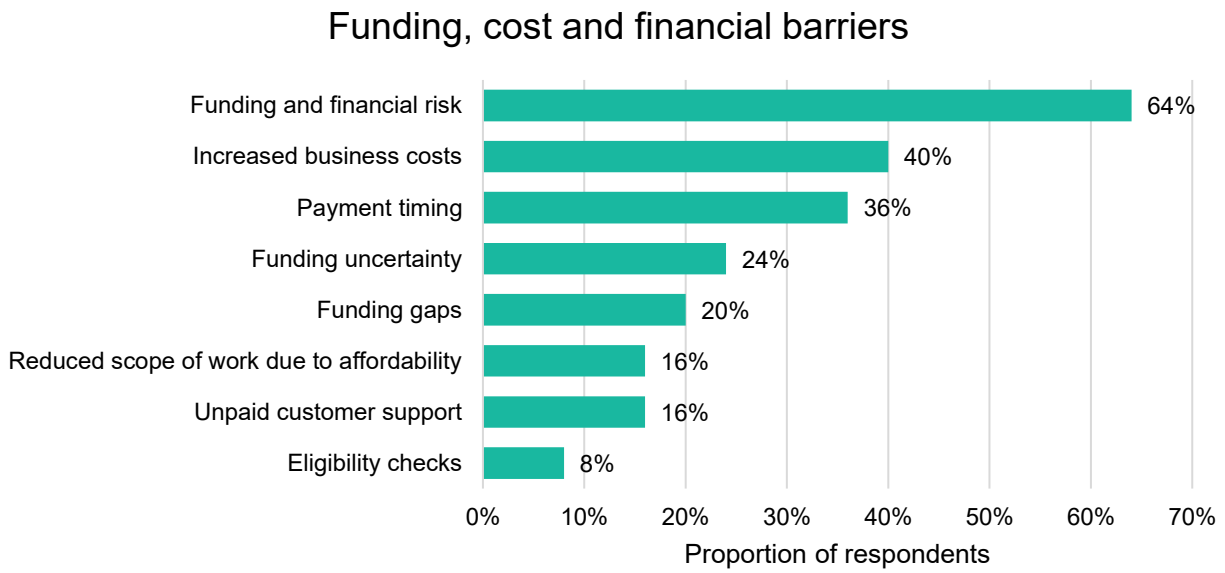


Figure 3: Funding, cost and financial barriers (n=25)

16 respondents (64%) described **funding, cost and financial risk** as a barrier to delivering energy efficiency and retrofit work. These respondents explained that decisions about whether work could

go ahead were shaped not only by the total cost of measures, but by how funding was structured, when payments were made, and who carried the financial risk if projects stalled or did not proceed.

Ten respondents (40%) described **cost pressures** affecting their own businesses as part of delivering retrofit work. These respondents referred to a combination of costs, including accreditation fees, inspections, insurance, administration, travel and unpaid time spent on compliance and customer support. These costs reduce margins and increase the risk associated with taking on complex or lower-value projects.

In practice, respondents described weighing up whether jobs were financially viable before quoting. Where the balance did not stack up, they described declining work, restricting the types of jobs they accepted, or focusing on non-funded work that carried less financial risk.

Nine respondents (36%) described **payment timing** as a direct risk to their business. These respondents explained that under several funding routes they were required to complete work before receiving payment, meaning they had to cover labour and materials costs up front. For small businesses, this created significant cash-flow pressure, particularly where projects were delayed or payments were slow to be processed.

One respondent described completing funded installations and then waiting extended periods for payment, with serious consequences for their business:

> ***"At the moment the contractor is at the mercy of the funding and the funder. Getting the money after installation has been very difficult, with delays to processing loan and grant payments. I've considered coming off MCS and not taking on jobs funded through HES because the delays nearly caused bankruptcy."***

Experiences like this led respondents to limit the number of funded projects they took on at any one time, or to avoid funded work altogether where the financial risk was too high.

Six respondents (24%) described **uncertainty about funding availability** affecting whether customers decided to proceed at all. These respondents explained that customers often wanted to move ahead but hesitated because they were unsure whether funding schemes would continue, or whether they would still be eligible once work was ready to start.

Respondents described situations where surveys had been completed and options discussed, but customers asked to wait before committing. In practice, this meant installers revisiting the same households multiple times as funding rules changed, or holding space in their schedules for work that did not materialise. This meant that some projects were postponed for months, while others did not proceed once customers lost confidence that support would be available.

Five respondents (20%) described situations where **the gap between available funding and the real cost of work** caused projects to stall. While funding reduced upfront costs, it often did not cover the full cost of recommended measures. They described carrying out surveys and producing

designs for whole-house solutions, only for customers to disengage once they understood the remaining contribution required.

One respondent described this from the installer's perspective:

> ***"The amount of grant funding and help available does not meet the cost of the work, and to householders the cost of upheaval and installation outweighs the benefits."***

This frequently resulted in projects being paused or abandoned after initial engagement.

Four respondents (16%) described **customers choosing to reduce the scope of work** because of affordability. These respondents explained that once full costs were clear, customers often decided to proceed with a single measure they could afford, rather than the full package that had been recommended.

Respondents described customers prioritising measures such as a heating system, while delaying insulation or ventilation work. In practice, this meant projects were broken into stages. Some respondents described returning months or years later to complete additional work once customers were able to self-fund; in other cases, the work did not progress beyond the initial installation.

Four respondents (16%) described **unpaid time spent supporting customers** through funding and decision-making as adding to financial pressure. These respondents explained that they regularly provided guidance, explanations and reassurance to help customers understand funding options and what installations would involve, even when there was no guarantee the work would proceed.

One installer reflected on the impact of this:

> ***"We only make money when we install measures, but we still spend time sending out guides and videos to help householders understand what they're getting."***

Respondents explained that while this work was often necessary to move projects forward, it reduced the time available for paid installation work.

Two respondents described **spending additional time checking and reviewing eligibility information** with householders before funded work could proceed. These respondents explained that some households who met the criteria for support had previously been told they were not eligible, which delayed or prevented work from going ahead.

Respondents described encountering this situation after customers had already engaged with the idea of retrofit, creating confusion and uncertainty. In practice, this meant installers had to re-check eligibility, explain the scheme again, and rebuild customer confidence before work could progress.

One respondent described this happening specifically in relation to the ECO4 Flex scheme:

> ***"We've carried out jobs for people eligible for ECO4 Flex work who were told by larger companies that they were ineligible."***

Respondents explained that correcting this kind of misinformation added unpaid time to projects and, in some cases, resulted in customers disengaging altogether before work could begin.

Decisions about whether work could go ahead were made once costs, funding rules and payment timing became clear. Respondents described projects being delayed while customers waited for funding certainty, reduced in scope once affordability was understood, or declined where payment delays and upfront costs created risk that could not be absorbed. Where work did go ahead, these funding decisions influenced how tightly jobs had to be planned and coordinated during delivery, which is explored in the following section.

2.3. Coordination, logistics and place

- Coordination across schemes
- Sequencing of trades
- Travel and distance
- Accommodation availability
- Materials and deliveries
- Local coordination and place-based delivery
- Access to premises and base space

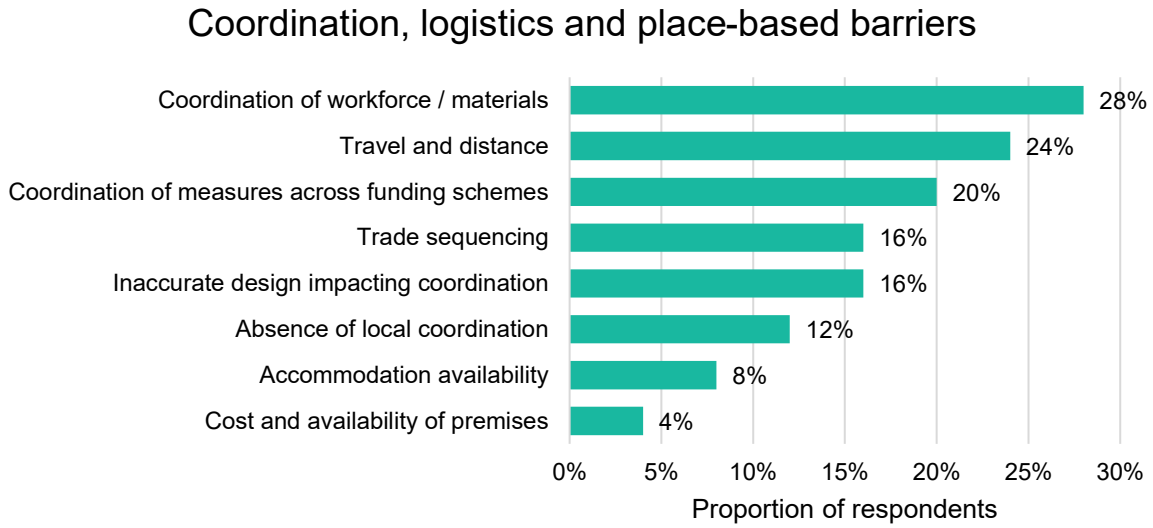


Figure 4: Coordination, logistics and place-based barriers (n=25)

Seven respondents (28%) described **coordination, logistics and place** as a barrier to delivering energy efficiency and retrofit work. These respondents explained that retrofit work depends on tasks being completed in a set order, with people and materials arriving at the right place at the right time. Where this alignment did not happen, respondents described work being delayed or not proceeding as planned.

Six respondents (24%) described **travel and distance** as a coordination challenge. These respondents explained that long journeys, ferry reliance and weather disruption affected both installation work and follow-up visits. They described situations where travel time was significantly greater than time spent on site, which made it difficult to align work across trades.

