

2026 HES Climate Action Skills Research: Systems-based mapping exercise

An exploration of the existing provision of climate action training currently available to the historic environment sector.

Final Evidence Report

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Please note this report, does not include the relevant annexes. HES would be happy to provide the annexes on request to the HES National Strategy (Our Past Our Future (OPOF) team via ourpastourfuture@hes.scot.

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Glossary

CiFA	Chartered Institute for Archaeologists
CIOB	Chartered Institute of Building
CPD	Continued Professional Development
ETP	External Training Provider
FE	Further Education
GHG	Greenhouse Gases
HE	Higher Education
HES	Historic Environment Scotland
HEF	Historic Environment Forum
ICOMOS	International Council on Monuments and Sites
MGS	Museums Galleries Scotland
OPOF	Our Past Our Future
PDA	Professional Development Awards
P.O.A	Price on Application
PTPs	Private Training Providers
R o UK	Rest of the UK
RIBA	Royal Institute of British Architects
RICS	Royal Institute of Chartered Surveyors
SIP	Skills Investment Plan for the Historic Environment
SPAB	Society for Protection of Ancient Buildings
SDS	Skills Development Scotland
VQ	Vocational Qualifications
UKGBC	UK Green Building Council

Terminology and definitions

Skills Mapping

Skills Mapping can be described in general terms as a tool to identify, capture, and visualise the existing skills, competencies, and qualifications of a workforce to compare them against role requirements. Identifying such skills development areas was clearly not the goal of this research exercise, and hence the Skills Mapping methodology we used differed significantly from the “business” model of Skills Mapping. Rather, and in line with the objectives of this report, we have employed Skills Mapping as an analytical method for quantitative and qualitative characterisations of available Continued Professional Development (CPD) climate action skills training provision.

Climate Action

Climate action refers to efforts taken to combat climate change and its impacts. These efforts involve reducing Greenhouse Gases (GHG) emissions (climate change mitigation) and/or taking action to prepare for and adjust to both the current effects of climate change and the predicted impacts in the future (climate change mitigation and adaptation). Climate action includes any policy, measure, or program that supports and finances those goals (Publications Office of the European Union, 2021) [1].

Climate Action Awareness Training

Climate Action awareness is an introductory training topic designed to ensure that learners have a basic awareness of the knowledge, abilities, values, and attitudes required to live in, develop, and support a society that reduces the impact of human activity on the environment. Aimed primarily at the workforce, individuals, and communities. The topic of Climate Action awareness can be delivered within Climate Action specific training, or as one topic in more general training for the workforce. For example, the Carbon Literacy Project focuses on accrediting individuals who demonstrate the ability to reduce carbon emissions and inspire others within their communities or workplaces.

Climate Action Specific Training

Training targeted to specific areas of climate action, such as traditional building retrofit and energy efficiency, circular economy, and climate change impacts, risk and adaption, promotes knowledge and understanding of climate action solutions. While demonstrating how to transform climate

anxiety into actionable strategies for organisations, businesses, projects, individuals, and communities. Climate Action specific training is the recommended approach to enhance capacity building, by providing specific technical, behavioural and transformative green skills for systemic change, to achieve a just transition.

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Executive Summary

This report has been produced by Ptotal Consultancy Ltd, as commissioned by Historic Environment Scotland (HES) to map, identify and document the existing provision of climate action training (Continued Professional Development (CPD) currently available to the historic environment sector within Scotland. The mapping analysis and subsequent report is based on rigorous research (up-to-date evidence and data sets) but has not been subjected to a sectoral peer-review process.

The research had a threefold intention: (1) gather data about current CPD related climate action training provision to gain a view of the overall state of play in relation to the Scottish historic environment sector; (2) support and feed into the delivery priorities of *Our Past, Our Future* – the Strategy for Scotland’s Historic Environment (OPOF) and the *Skills Investment Plan (SIP) for the Historic Environment*, as well as needs identified via the SIP Employer Skills Survey 2025.; and (3) not only to aid advancing climate mitigation and adaptation practice but also to support those who are considering undertaking climate action training, whether that be internally or externally.

The report provides an overview and baseline of current provision, allowing for the better identification of gaps, support clearer signposting and pathways to appropriate training, and provide better evidence to advocate for additional support but does not claim to be exhaustive. Nonetheless, the report has laid important groundwork to help support and inform the current and future direction of a sustainable Scottish historic environment climate action skills and training sector within Scotland. The ultimate aim of the identification of training provision gaps and needs in the educational and training sector for the historic environment is to provide policy makers, education and training providers, heritage organisations and the wider network of historic environment stakeholders with indications on the priorities of interventions to have the workforce adequately trained to operate in a well-functioning historic environment climate.