One respondent described this in practical terms:

> ***"Jobs in the Highlands require three days by the time you factor in travel."***

Respondents explained that where materials were delayed or another trade had not completed work in advance, installers could arrive on site but be unable to proceed, requiring additional trips to complete the job.

Respondents also described **distance to suppliers** as a logistics issue. In some locations, the nearest builders' merchant was more than 100 miles away. Where materials did not arrive on time, respondents described arriving on site without the required equipment and being unable to complete work in one visit. Return visits then had to be planned around ferry availability, weather and other commitments, which extended project timescales and made coordination across trades more difficult.

Five respondents (20%) described **difficulties coordinating retrofit measures** delivered through different schemes. These respondents explained that insulation, heating and other measures were often funded and delivered separately, with no shared timetable or responsibility for sequencing work. One respondent described a live project on Colonsay, where measures were being delivered through two separate programmes:

> ***"It's really difficult to coordinate installations of different measures on the same timescales. We've been waiting over a year for one measure to be installed by a separate company through a different scheme."***

They explained that survey work had been completed and expectations set with the householder, but delays to one measure prevented other work from progressing, leaving the project incomplete for an extended period.

Four respondents (16%) described problems with **sequencing between trades**. These respondents explained that retrofit work depends on tasks being completed in a specific order, such as insulation before heating or electrical work before commissioning. Where one trade was delayed or unavailable, respondents described installations pausing part-way through and projects extending over long periods.

Four respondents (16%) described **place-based design issues** affecting coordination once work had started. These respondents explained that designs were often prepared based on surveys and calculations that did not fully reflect the condition or layout of older or traditional buildings.

They described arriving on site and finding features such as thick stone walls, extensions added over time, uneven layouts or limited internal space that required changes to insulation levels, ventilation routes or equipment placement. Respondents explained that, in practice, this meant designs had to be paused and revised during delivery. These changes disrupted the planned sequence of work across trades and required visits to be rearranged.

Three respondents (12%) described the **absence of local coordination infrastructure** as a barrier. Work was organised independently, without a shared base, shared diary or local point of contact to help line up trades working in the same area.

They described having to arrange site visits, follow-on work and return visits job by job, even where multiple properties or measures were involved. This made it harder to group work, align visits across trades or respond quickly when plans changed, particularly for multi-measure projects in rural and remote locations.

Two respondents described **accommodation availability** as a further coordination barrier when working in remote and island locations. These respondents explained that installations and follow-up visits often required overnight stays, but that accommodation could be limited, seasonal or fully booked. One respondent described the coordination work involved:

> ***"Our office staff end up acting like travel agents – booking ferries, finding accommodation and rearranging schedules when something changes."***

They explained that where accommodation could not be secured, work had to be postponed or split across multiple visits. Respondents described this as adding delay and increasing the difficulty of coordinating work across trades and locations.

One respondent also described the **cost and availability of premises** as a place-based coordination barrier. They explained that the high cost of renting office or yard space in the Highlands made it difficult to store materials, receive deliveries or manage paperwork locally. As a result, respondents described organising work from vans or temporary spaces, which increased the time required to coordinate jobs and manage logistics across sites.

Problems with coordination and logistics emerged during delivery rather than at the point of initial interest or survey. Respondents described projects stalling when trades could not be aligned, materials did not arrive on time, or travel, accommodation and weather disrupted plans. These delays and incomplete installations then shaped how customers experienced the process, feeding into issues of confidence and decision-making outlined in the next section.

2.4. Customer confidence, trust and demand

- Understanding what work involves
- Trust in installers and the wider market
- Impact of poor or non-optimised previous installations
- Fear of disruption inside the home
- Concerns about performance and energy bills
- Drop-off after survey or quote

Figure 5: Customer confidence, trust and demand barriers (n=25)

Eight respondents (32%) described **customer confidence, trust and demand** issues as a barrier to delivering energy efficiency and retrofit work. These respondents explained that work often stalled or stopped after initial interest, once householders were faced with the practical implications of retrofit work in their home. Respondents further expanded on these issues, highlighting specific points of concern.

Six respondents (24%) described **customers struggling to understand what retrofit would involve in practice**. These respondents explained that customers often agreed in principle to improvements but became hesitant once the sequence of work was explained. Installers described carrying out surveys for insulation, ventilation and heating measures and then explaining that work would involve multiple visits, changes to how rooms were used, and coordination across trades.

In these situations, respondents described customers asking to pause once they realised that work would not be completed in a single visit or that different parts of the home would be affected at different stages. Respondents explained that surveys were completed, but projects did not move forward to installation.

One installer described this pause point clearly:

> ***"Sometimes if we think a householder doesn't understand what we are planning to do, we will refuse to continue. Sometimes that householder gets back in touch after some time passes to restart the process."***

Six respondents (24%) described **customers dropping out** after surveys or quotes had been completed. These respondents explained that they often carried out site visits, measurements and designs for insulation, heat pumps or whole-house retrofit, only for customers to decide not to proceed. Respondents described this happening after weeks or months of discussion.

One installer captured the impact of this:

> ***"A full proposal to a householder takes time to do – a lot of time is wasted doing this to not get the job."***

Respondents explained that in these cases work stopped after the planning stage, leaving installers with unrecovered time spent surveying, designing and preparing quotes.

Five respondents (20%) described **trust as a deciding factor** in whether customers proceeded. These respondents explained that customers often raised concerns about poor-quality work they had heard about, installers not returning after installation, or systems not working as expected. One respondent described the wider impact of this on customer confidence:

> ***"You see a lot of bad installs, and the bad press really can damage public perception."***

Respondents explained that even where customers trusted them personally, these wider stories made people cautious about committing to major work, particularly where significant changes to heating or insulation were involved.

Five respondents (20%) also described being asked to **assess, repair or optimise installations carried out by other trades** as a factor affecting customer trust. These respondents explained that householders often contacted them after experiencing problems with previous work, such as heat pumps not performing as expected, controls not being explained, insulation being poorly fitted, or installations being left unfinished. Respondents described being called out to homes where measures had already been installed, but where householders reported cold rooms, higher bills or systems they did not understand.

One respondent described the knock-on effect this had on confidence:

> ***"We spend a lot of time fixing or adjusting work that's already been done, and by that point the customer has lost confidence in the whole process."***

Respondents explained that these experiences shaped customer expectations before any new work was discussed, and in some cases led to customers deciding not to proceed with further retrofit measures.

Five respondents (20%) described **customers raising concerns about how new systems would perform** and how this would affect energy bills. These respondents were mainly discussing heat pump installations, sometimes alongside insulation or ventilation measures. They explained that customers asked whether homes would feel warm enough in winter, how long systems would take to heat the house, and how electricity use would change compared to oil or gas heating.

One respondent explained the seasonal concern that often came up:

> ***"People have to be aware that there will be a spike in electric use in the winter even with solar panels, and low bills in the summer."***

Respondents described these concerns arising after surveys, once installers explained how systems operated differently from traditional heating. Where customers felt uncertain about outcomes, respondents described work pausing at the quotation stage, particularly for heating measures.

Four respondents (16%) described **fear of disruption** as affecting customer decisions. These respondents explained that customers became concerned once they understood that retrofit work could involve noise, mess, loss of use of rooms or repeat visits over a period of time. Respondents described customers withdrawing after surveys once they realised that work would affect lived-in spaces or require changes to daily routines.

Clear exit points in the customer journey were described by respondents in this section. Work stopped or paused after surveys, at the quotation stage, or once householders became uncertain about cost, disruption or past experiences. Respondents described these moments as points where interest did not convert into action, even when technical solutions existed, which then shaped how much work businesses were willing or able to plan for.

2.5. Delivery capacity and workforce

- Skills shortages
- Training barriers
- Apprenticeships
- Workforce retention
- Capacity limits

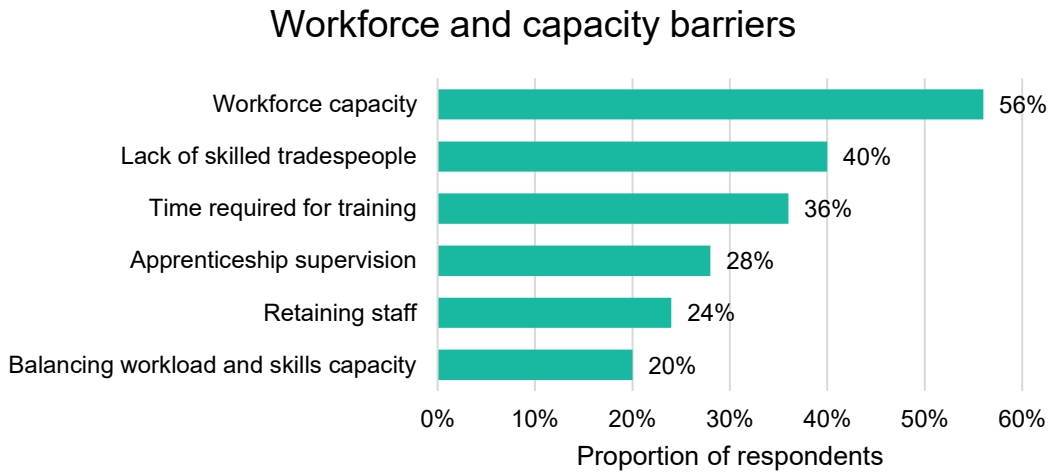


Figure 6: Workforce and capacity barriers (n=25)

14 respondents (56%) described **limits in workforce capacity** as a barrier to delivering more energy efficiency and retrofit work. These respondents explained that even where demand existed, they did not always have the people or skills available to take on additional work.

Respondents described this barrier appearing at the point where work could otherwise have gone ahead. They explained that projects were delayed or declined not because of a lack of interest, but because there were not enough suitably trained people available at the right time.

Ten respondents (40%) described **difficulty finding or recruiting skilled tradespeople**. These respondents referred to shortages of electricians, installers, plumbers and joiners with experience relevant to retrofit work. They explained that competition for these skills was high and that recruitment was difficult both locally and more widely.

Respondents described situations where they had secured work but could not assemble the mix of trades needed to deliver it. In some cases, they delayed jobs while waiting for availability; in others, they declined work because they could not give customers reliable start dates.

One respondent described the reality of this shortage:

> ***"There aren't enough trained people available. Even when the work is there, you can't always put a team together."***

Nine respondents (36%) described **training requirements** as a barrier to expanding their capacity. These respondents explained that gaining new skills or accreditations required time away from

site, travel to training locations and upfront cost. In practice, this meant removing experienced staff from paid installation work.

Respondents described wanting to train staff in areas such as heat pump installation or retrofit coordination but being unable to release them without disrupting existing jobs. One respondent explained the trade-off clearly:

> ***"If someone's away on a course, they're not on site. For a small business, that's hard to absorb."***

As a result, respondents described postponing training or limiting the range of work they offered, even where they believed additional skills would be useful.

Seven respondents (28%) described challenges linked to **apprenticeships and entry routes into the sector**. These respondents explained that taking on apprentices required supervision time as well as wages. For small businesses, this was difficult to manage alongside existing workloads.

Respondents described situations where they considered taking on apprentices but decided against it because experienced staff could not be spared to supervise them safely on site. Others explained that they were unclear which apprenticeship routes were suitable for retrofit work.

One respondent summarised this pressure:

> ***"We're not currently able to offer apprenticeships due to workload, but we're very keen to investigate this opportunity"***

Six respondents (24%) described difficulties **retaining trained staff**. These respondents explained that once staff gained experience or qualifications, they were often attracted to other employers offering higher pay or more stable work.

Respondents described investing time and money in training, only to lose staff shortly afterwards. One respondent described the effect this had on future decisions:

> ***"You spend time training someone up, and then they leave. It makes you think twice about doing it again."***

As a result, respondents described becoming more cautious about training investment, particularly where future work volumes were uncertain.

Five respondents (20%) described **reaching capacity limits** even where skills were available. These respondents explained that they were already working at or near full capacity and were reluctant to take on additional work without confidence that demand would be steady.

In practice, this meant maintaining existing workloads rather than expanding delivery. Respondents described turning down work or limiting growth because they did not want to over-commit and risk delays, quality issues or burnout.

Limits on workforce capacity acted as a final constraint on delivery for the respondents described here. Rather than a single project failing, respondents described maintaining existing workloads, postponing training, or declining additional work because they could not release staff, supervise apprentices, or risk losing trained workers. These constraints explain why overall delivery remained capped, even where demand and funding were present, and provide the context for the training discussion that follows.

The next section covers training and skills development barriers in more detail.

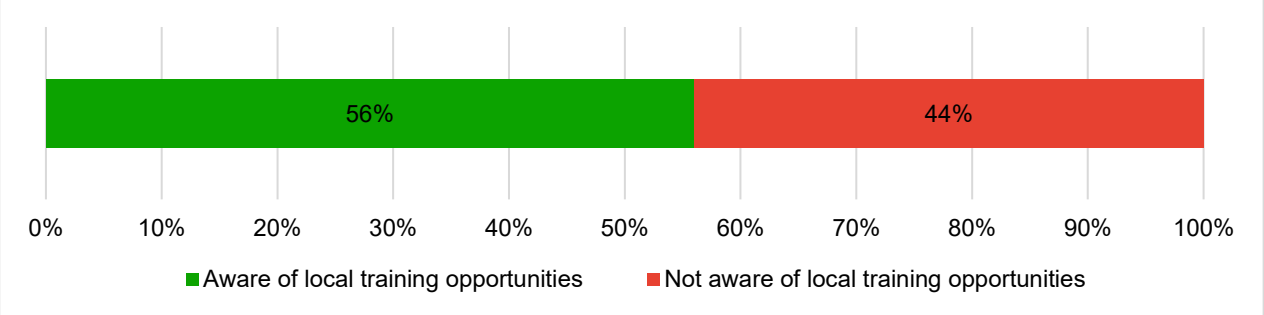
3. Training and Skills Development

The focus on training and skills development in this research was a response to anecdotal evidence that access to training was a barrier. Through the research, our interview respondents have described how challenges in terms of travel and access to training disproportionately affects Highland businesses.

Training and skills development were discussed by respondents in relation to how businesses build and maintain the skills needed to deliver energy efficiency, renewables and retrofit work. Respondents described training as something that usually takes place alongside live delivery, rather than separately from it, and explained how access, timing and supervision shape their ability to invest in people.

- Awareness of training and apprenticeship opportunities
- Range of training routes linked to retrofit delivery
- Travel and time required to complete training
- Local training provision in Inverness
- Apprenticeships and supervision capacity
- Conditions affecting decisions to take on trainees

Of the 25 people interviewed, 14 respondents said they were **aware of training or apprenticeship opportunities** related to energy efficiency, renewables or retrofit work. The remaining 11 respondents said they were **not aware of any local training or apprenticeship opportunities**.



Respondents who were aware of training opportunities described a range of routes. These included college-based courses, manufacturer-led training, NVQ or SVQ qualifications, and training linked to accreditation requirements such as MCS or PAS 2030. Training was described almost entirely in relation to the work respondents were already delivering, or wanted to deliver next, including heat pump installation, solar PV installation, heat-loss calculation, ventilation installation and the electrical qualifications required for renewable installations.

Respondents described training as being closely linked to accreditation requirements rather than undertaken separately from delivery work. This included training linked to schemes such as MCS and PAS 2030, where installers are required to complete manufacturer-led installation courses, assessment visits linked to live installations, and refresher training in order to gain or maintain

accreditation. Respondents explained that this training often involved a combination of classroom-based learning and on-site assessment, with competence demonstrated through real installations rather than through coursework alone.

In practice, respondents described needing to plan training alongside live jobs, as accreditation assessments often depended on the availability of suitable installations. One respondent described how this affected scheduling:

> ***"You need a live install to get signed off, but you can't always line that up with when the course or assessment is running."***

Respondents described travelling outside the Highlands and Islands to complete some types of training, including courses delivered in Elgin, Stirling, Falkirk and London. They explained that training often involved more than just time in the classroom, including travel days, overnight stays and time away from paid installation work. For small businesses, respondents described this as a particularly significant challenge because staff often cover multiple roles.

At the same time, three respondents (12%) described completing **training locally through college-based or locally delivered opportunities in Inverness**. These included SVQ-based plumbing or heat pump training and short courses linked to renewable energy installation or accreditation, delivered through providers such as the University of the Highlands and Islands – Inverness campus. Respondents explained that local provision reduced travel time and made it easier to schedule training around existing work, rather than requiring staff to be away for extended periods.

Eight respondents (32%) stated that their business **currently offers, or has previously offered, apprenticeship opportunities**. These included apprenticeships in electrical installation, plumbing and renewable energy installation. Respondents described apprentices completing SVQ qualifications through college-based training while working alongside experienced staff on site.

Respondents explained that apprenticeships were typically structured around a combination of formal training and on-the-job learning. Apprentices were described as spending time both in college and on site, gradually taking on more responsibility as their skills developed. In some cases, respondents described apprentices progressing into full-time roles within the same business after completing their qualification. In other cases, apprenticeships were described as a longer-term investment, requiring sustained support before apprentices could contribute independently to delivery work.

Respondents explained that taking on apprentices required ongoing supervision in addition to formal training. This included time spent overseeing work on site, checking quality and ensuring safety, as well as supporting apprentices through assessments and coursework. One respondent described the practical limit this created for small teams:

> ***"We can only really take one apprentice at a time, because someone has to be there to supervise them properly."***

One respondent stated that they were developing an apprenticeship programme at the time of interview. This included plans to work with local colleges to support recruitment into retrofit-related roles and to build clearer pathways from training into employment. The respondent described this as a way to strengthen the local workforce over time, while recognising that it required upfront investment and careful planning alongside existing delivery commitments.

Three respondents (12%) stated that they **would consider taking on apprentices if certain conditions were different**. These respondents described accreditation requirements and funding rules as factors affecting their confidence to invest in additional staff or trainees. They explained that uncertainty about future work volumes, scheme eligibility and administrative requirements make it harder to commit to long-term training arrangements. One respondent linked this directly to decisions about investing in training:

> ***"If we knew that there was continuity in the funding models, we wouldn't hold back and would look to set up a base further north to train and employ local tradespeople"***

19 respondents also provided comments on the barriers affecting their ability to carry out energy efficiency or retrofit work. A number of these responses related to workforce development, training access or the ability of businesses to take on apprentices, as shown in the graph below.