The multi-method qualitative research was conducted between late May 2026 and August, comprising of the following methodology:



Desktop study research, to inform the study as a whole, (i.e. literature review of industry intelligence reports and academic articles)

Online survey of twenty-nine relevant training providers – 16 respondents completed the questionnaire – 55% return rate

Ten leadership interviews (all online)

Key Findings - Baseline Mapping



36 no. historic environment relevant CPD courses were identified, provided by **29 no.** private training providers, HE institutions, third sector organisations and national heritage bodies.

From the skills mapping analysis, covering the 10 no. climate action topics targeted by the research and relevant for the historic environment sector.



Eight of the ten topics had available CPD courses. The most predominant type of climate action training CPD courses available was climate literacy (**n=10**), however **8** of these courses are remarkably similar, resulting in **only 3 courses**.

Furthermore, in terms of retrofitting there were **fifteen courses available** however in reality there were **only five distinct courses** obtainable.

With next most available surrounding energy and carbon management (**n=8**), biodiversity and nature-based solutions (**n=8**) and impacts, risk, and adaption of climate change (**n=7**).

Followed by CPD courses covering building performance evaluation (**n=3**), circular economy (**n=2**), and sustainable tourism (**n=2**).

Key Findings – Climate Action Skills Provision (CASP) Audit Questionnaire



Key delivery topics - retrofit and energy efficiency of traditional buildings (**68.75%**), impacts, risk, and adaption of climate change (**62.5%**), building performance evaluation (**56.25%**), carbon literacy (**56.25%**), and circular economy (**56.25%**).



Learning content least in demand - sustainable tourism (**n=6, 37.5%**), and biodiversity and nature-based solutions (**n=5, 31.25%**).

Counter intuitively building performance evaluation (**n=6, 37.5%**) had been indicated as least in demand suggesting there appears to be a delivery and demand disconnect.



Over 50% of courses were found to have **no cost (free)** - many ranged between a low cost of between **£10 - £100** (which were typically funded).

In the higher cost range, they were set **between £200 - £1000+** with some **Price on Application (P.O.A.)**.



81.25% (n=13) of respondents designated their CPD courses as formal learning content.

Designed towards those with either no understanding (**n=13, 81.25%**) or *limited understanding of climate science* (**n=12, 80%**).



In terms of frequency of provision, the most common was on demand (**n= 10, 62.6%**).

With weekly (**n=5, 31.25%**), and monthly (**n=4, 25%**) the next most common.



The most dominant delivery modes are in-house training and workshops (***n=10, 62.5% each***), with eLearning (***n=8, 50%***), blended learning and seminars (***each n=7, 43.75%***) being the next most common.



The most common types of training delivery methods were either in-classroom training (***n=10, 66.67%***) or live virtual training (***n=11, 73.33%***), but digital and flexible learning options are gaining traction.



Most respondents used external organisations to provide information, resources or teaching to support the delivery - *those who did* (***n=10, 62.5%***) and *those who did not* (***n=6, 37.5%***). Implying there was a skills gap within training providers and educator organisations.



Assessment of the courses delivered was almost an even split - *those who did* (***n=9, 56.25%***) and *those who did not* (***n=6, 43.75%***).



Most training providers, undertake quality assurance given the reliance on external climate action expertise input - either (***n=6, 37.5%***) yearly or (***n=6, 37.5%***) after delivery of each course, or (***n=3, 18.75%***) bi-annually.



Many respondents have trainer qualifications and in their relevant field, however, only ***a small number of*** responses indicated they had relevant climate action qualifications.



Majority considered time constraints (***n=14, 87.5%***) and increasing costs (***n=11, 68.75%***) as the biggest challenges - Several training provider respondents acknowledged they faced more than one challenge.



Over a third of respondents suggested adaptations would be made to their courses in response to government driven policy changes.



Only just over a third (***n=6, 37.5%***) considered training content or delivery to be potentially customisable with almost half being neutral (***n=7, 43.75%***).



Many providers are only capable of delivering to two distinct levels (small to medium) - **68.75% (*n= 11*)** can cater for medium-size organisations (up to 250 staff), **56.25% (*n=9*)** can provide for micros (up to 50 staff)

The overall picture concerning the existing provision of climate action training currently available to the historic environment sector, is a divergent one. As the survey data suggests, there appears to be a disconnect on multiple levels, ranging from a delivery and demand disconnect to courses' taking a "one-size-fits-all approach" to training providers experiencing skills gaps needed to deliver courses effectively.

Moreover, training providers face increasing external pressures potentially having an adverse effect on operational or financial measures. To circumvent these challenges, in some ways digital and flexible learning options are gaining traction, reflecting the pattern that flexible, self-paced learning is being championed.

Despite these apparent disconnects, and training provision challenges, the data suggests when organisations are deciding on the type of climate action training required, they should undertake a balanced analysis, of both, workforce, and organisational needs. So, they can ensure that training delivers tangible, observable results that are able to be assessed against specific educational or business metrics and targeted towards roles as opposed to being driven by economics and coordination.