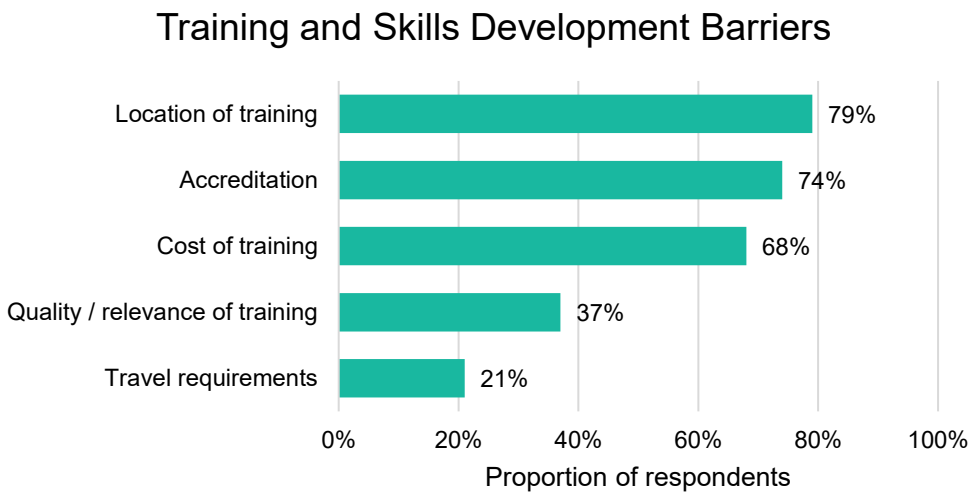


Figure 7: Training and Skills Development Barriers (n=19)

These findings indicate that training access and workforce development may affect the ability of businesses to take part in training or support apprentices. Taken together, these responses show that training and skills development are closely linked to day-to-day delivery decisions.

Respondents described training access, timing and supervision capacity as factors that shape how and when businesses invest in people, and how confidently they plan future work. These experiences help explain the workforce patterns described in section 2 and provide context for the enabling conditions explored in the next section.

4. Opportunities and Enablers

This section sets out the opportunities and enablers identified through the interviews. These reflect what respondents said would encourage them to do more energy efficiency, renewables and retrofit work in practice. The focus of this section is on the conditions that would make delivery easier, more predictable and more viable in the Highlands and Islands.

The opportunities described here are drawn primarily from respondents' answers to the question about what would encourage them to take on more work in this space. They highlight practical changes to funding signals, accreditation systems, coordination, and market conditions that shape day-to-day delivery decisions. In some cases, additional context from elsewhere in the interviews is used to explain how these opportunities would change what happens on a job, but the emphasis remains on enabling conditions rather than barriers.

Respondents described a wide range of opportunities, many of which were mentioned by individual businesses rather than consistently across the whole sample. Taken together, these responses show that the opportunity landscape is broad and detailed, with multiple points where delivery could be unlocked or expanded if conditions were right. The section therefore organises opportunities into seven themes that reflect the structure of respondents' answers and the realities of delivery in the Highlands and Islands:

- **Skills, training and local workforce** – where accessible training routes, apprenticeships and local employment support businesses to build and retain capacity.
- **Stable demand and funding certainty** – where predictable funding, advance notice of schemes and guaranteed work allow businesses to plan, invest and expand.
- **Clear, workable accreditation and approval systems** – where simpler pathways, aligned requirements and reduced administrative burden make it easier to participate in funded work.
- **Systems that work for Highland housing** – where guarantees, approvals and retrofit pathways reflect traditional and stone buildings and local housing conditions.
- **Joined-up delivery, hubs and local coordination** – where area-based approaches, networks and shared infrastructure reduce travel, duplication and inefficiency.
- **Quality, trust and market integrity** – where confidence in standards and protection from poor practice support sustainable growth without compromising quality.
- **Supply chain resilience and availability** – where access to materials and components supports installation and ongoing maintenance in remote and rural areas.

Together, these themes provide a structured picture of what respondents said would make retrofit delivery more viable in the Highlands and Islands. They are intended to inform the next phase of work on solutions and delivery models, rather than to propose specific interventions.

4.1. Skills, training and local workforce

- Accessible training routes linked to retrofit delivery
- Apprenticeships and adult retraining pathways
- Clear skills pipelines into long-term work
- Ability to recruit and retain staff locally
- Building workforce capacity with local housing knowledge

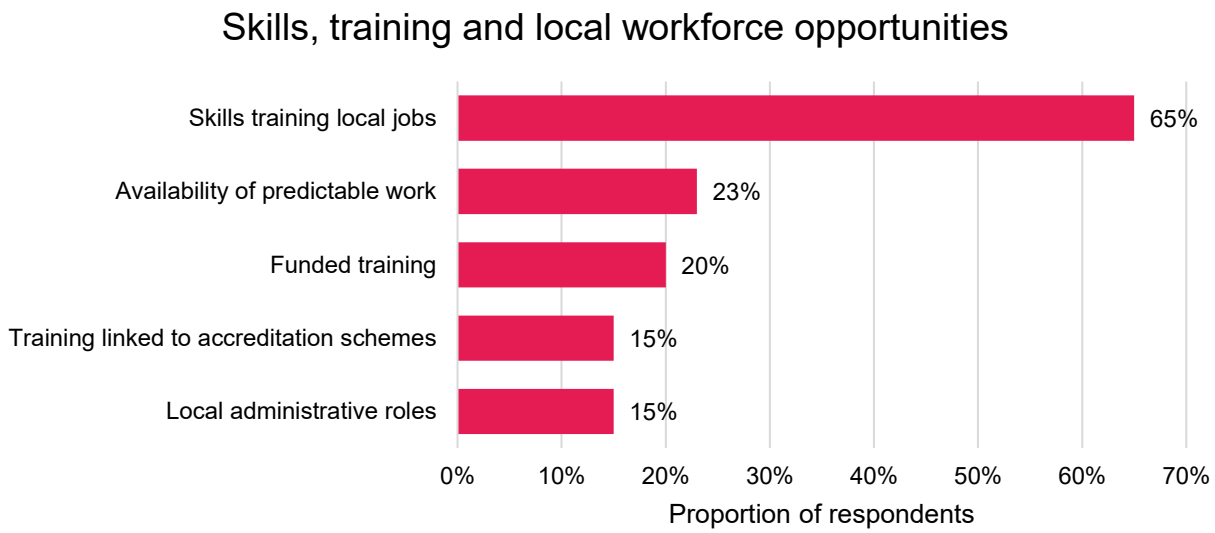


Figure 8: Skills, training and local workforce opportunities (n=25)

17 respondents (65%) described **skills, training and local workforce capacity** as a key opportunity to strengthen delivery over time. They explained that training worked best when it was closely tied to live retrofit work and led to clear, local routes into long-term employment, rather than qualifications that could not be used in practice.

Respondents described gaps in local training provision, particularly in the Highlands and Islands, and explained how this shaped their experience of entering or expanding within the sector. One respondent described having to travel long distances to complete required certificates, and reflected on the value of having training available closer to home:

> ***"When I retrained, I had to travel to England to complete my certificates. That experience showed how little local training was available, and why it would help to offer retrofit and accreditation training closer to where people live and work."***

Respondents described apprenticeships working best when they were **embedded in day-to-day delivery**. In practice, this meant an apprentice starting on site alongside experienced installers, helping with surveys, preparing materials and carrying out basic tasks, while completing an SVQ or NVQ through college-based training. As skills developed, respondents described **apprentices taking on more responsibility**, including supporting full installations or commissioning work under supervision.

Six respondents (23%) described how the **availability of steady and predictable work** shaped decisions about training and retention. Where businesses had confidence that retrofit work would continue locally, respondents explained they were more willing to take on apprentices or invest in upskilling existing staff. In these situations, training was planned alongside delivery, with the expectation that newly trained staff would move directly into ongoing work rather than waiting for the next project.

Five respondents (20%) described the **cost of training** as a factor affecting whether they could expand and develop their workforce. These respondents explained that the cost of putting staff through SVQ or NVQ courses, or funding adult retraining, meant they delayed or limited training unless financial support was available. Where training was funded or subsidised, respondents described being more willing to invest, particularly where they could see a **clear route from training into paid retrofit work**.

Four respondents (15%) described the importance of **certainty that training would lead to deliverable work**. These respondents explained that investing in training felt risky where accreditation rules, guarantees or scheme requirements still prevented them from offering the work once staff were qualified. In these situations, training could be completed but not used. In contrast, respondents described greater confidence where training was clearly recognised by schemes and allowed newly trained staff to move straight into live retrofit jobs.

Respondents also described opportunities to grow and diversify the number of local jobs that support delivery, alongside installation roles. Four respondents (15%) described **employing people in roles focused on administration, compliance, scheduling or coordination**. These respondents explained that when paperwork, customer contact and job planning were handled by someone off site, installers could spend more time on installations and less time managing documents or phone calls:

> ***"If someone else is dealing with the paperwork and organising the jobs, it frees up the installers to actually get the work done."***

Respondents described how these conditions changed delivery patterns over time in the Highlands and Islands. Where training routes, apprenticeships and support roles were available locally, respondents described being able to line up work several months ahead, rely less on short-term subcontracting, and reduce gaps between projects. This made it easier to plan work across seasons and locations, rather than treating retrofit as intermittent or opportunistic activity.