Key Findings –

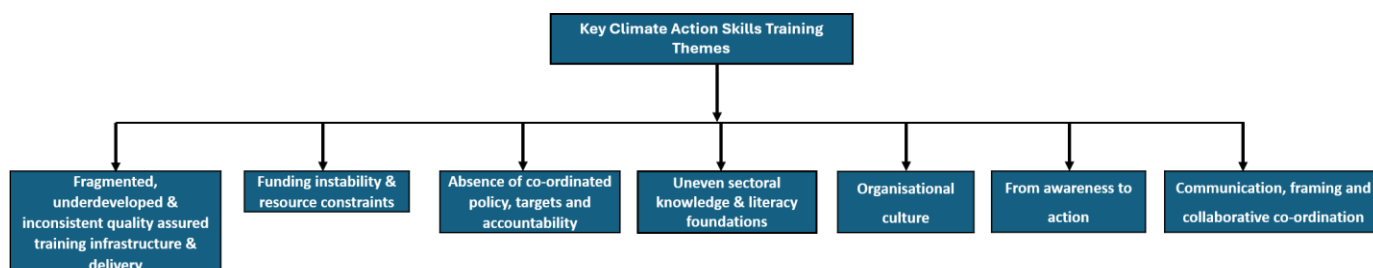
Historic Environment Climate Leadership Interviews

To enable relevant themes and emerging concepts to materialise during the interview process the research questions (RQ) surrounded four primary areas:

- (1) training provision key challenges, barriers, obstacles, and drivers that prevent relevant Climate Action skills training within the Scottish historic environment sector.
- (2) skills gaps and needs preventing organisations from putting a greater emphasis on climate change impacts, risk, and adaption requirements.
- (3) awareness of the overarching strategic, operational, financial and resource needs; and
- (4) identify opportunities and suggest recommendations (i.e. leverage point identification across the training system).

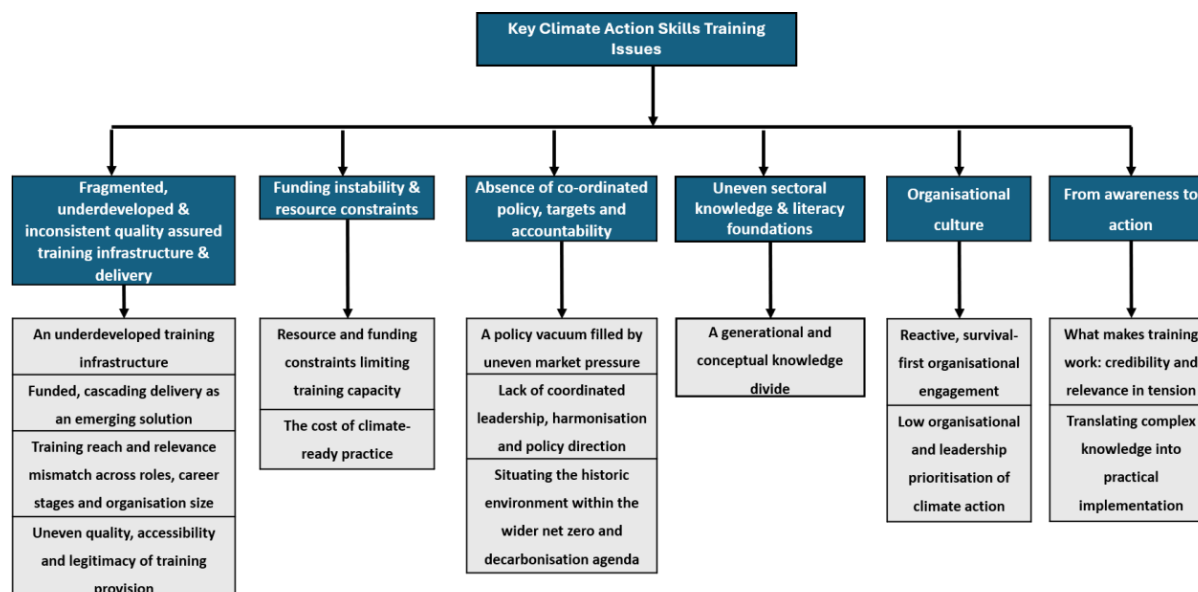
Key Themes

7 key themes emerged: 1) Fragmented training infrastructure & delivery; 2) Funding instability & resource constraints; 3) Absence of coordinated policy/targets; 4) Uneven knowledge/literacy foundations; 5) Organisational culture (reactive vs. leadership-led); 6) Awareness to action; and 7) Communication, framing & coordination

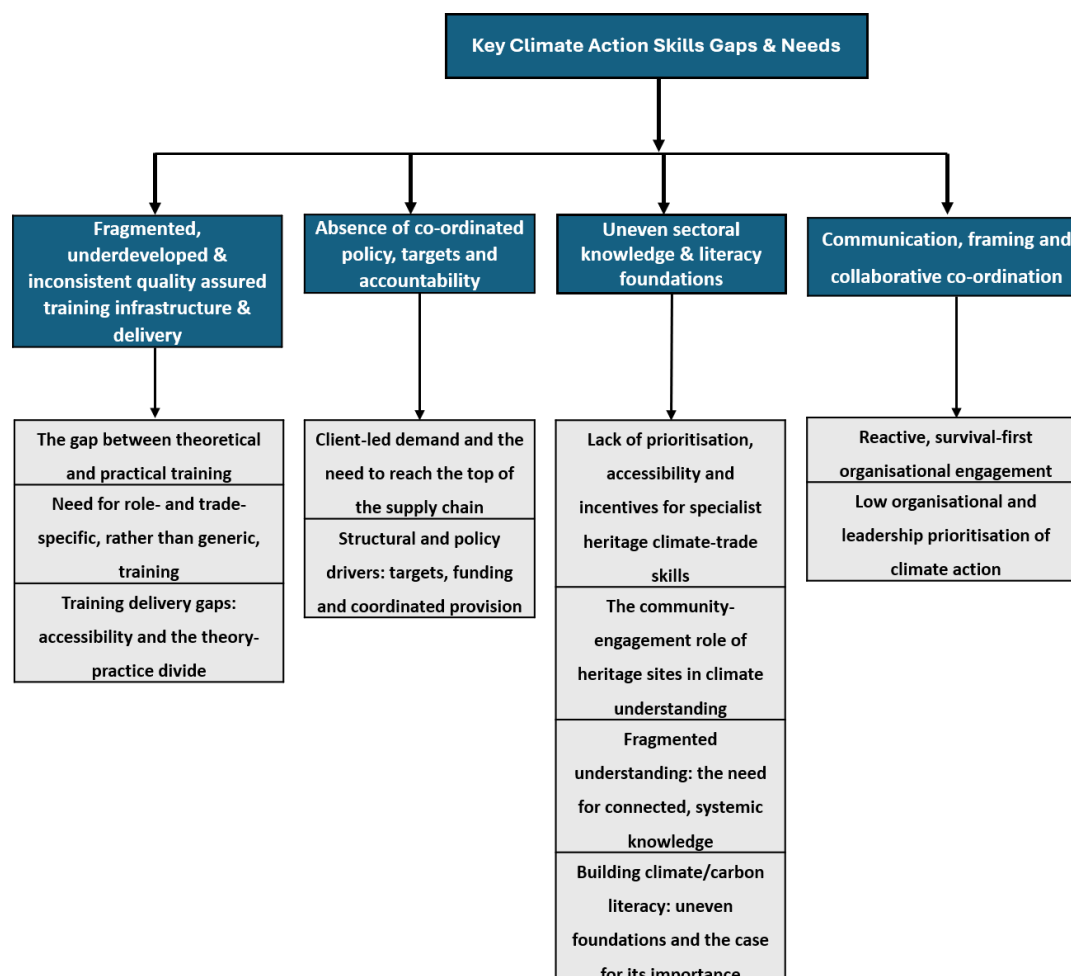


Within these **seven key themes**, all 16 respondents highlighted numerous areas that required addressing, ranging from: addressing training accessibility/provision and relevance mismatch across roles, career stages and organisation to “plugging” the inherent gap between theoretical and practical training to developing structured, reusable and scalable training delivery to calling for the whole sector to adopt joined-up, systems-integrated thinking and shared standards, while still respecting that “no one size fits all.”

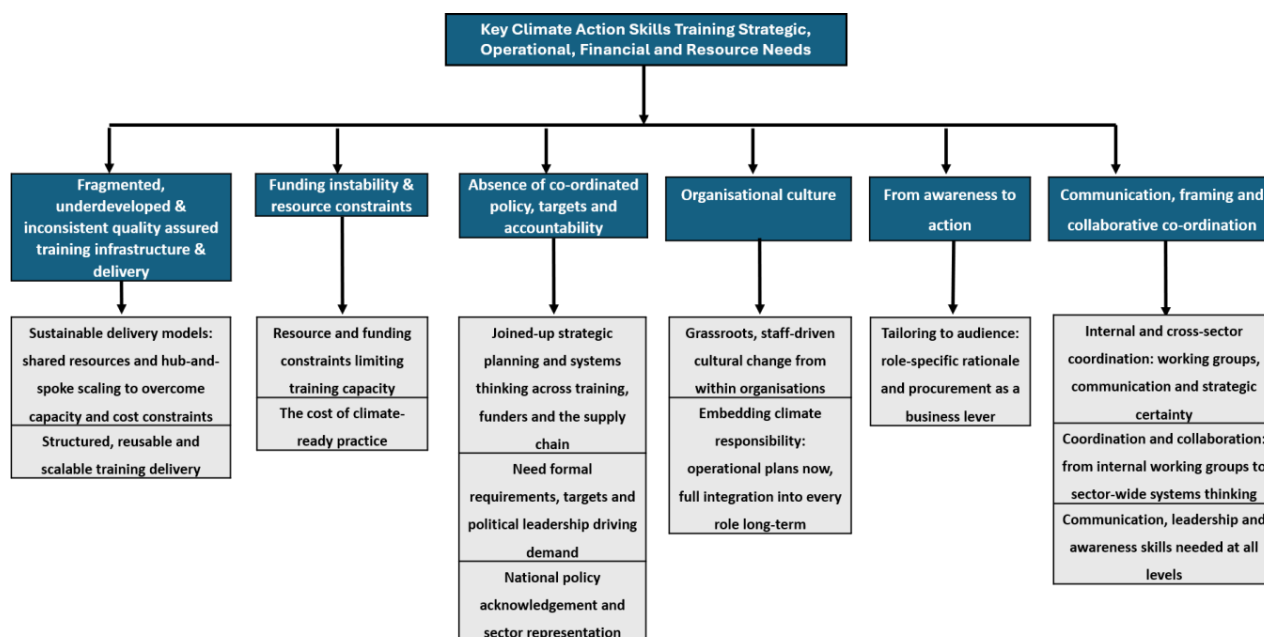
Key Climate Action Skills Training Issues