4.2. Clear, workable accreditation and approval systems

- Clear entry routes into accreditation
- Confidence to expand into new measures
- Approval processes that fit real delivery practice
- Reduced administrative burden alongside site work
- Training and accreditation that lead directly into live jobs

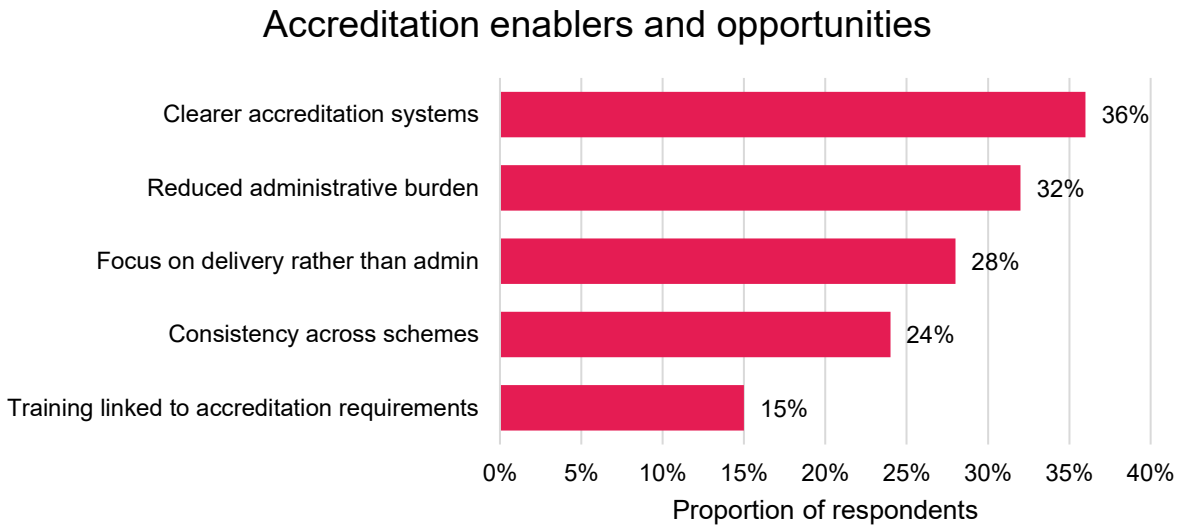


Figure 9: Accreditation and approval system enablers and opportunities (n=25)

Respondents said clear and workable accreditation and approval systems would actively encourage them to expand the work they already deliver. Rather than seeing accreditation as a barrier, respondents described wanting confidence that there was a clear, proportionate route from skills and training into approved, funded delivery.

Nine respondents (36%) described being interested in **offering additional retrofit or renewables measures** but explained that uncertainty about accreditation pathways made them hesitant to take that step. These respondents described situations where they could see demand from customers and felt confident in the technical work but were unclear about what was required before they could offer that work through funded schemes. One respondent described the opportunity clearly:

> ***"I would do more work if there was a clear way in. At the moment, it's hard to tell what you actually need to do before you can start."***

If accreditation routes were clearer and easier to understand, respondents described being more willing to invest time and money in expanding their offer, rather than postponing decisions or limiting the work they took on.

Administrative processes were described as a practical tipping point in decisions about expansion. Eight respondents (32%) explained that **approval and compliance tasks often sat alongside live site work**, rather than being separate from it. In practice, this meant evidence gathering,

uploads and responses to queries being completed in the evenings or between jobs. One respondent described what would change if this was simpler:

> ***"I would be able to do more work if MCS processes were improved, if paperwork were simplified with standardised checklists, and if new installer support was clearer."***

Where administrative requirements were simpler and more predictable, respondents described being more willing to accept **additional accredited jobs** rather than limiting their workload to protect time outside site hours.

Respondents described these opportunities as particularly important in the Highlands and Islands. Seven respondents (28%) explained that most businesses operated with small teams and no dedicated back-office staff, meaning compliance tasks were handled by the same people carrying out site work, often after long travel days. In this context, even small increases in administrative work reduced how much additional work they could take on. Where accreditation and approval processes were clearer and easier to manage, respondents described being more willing to accept **extra jobs, extend their offer, and focus more of their time on delivery** rather than managing compliance.

Respondents also described **confidence to expand** as being closely linked to **consistency across schemes**. Six respondents (24%) explained that they currently limited what they offered after experiencing jobs where approval requirements changed part-way through delivery. In practice, this meant completing a survey and design based on one funding route, then realising that the same evidence or calculations would not be accepted once a job moved into a different scheme.

Rather than redesigning work or repeating compliance tasks without payment, respondents described narrowing their offer to work they knew would pass. Where requirements were consistent across schemes, respondents described being willing to quote a **wider range of jobs** instead of holding back to manage risk.

Respondents also described accreditation as encouraging when it allowed training to translate directly into paid work. Four respondents (15%) explained that they had paid for training and had people ready to work but were still unable to offer funded jobs because approval or scheme requirements were not yet in place. In practice, this meant trained staff were available but could not be assigned to live retrofit work straight away. Respondents described greater confidence where training, accreditation and approval were clearly linked, allowing **new skills to be used immediately** rather than waiting for additional steps.

4.3. Stable demand and funding certainty

- Predictable grant and loan funding for households
- Advance notice and continuity of funding schemes
- Longer-term visibility of demand to support planning
- Guaranteed or area-based work pipelines
- Funding that supports all householder backgrounds

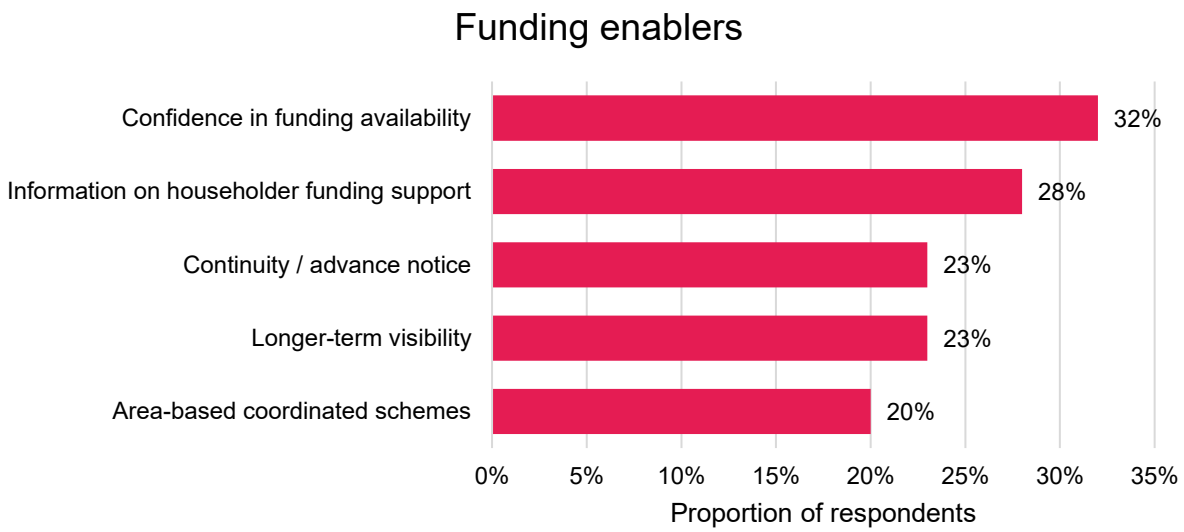


Figure 10: Funding enablers and opportunities (n=25)

Respondents described stable demand and funding certainty as one of the strongest factors that would encourage them to take on more retrofit, energy efficiency and renewables work. They talked about this in very practical terms: whether they could confirm start dates, commit staff time, and move enquiries through to installation without leaving work "parked" indefinitely.

Eight respondents (32%) described situations where they were ready to proceed with work, but **customers were waiting for clarity on whether funding would be available**. In practice, respondents described carrying out surveys, preparing quotes and discussing options with householders, only for jobs to pause at that point. One respondent described how this played out week to week:

> ***"You do the survey, you've talked it all through, and then it just sits there. The customer doesn't want to commit and we don't want to book it in if we don't know the funding will still be there. So nothing moves."***

Where respondents could be confident that funding would be in place when work was due to start, they described being more willing to agree dates, order materials and **line jobs up back-to-back**, rather than leaving gaps in the diary.

Funding was also described as shaping whether households could move forward with work. Seven respondents (28%) explained that many customers were interested and engaged but needed clear

information about **what financial support was available** before committing. Respondents described customers who could contribute something towards costs but were hesitant without understanding how grants or loans would work in practice. One respondent described these conversations:

> ***"People aren't saying they don't want it done. They're saying they need to understand what help there is and what it means for them before they can say yes."***

Where funding offers were clear and stable, respondents described being able to have more open and confident conversations about costs, sequencing and timing, which helped **move projects from enquiry into delivery**.

Six respondents (23%) described the importance of **advance notice and continuity of funding schemes**. They explained that sudden pauses or changes made it difficult to plan work beyond the short term, particularly where jobs involved travel, coordination with other trades, or multiple visits. One respondent described how this uncertainty affected staffing decisions:

> ***"If you don't know what's happening in a few months' time, you can't take people on or promise them hours. You just keep things ticking over instead of growing."***

Respondents described that advance notice of changes — even without additional funding — would allow them to **plan workloads, manage customer expectations and give clearer timescales**, rather than working reactively.

Six respondents (23%) also described how **longer-term visibility of demand** would change how they ran their business. These respondents talked about the difference between working job-to-job and being able to see a pipeline of work stretching across seasons. One respondent described what that shift would enable:

> ***"If you could see what work was coming over the next few years, you'd do things properly — take on staff, open a base, plan routes — instead of just fitting jobs in wherever you can."***

In practice, respondents described that longer-term certainty would allow them to commit to **employing staff beyond short trial periods**, **expand the measures they offered**, and reduce reliance on subcontractors brought in at short notice.

Respondents also described guaranteed or coordinated work pipelines as particularly encouraging. Five respondents (20%) explained that **area-based or coordinated retrofit programmes** would make it easier to do more work by reducing uncertainty and wasted effort. They described being able to group surveys, installations and follow-up work in the same area, reducing travel time and repeat visits, and **making better use of staff time**.