Key Skills Gaps and Needs



Key Strategic, Operational, Financial and Resource Needs



In addition, the respondents offered a plethora of sector-wide leadership and training level key recommendations and opportunities (e.g. improved collaboration, communication, and framing, ensuring delivery providers are genuinely competent and cost-effective, and efficient, scalable and sustainable delivery) which are inextricably linked, very much like the complex, inter-disciplinary and bespoke characteristics and nature of climate action training content.

However, they were clear to drive such options forward, the historic environment CPD training system, organisations, employers, and policy makers' requires several key needs such as harnessing "Big data" to identify future skills needs, monitor the outcome of CPD interventions, to ensure as the CPD system strengthens identify CPD courses at risk of being curtailed and seek to integrate innovation and technology in CPD delivery and provision.

Furthermore, this must be balanced against accreditation and quality control (especially around climate resilience-critical content), supported by tools like a self-assessment instrument for measurable competency and clearer signposting of which training is reputable and genuinely matched to role-specific needs via a single authoritative organisation or directory.

Actionable Recommendations

Upon conclusion of this research study, the project team proposes the following five actionable recommendations, which align with and support the delivery priorities of [Our Past, Our Future](#) – the Strategy for Scotland’s Historic Environment (OPOF) and the [Skills Investment Plan SIP](#), as well as needs identified via the SIP Employer Skills Survey 2025.

Action 1.

Build Climate Confidence: Grow Literacy, Anchor Values, and Think in Systems:

Raise Widespread Climate Literacy, promote a Value-Driven Approach, and Develop a Systems Thinking Mindset

Action 2.

Unite Stakeholders to Build Clear, Confident, and Consistent Frameworks:

Convene Stakeholders and Develop Frameworks to Enhance Consistency and Confidence

Action 3.

Reinforce Collaboration, Communication, Alignment, and Governance:

Strengthen Collaboration, Communication, and Governance for Unified Sector Alignment

Action 4.

Pinpoint and Address Emerging Job and Competency Gaps:

Continue to Identify Job and Competency Gaps

Action 5.

Build and Share Deep, Role Ready Expertise Across the Sector:

Develop and Deliver Sector-Specific and Role-Specific Expertise

1.0 Introduction

1.1 Research Background

- 1.1.1 Scotland's historic environment is a major contribution to our quality of life, our culture, and the economy. It serves as a critical driver of the nation's wellbeing economy, generating approximately £6 billion for Scotland's economy in 2023 and supporting 81,000 full-time equivalent jobs primarily within heritage, tourism, and construction sectors [2].
- 1.1.2 With a growing climate and energy crisis, and net zero carbon target dates fast approaching, it has never been more important to address the impacts, risks, and adaption of climate change. From a regulatory context [“The Climate Change Act \(2008\)”](#) provides a legally binding framework to reduce the UK's greenhouse gas (GHG) emissions, set legally binding 'carbon budgets' and prepare for the impacts of climate change [3]; [4]; [5]. In the same manner, Scotland enacted the [Climate Change \(Scotland\) Act 2009](#) amended by the [Climate Change \(Emissions Reduction Targets\) \(Scotland\) Act 2019](#), resulting in increasing the ambition of Scotland's emissions reduction targets to net zero by 2045.
- 1.1.3 While Historic Environment Scotland (HES) operates independently, its efforts align with the broader [Scottish National Adaptation Plan \(SNAP3\) 2024- 2029](#), which sets out the actions that the Scottish Government will take to prepare for and build Scotland's resilience (protect communities, infrastructure, and the natural environment) to the impacts of climate change. In addition, [Adaptation Scotland](#) provides advice and support to help Scotland be prepared and resilient to the effects of climate change. Such that they have developed in collaboration with adaptation leaders across the public sector, the [Adaptation Capability Framework](#) identifies four capabilities needed for an organisation's adaptation journey. The framework supports them in identifying and learn about tasks that are suitable for their organisation and to plan and implement action accordingly.
- 1.1.4 Given the built environment, including the historic environment accounts for 30% of the UK's carbon emissions, and the recent [Just Transition Plan for the Built Environment and Construction sector](#) stressing the sector will be a key enabler towards decarbonisation. Climate action is both an immediate challenge and a long-term one. As such, the role the historic environment plays within climate change resilience is being realised, globally, nationally, and regionally in addressing climate resilience and achieving net zero.