Respondents described these conditions as **especially important in the Highlands and Islands**, where longer travel distances, smaller local markets and seasonal working patterns increase risk. Where demand was predictable and funding visible in advance, respondents described being able to book work further ahead, smooth out quiet periods and **invest in local delivery with greater confidence**.

4.4. Systems that work for Highland housing

- Approval routes that reflect traditional and stone buildings
- Recognised guarantees for non-standard construction
- Whole-house approaches that can proceed without redesign
- Systems that support fabric-first delivery
- Confidence to recommend and deliver appropriate measures

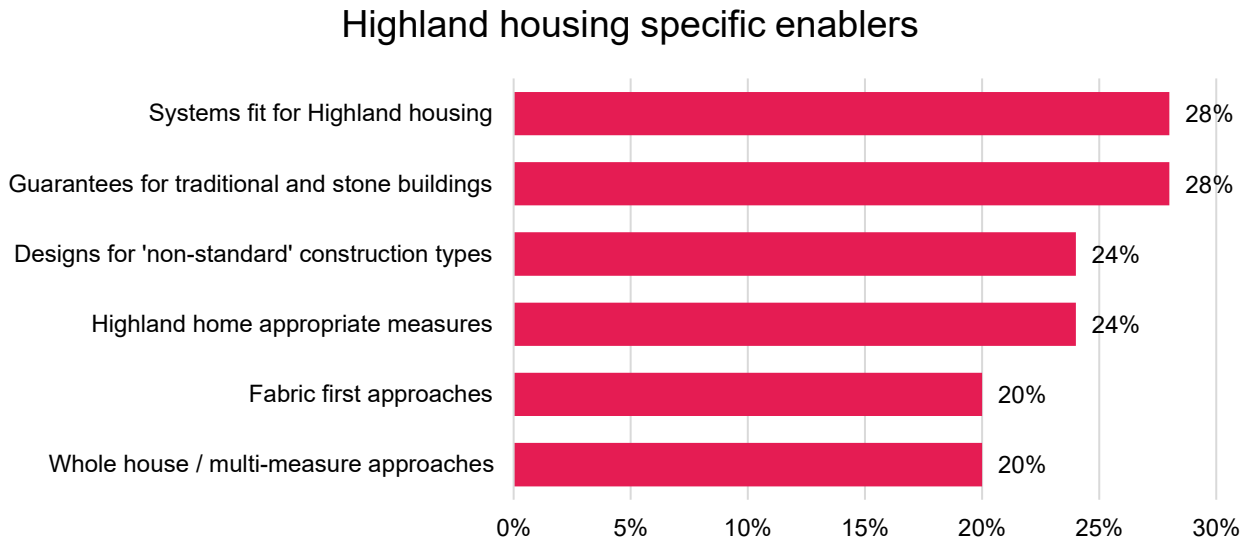


Figure 11: Opportunities and enablers for Highland housing

Seven respondents (28%) described **systems that work for Highland housing** as something that would actively encourage them to take work from survey through to installation. They described this in relation to traditional and stone buildings, where decisions about whether work could proceed depended on whether approval routes and guarantees recognised the type of building involved.

These seven respondents explained that this decision point most often occurred after survey. They described carrying out surveys, measuring walls and floors, and discussing options with householders, but then having to pause because **recognised guarantees or approved systems were not available for that construction type**. Rather than repeating the survey or redesigning work unpaid, respondents described narrowing the work they offered to what they knew could be approved**.** One respondent described the opportunity clearly:

> ***"If there was a way to get systems approved and guaranteed for stone buildings, we could do a lot more of this work. We already have the skills to do it, but without guarantees or certification that applies to the buildings we work on, we can't move forward."***

In practice, respondents described completing surveys and having conversations with householders but being unable to book the next visit because approval could not be obtained for the building type, even where the technical solution was understood.

Six respondents (24%) described how **current systems assume "standard" construction types** that do not match much of the housing stock they work with. These respondents explained that they often identified appropriate measures on site but then had to adapt designs or commission additional surveys because the assumptions behind the approval process did not reflect what they found in the building. One respondent described this mismatch:

> ***"Most of the houses we work on up here are traditional or stone buildings, and the standard design guides don't really reflect how they're built."***

When this happened mid-process, respondents described either spending additional unpaid time re-working designs or deciding not to offer that type of work again. Where systems better reflected local housing, respondents described being more willing to recommend measures and proceed without repeated justification.

Six respondents (24%) described **confidence to recommend appropriate measures** as an important outcome of systems **that fit Highland housing**. These respondents explained that clearer approval routes would allow them to **speak more openly with householders about what would work best for their home**, rather than limiting recommendations to what they knew could be approved. They described moments at the kitchen table where they wanted to recommend a solution they believed was right for the building but held back because they were unsure it would be accepted.

These opportunities were described as particularly important in the Highlands and Islands, where traditional and stone buildings make up a large proportion of the housing stock and most businesses operate with small teams. They explained that compliance tasks often sat alongside long travel days and full days on site, meaning decisions about whether to take on additional work were closely tied to whether systems reflected the reality of the buildings they worked on. Where approval routes and guarantees aligned with local housing, respondents described being more willing to **proceed beyond survey stage** and take on work they were confident they could deliver well.

Five respondents (20%) also described being encouraged to do more work if they could start by **improving the building fabric itself, such as walls, lofts or floors,** before moving on to heating or other systems. These respondents explained that they often identified insulation or building

improvements as the first step during surveys but found that approval rules or guarantees made it difficult to proceed in traditional buildings. One respondent described the opportunity simply:

> ***"Insulation is the big one. If that could go ahead properly, everything else would follow."***

Where systems supported this approach, respondents described being able to progress jobs in a logical, planned-out sequence rather than stopping after survey or initial discussions.

Five respondents (20%) described being more willing to take on **larger or more complex jobs if systems allowed them to treat a home as a single, joined-up project** rather than a series of separate measures. These respondents explained that, in practice, this meant carrying out one survey, agreeing a clear plan with the householder, and completing the work in the appropriate order, instead of stopping after each stage because the next step required a different approval route. Where systems allowed measures to be designed and approved together, respondents described being able to move directly from one stage of work to the next rather than pausing or breaking jobs up to fit scheme rules.

4.5. Joined up delivery, hubs and local coordination

- Joined-up delivery across multiple measures
- Local coordination to reduce travel and duplication
- Shared hubs, networks or points of contact
- Ability to group work and plan jobs together
- Support to coordinate delivery in rural and remote areas

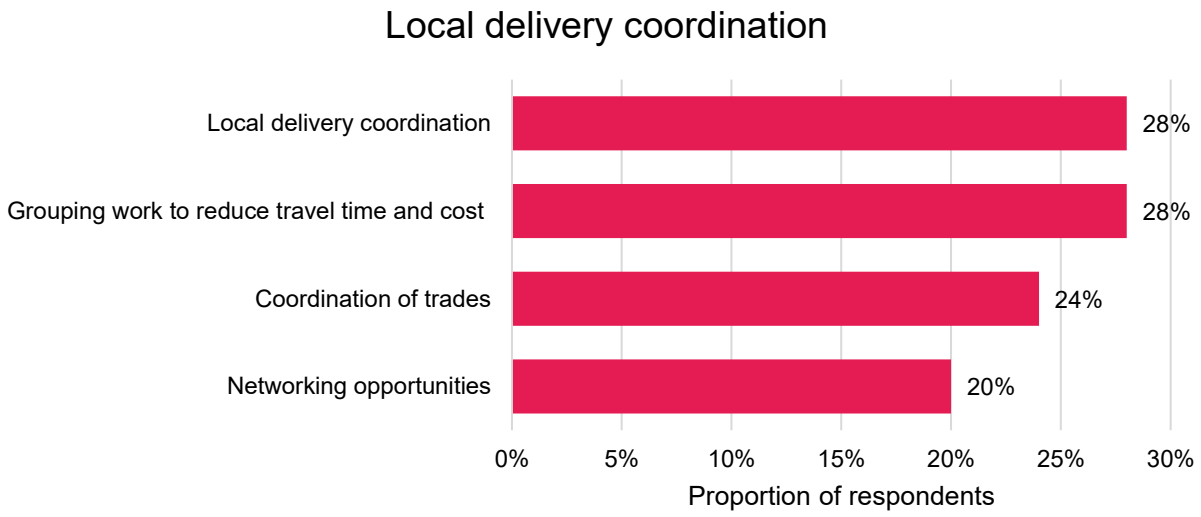


Figure 12: Local delivery coordination enablers and opportunities (n=25)

Seven respondents (28%) described **joined-up delivery and local coordination** as a way to deliver more work within the same amount of time and numbers of staff. They linked this to working across rural and remote communities in the Highlands and Islands, where coordination affects how much work they can realistically complete.

All seven respondents who raised opportunities around this theme said they were more willing to **take on extra jobs if work could be grouped and planned locally**, rather than delivered as one-off projects. They explained that a typical week might involve travelling long distances to carry out a single survey or installation. They then had to return days or weeks later to complete the next stage. One respondent described the cost and inefficiency this created when work was not coordinated locally:

> ***"It would be more cost effective to actually utilise people in rural areas – the local contractors – rather than us bringing staff from further afield, because then you've got additional accommodation costs."***

These respondents explained that, in rural and remote communities, this affected whether they were willing to take on more work. Uncoordinated jobs often meant making several long trips for small amounts of work. Where work could be grouped, respondents described planning routes more easily, **spending more time on site,** and reducing fuel, travel and accommodation costs.

Respondents also described **joined-up delivery across different measures** as a separate opportunity to reduce repeat visits. Six respondents (24%) explained that retrofit work often involved several stages or trades. When work was not well coordinated, this meant returning to the same property many times. This included repeating surveys, setting up site access again, and disrupting householders more than needed. Where delivery was coordinated, respondents described **completing jobs in fewer visits and with less repeat work**.

Five respondents (20%) described the **value of shared hubs, networks or points of contact**. These respondents explained that work sometimes stalled because it was unclear who else was working in an area or how to link jobs together. They described knowing that work was happening nearby but having no simple way to coordinate timing or share information. One respondent explained what having shared information would enable:

> ***"It would make a big difference just knowing who else is working locally and how to link jobs up properly."***

Respondents described joined-up delivery as a way to make better use of existing capacity across the Highlands and Islands, where businesses often cover wide areas with small teams. Where coordination reduced duplication, respondents described being able to **take on more work with the same staff, rather than needing to expand teams simply to manage logistics**.

4.6. Quality, trust and market integrity

- Confidence that good-quality work is recognised and protected
- Reduced impact of poor-quality or rogue practice
- Ability to compete on quality rather than price alone
- Clear signals that high standards are valued
- Trust between installers and householders

Figure 13: Quality, trust and market integrity opportunities

Seven of the twenty-five respondents (28%) described **quality, trust and market integrity** as an important factor in whether they would expand their retrofit, energy efficiency or renewables work. Their responses focused on whether high-quality delivery was recognised and protected in the market, rather than being undercut by poor practice.

Respondents also described **trust at the quotation stage** as a practical enabler. Seven respondents (28%) explained that when customers were unsure about quality, conversations focused on reassurance rather than delivery. In practice, this meant longer quoting processes and more follow-up visits before work could proceed.

Six respondents (24%) described being more willing to take on additional work if they could be **confident that poor-quality or rogue installations were addressed**. These respondents explained that experiences of seeing sub-standard work elsewhere made them cautious about expanding, because it affected customer confidence and the reputation of the sector as a whole. One respondent described how this influenced their decisions:

> ***"When people have had a bad experience before, you spend half the job explaining why you're different."***

Where respondents felt that quality standards were visible and enforced, they described being more confident that **good work would stand out** rather than being compared directly with poor practice.

Respondents described being encouraged to do more work where **quality could be shown clearly during the quoting and planning stage**, rather than relying solely on price comparisons. Five respondents (20%) explained that when they could walk a customer through how the work would be carried out — including the order of tasks, checks during installation and how the job would be signed off — **customers were more willing to proceed**. In practice, this meant customers were less focused on finding the cheapest option and more confident in agreeing the work, which encouraged respondents to take on jobs they might otherwise have declined.

Respondents also described **quality and trust as particularly important in the Highland context**. Five respondents (20%) explained that in smaller or rural communities**, reputation travelled quickly and poor work could have long-lasting effects**. In practice, this meant being selective about the jobs they accepted and cautious about taking on work where quality might be compromised. One respondent described this local reality clearly:

> ***"It's a race to the bottom and I don't want to be tarred with the same brush as the poor workmanship"***

Where respondents felt that quality was recognised and supported, they described being more confident in **expanding their work without worrying about long-term reputational damage**.

Four respondents (15%) described **quality as affecting day-to-day decisions** on what work to accept. These respondents explained that they sometimes declined work if they felt the customer was focused only on lowest cost, because this increased the risk of corners being cut or dissatisfaction later. Where quality was valued and understood, respondents described being more willing to proceed and **invest time in doing the job properly**.

Respondents described these conditions as enabling more stable delivery. Where quality was recognised, customers trusted the process, poor quality work was repaired, and

respondents described being able to focus more on installation work and less on reassurance, dispute management or reputational harm.

4.7. Supply chain resilience and availability

- Reliable access to materials and components
- Availability of products suitable for traditional and rural housing
- Reduced delays caused by supply shortages
- Confidence to maintain and repair existing systems
- Resilient supply chains that work across the Highlands and Islands – in remote and rural communities

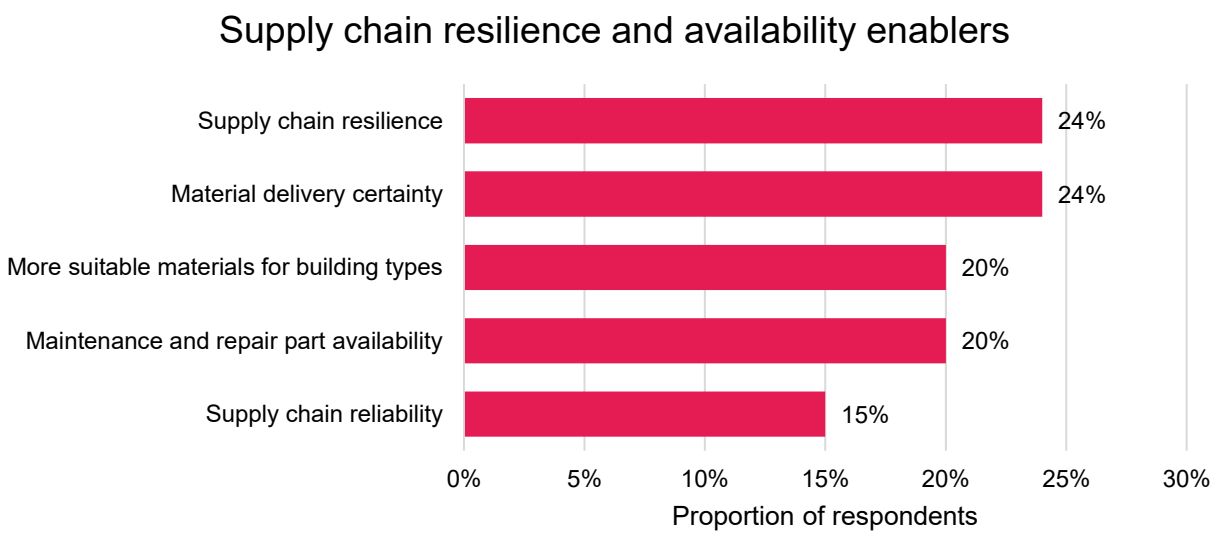


Figure 14: Supply chain opportunities and enablers (n=25)

Six respondents (24%) described **supply chain resilience** and availability as an important factor in whether they could take on more retrofit, energy efficiency or renewables work. These responses focused on whether materials, components and replacement parts were available when needed, allowing work to move smoothly from booking through to completion.

These respondents described being more willing to commit to additional work if they could rely on **materials arriving within a predictable timeframe**. These respondents explained that uncertainty around delivery dates made it difficult to book work with confidence. In practice, this meant surveying a property, agreeing a scope of work, and then delaying the start date because key components had not arrived. One respondent described how this affected day-to-day planning:

> ***"You can't book work properly if you don't know when the parts will turn up."***

Where materials were available when expected, respondents described being able to line jobs up back-to-back, **reduce gaps between installations and avoid repeated rescheduling**.

Respondents also described the **availability of products suitable for traditional or non-standard housing** as an opportunity to expand the work they offered. Five respondents (20%) explained that some commonly specified products were difficult to source or unsuitable for

the buildings they worked on. In practice, this meant reaching the point of confirming materials and booking the installation, then having to pause while suitable products were sourced or deliveries confirmed, even though the approach itself was clear. Where suitable products were readily available, respondents described being more willing to proceed and **recommend measures with confidence**.

Supply availability was also described as particularly important for **maintenance and repair work**. Five respondents (20%) explained that they were frequently asked to service or repair systems installed by other companies. In practice, this meant attending a property, diagnosing an issue, and then being unable to complete the repair because a specific component was unavailable. One respondent described this situation:

> ***"You go out, find the problem, and then you're stuck waiting for a part before you can finish the job."***

Where replacement parts were easy to source, respondents described being more willing to take on this type of work and **resolve issues in a single visit**, rather than returning multiple times.

Four respondents (15%) described supply chain reliability as **shaping decisions about whether to expand into new types of work**. These respondents explained that even where they had the skills to offer additional measures, uncertainty about sourcing materials made expansion feel risky. In contrast, respondents described greater confidence to **broaden their offer** when supply chains were stable and predictable.

Respondents described **supply chain resilience** as especially important across the Highlands and Islands, where many businesses serve remote and rural communities and long travel distances amplify the impact of delays. In practice, a late delivery could mean cancelling a full day's work, re-routing staff, or returning to the same property days later. Where supply chains worked well, respondents described being able to complete jobs in fewer visits, **reduce disruption for householders**, and make better use of staff time.

Respondents described reliable supply chains as enabling smoother delivery overall. Where materials and parts were available when needed, respondents described being able to keep work moving, complete installations and repairs efficiently, and take on more work without increasing pressure on staff or delay and inconvenience to customers.

4.8. A note on capacity and expansion of activities

While most respondents identified changes that would encourage them to do more work, a small number described being at or near full capacity or unwilling to expand further under any circumstances.

Two respondents described already having more work than they could reasonably deliver. These respondents explained that their current workload was sufficient and that they were not seeking to expand into additional measures or take on more installations. In practice, this meant maintaining a stable volume of work rather than responding to new incentives. One respondent described this clearly:

> ***"There is so much work currently available that I wouldn't consider doing more installations."***

These respondents did not describe additional opportunities as irrelevant but explained that their current position meant expansion was neither necessary nor desirable.

A further **two respondents** described that nothing would encourage them to take on more work if it risked lowering quality. These respondents explained that their priority was maintaining standards and reputation, rather than increasing their output – quality over quantity. They were comfortable with turning down opportunities to increase their workload if doing so could compromise the way their own quality standards.