- 2.1.1 HES has not only recognised the need for the historic environment to contribute to climate resilience, energy efficiency and sustainability, set out within their dedicated “[Climate Action Plan 2020-25](#)”. They have acknowledged when dealing with heritage, culture and historic buildings, the historic environment acts as a trifecta: a significant source of emissions and a critical resource for decarbonization through the preservation of embodied and operational carbon, as well as an important asset for climate resilience mitigation and adaptation (e.g. protecting estates from coastal erosion and increased rainfall, illustrated by the flash-flooding across Edinburgh in July 2021, which was the result of unprecedented heavy rainfall and directly impacted Edinburgh Castle) [6].
- 1.1.5 Despite, the inherent challenges, for the historic environment sector, the journey to net zero carbon can be successful with robust planning and fast action. Many heritage, and culture organisations out with HES have publicly committed to addressing their response to the climate crisis and addressing net zero carbon targets, and have developed a well-defined, strategic plan and roadmap to accomplish these goals
- 1.1.6 As the range of historic environment activities, mechanisms, policy instruments, and so forth aimed at reducing the severity of climate change and its impacts are not yet fully available nor funded. Thankfully, collaborative initiatives like the Joint UK-Ireland Research Agenda for Climate Change and Heritage (JRACCH) are developing [shared research priorities to guide funding and policy](#). Whilst the [UK National Lottery Heritage Fund \(NHLF\)](#) has identified embedding environmental sustainability as a core priority in its Heritage 2033 strategy and investments.
- 1.1.7 From a Scottish perspective, HES, in 2024-2025 increased its maximum grant funding per project from £500,000 to £750,000 to help historic environment projects cope with rising construction costs and climate change impacts, as part of £12.4 million fund mechanism [1]. In addition, £19.5 million in funding is being distributed to [Scotland’s City Heritage Trusts](#) to protecting historic buildings and addressing climate resilience.
- 1.1.8 Fundamental to these types of funding initiatives is the scale of workforce transformation needed to not only ensure maximising value, but also to bring together heritage and affiliate sectors organisations together. To connect heritage jobs/careers to the green jobs market, and to understand, gather evidence and seek to stimulate supply and demand of the breadth of green skills required by the sectors.

- 1.1.9 It will require capacity-building strategies to drive the climate action skills needed, will involve widespread historic environment stakeholders including education and training providers, professional associations/bodies, heritage organisations, the various levels of government (local, regional, and national), and the public sector.
- 1.1.10 HES as part of the refresh of the [Skills Investment Plan for the Historic Environment](#) (SIP), a roundtable was convened to identify the skills priorities and actions required to ensure the sector could address the climate crisis. This included an exercise to identify provision and capture views on the effectiveness of provision and activity that was required going forward. It was recognised that training and provision in this area does exist, but there is limited clarity about the consistency, level and accreditation offered by existing
- 1.1.11 HES has therefore commissioned this report to update understanding of the supply of climate action skills needed to mitigate and adapt the historic environment towards being more climate resilient. Whilst also helping to maintain community identity and social cohesion, which are critical components of societal resilience in the face of climate-related risks. For this research, training is defined as continued professional development (CPD) formal learning content (i.e. structured learning with learning outcomes) and does not include formalised and regulated qualifications (Vocational Qualifications (VQ), Professional Development awards (PDAs) based on national occupational standards, Higher Nationals, undergraduate and master's courses)

1.2 Aims and Objectives

- 1.2.1 The aim of the research is to align with delivery priorities of [Our Past, Our Future](#) – the Strategy for Scotland's Historic Environment (OPOF) and the Skills Investment Plan [SIP](#), as well as needs identified via the SIP Employer Skills Survey 2025.
- 1.2.2 The objectives of this project are:
- Establish regulatory context (legislation or funding) which drives requirements for training
 - Baseline mapping to understand and catalogue the existing provision of skills and training available to historic environment organisations, or that historic environment organisations access, to support climate action. Profiling to identify:

1. type of training, training provider,

2. consistency & regularity,
 3. accreditation or certification status,
 4. level of sector specific content, target audience,
 5. accessibility of training (geographical, financial)
- Gap analysis to identify gaps in training provision, particularly for smaller historic environment organisations with limited budgets.