These responses highlight that not all businesses are seeking to expand, even where enabling conditions improve. They show that some respondents prioritise maintaining current levels of work or protecting quality over increasing, or diversifying, their workload.

5. Conclusions

This research provides a clear representation of the current conditions facing the retrofit, energy efficiency and renewables supply chain operating across the Highlands and Islands. Respondents described a set of systemic and interconnected challenges, alongside practical changes that could make it easier to plan, deliver and sustain work in rural and remote settings.

Across the interviews, retrofit delivery was described as being shaped by a combination of issues relating to systems and accreditation, funding and financial processes, coordination and logistics, customer trust, and delivery capacity and skills. While these challenges were familiar to many businesses, respondents also identified a range of opportunities and enablers that could support more effective delivery if conditions improved.

These enablers cover the breadth of the barriers identified:

- **Skills, training and local workforce** – where accessible training routes, apprenticeships and local employment support businesses to build and retain capacity.
- **Stable demand and funding certainty** – where predictable funding, advance notice of schemes and guaranteed work allow businesses to plan, invest and expand.
- **Clear, workable accreditation and approval systems** – where simpler pathways, aligned requirements and reduced administrative burden make it easier to participate in funded work.
- **Systems that work for Highland housing** – where guarantees, approvals and retrofit pathways reflect traditional and stone buildings and local housing conditions.
- **Joined-up delivery, hubs and local coordination** – where area-based approaches, networks and shared infrastructure reduce travel, duplication and inefficiency.
- **Quality, trust and market integrity** – where confidence in standards and protection from poor practice support sustainable growth without compromising quality.
- **Supply chain resilience and availability** – where access to materials and components supports installation and ongoing maintenance in remote and rural areas.

These opportunities sit at different levels of control and influence. Some represent relatively quick or lower-cost actions, such as increasing networking opportunities among installers and tradespeople working across the Highlands and Islands. Others are more structural and require longer-term collaboration with external organisations, for example around funding design or reviewing guarantee conditions for measures installed in traditional buildings. Recognising this distinction is important when prioritising action.

Training and skills development emerged as a key theme because it cuts across several other issues raised by respondents. Awareness of existing training opportunities was mixed, and

significant gaps in local provision were identified. This reinforces the importance of accessible regional training provision, particularly where it can reduce travel and make it easier for Highland-based businesses to take part. Respondents also described how training, accreditation, quality and confidence are closely linked. This shows that skills development cannot be addressed in isolation from the wider systems that shape delivery. The research also provides direct insight from installers operating in the Highlands, many of whom face greater travel, time and cost pressures in order to stay aligned with the wider retrofit industry.

The findings also bring into clearer focus the link between training, accreditation and employment, and the need for more joined-up routes into retrofit-related roles for businesses and individuals. They show how training access, accreditation requirements and demands on workforce can affect what is practical for small businesses, particularly in rural and remote areas. They also point to a role for closer working between installers, training providers such as the UHI Inverness, accreditation scheme providers, and delivery partners. This would help make sure that support offered is tailored to the day-to-day realities of retrofit work across the Highlands and Islands.

Delivering change will require action at multiple levels. Individual businesses can be supported to connect with other tradespeople and installers working across the Highlands and Islands, increasing opportunities for subcontracting, shared learning and collaboration. By bringing stakeholders across the supply chain together, the Highland Energy Community Partnership can provide a space to test, prioritise and co-design responses to the opportunities identified in this research. The partnership team will continue to work alongside the supply chain and communities to coordinate work focused in removing these barriers, starting by hosting a roundtable discussion between installers and regional stakeholders to identify solutions that can be taken forward. Wider systemic issues, particularly those linked to funding, accreditation and national policy, will require clear evidence to be communicated to external bodies and decision-makers.

While the barriers identified may be present for business across the country, often these are exacerbated by the rural and remote geography and differences in housing types. This reinforces the need for Highland-specific solutions that respond to place, housing typology and geography.

By bringing the supply chain together through the Highland Energy Community Partnership, challenges and potential solutions have been identified. There is a clear opportunity to support the supply chain by working collaboratively with businesses, communities and partners to test, prioritise and shape solutions based on these insights, ensuring that future action is grounded in the realities of delivery across the Highlands and Islands region.

The next stage of the work will build on these findings through the roundtable event, helping to shape a follow-on document focusing in on the opportunities and solutions to barriers in the supply chain. If taken forward, this follow-on document could help businesses access training and accreditation more easily, build capacity, and take on more or different kinds of retrofit work across the Highlands and Islands.

6. Appendices

6.1. Methodology

The findings in this report are based on research carried out as part of the Highland Energy Community Partnership project.

Data for was collected through interviews with 25 businesses delivering energy efficiency, renewables and retrofit services within the partnership area. These interviews were carried out with installers, contractors and companies working across the retrofit supply chain.

Participants were asked about:

- the services they currently provide
- how they became involved in energy efficiency or renewable work
- the training or accreditation opportunities available to them
- the barriers they face when delivering retrofit work
- the conditions that could allow them to carry out more work

The interviews were designed to gather the views and experiences of businesses currently working in the sector. Questions were informed by earlier Changeworks activity[5], which suggested that there may be challenges linked to improving energy efficiency and tackling climate change in the Highland region.

Interview responses were reviewed to identify common themes. These themes include training needs, workforce capacity, accreditation requirements, delivery conditions and opportunities for further retrofit activity.

All findings presented in this report are based on the experiences described by interview respondents. Where percentages or totals are given in later sections, these refer to the number of respondents who raised a particular issue during the interview process.

This report does not measure household outcomes or evaluate the performance of retrofit programmes. Instead, it focuses on the experiences of businesses delivering energy efficiency and renewable energy work within the partnership area.

The research presented here aims to provide an evidence-based understanding of supply chain conditions in the Highlands and Islands. Findings will inform a later Highland Energy Community Partnership recommendations paper, which will explore potential solutions based on the real-life experiences of suppliers and installers working in the region.

[5] A perfect storm: Fuel poverty in rural Scotland

6.2. Interview Questions

Each respondent consented to a series of questions to draw out their lived experience as installers and tradespeople. These questions were specifically created with this research piece in mind, ensuring that answers would be detailed and insightful – providing a foundation for this report and for future conversations on solutions for the barriers in the supply chain.

Interview Questions:

1. Tell me about your work (systems work with; geographical areas covered; size of company, length of time working in sector / area)
2. Do any of your services cover energy efficiency, renewables or retrofit?
3. (If yes to question 3) Please tell me about the services you offer that cover energy efficiency, renewables or retrofit
4. How did this work in the previous question come about?
5. What made you take on this work?
6. Are you aware of any local training or apprenticeship opportunities for retrofit or energy efficiency?
7. (If yes to question 6) Please give an example of industry training opportunities that you are aware of:
8. (If no to question 6) Do you think training opportunities in energy efficiency and retrofit are needed? (Could you offer different services if training opportunities were available?)
9. What do you see as the main barriers around doing energy efficiency or retrofit work?
10. Is there anything that would encourage you to do (more) energy efficiency or renewable energy work?
11. Do you have any further comments you would like to add?

6.3. Background to Interview Respondents

The interviews provided information about the businesses involved in delivering energy efficiency, renewables and retrofit work, including the services they offer and how their businesses are structured.

All **25 respondents** said that some of their services cover energy efficiency, renewables or retrofit work. Respondents described carrying out a wide range of activities. These include installing heat pumps, solar PV systems and insulation measures, as well as general electrical, plumbing and building work.

In addition to installation work, **23 of 25 respondents (92%)** also reported carrying out maintenance or servicing of existing systems such as heat pumps or solar technologies. This includes maintaining systems that were installed by their own business or by other contractors.

Respondents described becoming involved in retrofit or renewable energy work in different ways. **10 respondents (40%)** reported that this work developed over time from services they were already offering, such as plumbing, heating or construction work. **11 respondents (44%)** reported entering the sector through funded programmes or contracts that required the installation of energy

efficiency measures. **Seven respondents (28%)** also reported that an interest in renewable technologies or energy efficiency influenced their decision to take on this type of work.

Respondents described a range of business structures:

- 7 respondents (28%) reported employing in-house staff only
- 2 respondents (8%) reported working solely with subcontractors
- 12 respondents (48%) reported using a combination of in-house staff and subcontractors

In total, **16 respondents (64%)** described using subcontractors to deliver specialist retrofit or renewable energy measures. Within this group, **six respondents (24%)** described working with trusted subcontractors or long-standing partner contractors. Respondents described subcontracting specialist work such as insulation, electrical installations or renewable technologies to trusted local installers, accredited subcontractors or contractors they had worked with for a number of years.

Respondents described working with a small number of subcontractors known to deliver high-quality work, including trusted local plumbers or electricians to carry out installations. One respondent described working with subcontractors they had known for 10 to 15 years, while another described subcontracting renewable installation work through a trusted electrical contractor.

19 respondents (76%) indicated that they had previously carried out work under energy efficiency schemes or accreditation frameworks such as the Energy Company Obligation (ECO), PAS 2030, TrustMark or MCS.

Respondents also reported operating across a range of locations:

- **12 respondents (48%)** described their business as being based in the Highlands and Islands region
- **13 respondents (52%)** did not describe their business as being based exclusively in the Highlands and Islands region

Businesses based in the Highlands and Islands reported travelling widely across the region, including to remote and island communities, to carry out installations and maintenance work. **5 of the 12 Highland and Island-based respondents (42%)** described travelling across the Highlands or to the isles as part of their work.

This pattern was also reported by businesses not based exclusively in the Highlands and Islands region. **8 of the 13 respondents (62%)** in this group described travelling across the Highlands or to island communities to deliver work.

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