1.3 Method and Approach

1.3.1 The research methodology was designed, in line with project brief - a proportionate, mixed methods approach suitable for a skills mapping exercise using a combination of:

Desk-based research: a comprehensive review of existing climate action training provision suitable for the historic environment was undertaken, focusing on ten climate action topics initially identified by HES and subsequently supplemented by systematic searching of the internet:

1. Climate Literacy
2. Energy and carbon management (including low carbon heating)
3. Impacts, risk, and adaption of climate change
4. Circular economy
5. Sustainable travel
6. Sustainable procurement
7. Retrofit and energy efficiency of traditional buildings
8. Building performance evaluation
9. Biodiversity and nature-based solutions
10. Sustainable tourism

Desk-based research: a comprehensive review of policy literature focusing on the key policies and associated legislation initially identified by HES and subsequently supplemented by systematic searching of the internet and bibliographic databases.

Questionnaire: a short, accessible online questionnaire to thirty-seven identified organisations in desk-based research as providing climate action training suitable for the historic environment. The survey started from 4 June 2026 and was live until 25 June 2026, collecting in total 27 responses - receiving full completions from 15 organisations who deliver

sector focused climate action training and collecting basic data from a further 12 organisations not engaged in directly targeted sector climate action training. Contact details were sourced using a mix of desk research data and desk research/review of professional and sectoral organisations training offerings.

In depth interviews: ten in depth interviews explored key stakeholders' opinions, perceptions, needs, and the behaviour of the current system provision in detail and suggest recommendations. These took place during June and July 2026.

Round table interview discussions with key stakeholders: a round table event was held with 6no. stakeholders from HES and Skills Development Scotland in July 2026 to inform understanding of the broader context, and potential implications of the research as well as suggest recommendations.

- 1.3.2 Please note, the study had several limitations. Firstly, methodologically, the research employed a predominant qualitative approach to achieve the aim of the study. Secondly, the research primarily targeted stakeholders with a specific interest in delivering climate action skills and therefore represents the self-reported views of this specialist knowledge domain. Thirdly, while the sample size is sufficient to give a robust national picture, bases of responses on a regional basis and by individual stakeholder discipline are in some cases relatively low, meaning that findings at this level should be regarded as indicative.
- 1.3.3 More generally, while the responses give a clear picture of the current situation, projections by individual stakeholder organisations of future developments in the sector appeared in some cases to be 'best estimates' rather than the result of formal business planning, reflecting the greater proportion of smaller organisations with limited capacity or need for this kind of systematic approach to training development. These limitations may affect the generalisability of findings and constrain the depth of quantitative insights that could have been gained from alternative methods.

1.4 About this report

- 1.4.1 This report presents findings of the mixed-methodology research approach described above. It is set out to provide a structured narrative based on the major themes that emerged from the research. The information provided in Section 2.5 lists relevant CPD, training providers and availability and is intended as a starting point and to be used as a

live document to be up-dated as and when training provision and CPD changes. The overall findings are then drawn together into a set of conclusions from which outline recommendations have been derived. Detailed charts and tables supporting these conclusions are available in the Technical Appendices which accompanies this report.

2.0 Training Provision

2.2 Baseline Mapping

- 2.2.1 Adequate skills and training provision is needed not only to ensure that the historic environment sector has the talented workforce it needs to fulfil increasing demand for climate action, but to address the skills gaps and shortages that currently exist. Skill shortages are defined as “relating to a situation whereby employers are unable to fill key vacant posts due to a lack of suitable candidates” while skills gaps are “the extent to which workers lack the skills necessary to perform their current jobs” [6].
- 2.2.2 Gaps and shortages in terms of climate action skills have been evident in the sector for at least the last five years, with the growing need to adapt to climate change and achieve decarbonisation causing further skills gaps as regulations to ensure net zero goals were introduced. For example, three reports albeit focusing on heritage in England: [*“Skills Needs Analysis for the Repair, Maintenance and Retrofit of Traditional \(pre-1919\) Buildings in England” \(2024\)*](#); [*“Heritage and Carbon Addressing the skills gap” \(2024\)*](#) and [*“Heritage Sector Net Zero Projects Audit” \(2025\)*](#) highlighted challenges relating to training and apprenticeships, certification, and lack of clear definitions of climate related work processes. In many cases the findings set out in these reports are consistent with each other and somewhat complementary to the findings in this report.
- 2.2.3 The baseline mapping undertaken provides an initial, readily available, and up-datable source of information of CPD. With the intention to meet the needs of historic environment organisations, businesses, and the workforce and promote this to key stakeholder audience to increase up-take of climate action skills training and where possible engage training providers in training delivery.
- 2.2.4 The objective of this report is to investigate training, which for the purposes of this project is defined as CPD related formal learning content (i.e. structured learning with learning outcomes) that supports individuals and organisations working in the historic environment to develop the skills, knowledge, and behaviours needed to take action to address the climate crisis [7].
- 2.2.5 Most of the Climate action training is increasingly integrated into CPD to upskill professionals in sustainability, net-zero strategies, and climate literacy. CPD is achieved by

organisations doing so via offering CPD-accredited courses that allow participants to earn recognised certificates while gaining practical knowledge for their careers.

2.2.6 The key aspects of this CPD integration include the following:

- **Mandatory vs. Optional:** While some professional bodies are moving toward mandatory CPD in climate literacy, most current sustainability-focused CPD remains optional, though demand is rising.
- **Sector-Specific Training:** Providers like Carbon Literacy Project (overseen by the Carbon Literacy Trust) offer accredited modules on topics such as carbon literacy, carbon costs and impacts of everyday activities.
- **Career/Organisation Benefits:** Completing such climate action CPD courses helps organisations, businesses and professionals demonstrate competence in sustainable and resilient practices, enhancing their ability and motivation to incorporate climate mitigation and adaptation processes, on an individual, community and organisational basis whilst supporting organisational net-zero commitments.
- **Formats:** Training is available in various formats, including online modules, bite-sized courses, and face-to-face sessions, often certified by bodies like the Carbon Literacy Trust, Museums Galleries Scotland, and the Edinburgh Climate Change Institute

2.2 Climate Action Skills Heritage Related Training Mapping

2.2.1 When faced with the task of scoping and identifying existing training provision available to historic environment organisations in Scotland. In alignment with the research project specification. It was agreed that it would be sufficient to search for such CPD related courses through a desk-based approach.

2.2.2 These courses have been subjected to two kinds of skills mapping: (1) a quantitative skills mapping based on formal indicators; and (2) a qualitative skills mapping drawing on qualitative indicators. Skills mapping in most cases draws on quantitative and/or formal indicators. This is of course because only these indicators allow for a completely objective comparison. While the focus on the skills mapping exercise at hand is indeed on qualitative indicators, we did identify several quantitative/formal indicators which was considered

highly relevant for characterising climate action training provision relevant for the historic environment.

2.3 Quantitative Indicators

2.3.1 All these formal indicators which represent different specialisms, geographical areas and themes across the historic environment sector are identified below.

1. **Training Demographic:**

- Course Name; Target audience; Location (geographical); Historic environment relevancy
- Training Provider; Course cost; Delivery Mode (online, face to face, blended, hybrid), Training provider education background (i.e. private training providers (PTPs) or Further Education (FE) or Higher Education (HE) institutions)

2. **Historic environment climate action area:**

- Climate Literacy, Impacts, risk and adaption of climate change, Biodiversity, and nature-based solutions
- Energy and carbon management (including low carbon heating), Retrofit and energy efficiency of traditional buildings, Building performance evaluation
- Circular economy, Sustainable procurement
- Sustainable travel, Sustainable tourism

3. **Learning Format: Accreditation or certification status**

- Formal learning (i.e. structured learning with learning outcomes leads to certification taking place in a structured environment)
- Non-formal learning (does not lead to a certification, but may still be structured, e.g. in-house training by companies)

4. **Length:** the major indicator for the time investment a CPD course requires, the length of a CPD course provides vital information for characterising it.

- Total CPD Time
- Consistency & regularity of training provision

2.4 Qualitative indicators

2.4.1 To capture the essence of the climate action training CPD content, the research employed the following method for identifying the qualitative indicators:

- Desktop review: While reviewing the relevant literature for this report, particular attention was paid to identifying relevant criteria that could then be used as indicators for the skills mapping.

2.4.2 For each indicator, the research defined leading questions (in italics) on which the skills mapping was based:

Theme A – General historic environment-related indicators

- Relevance for climate change: Are climate change needs explicitly addressed by the CPD course?
- Relevance for the sector: Are sector needs explicitly addressed by the CPD course?
- (Relative) novelty: Does the CPD course contain new elements (content or structural) that have not existed so far on the regional, or national training levels?
- Accessibility/awareness: Does the CPD course contribute to greater accessibility to historic environment climate action mitigation and strategies and thus contribute to awareness among different audiences?

Theme B – Structural elements

- Innovative teaching/delivery format: Is the CPD course delivered by innovative teaching methods? Is there a diversity of teaching methods employed? Are they relevant to the content that is being taught?
- Work-based learning opportunities: Does the CPD course include mandatory practical learning opportunities such as simulations, role-playing, hands-on learning etc.?
- Collaborative elements: Has the CPD course been developed or is it being implemented in cooperation between different organisations? Has it been developed in the context of a “live” project?

Theme C – Content elements

- **Trans-/Interdisciplinarity:** Does the CPD course transcend disciplinary boundaries in a meaningful manner and thus foster a wider understanding of historic environment related climate action?
- **Core historic environment/transversal skills:** Does the programme content focus on core historic environment skills? Is it tailored towards Archaeology or Historic Buildings or Land use/Designed Landscapes or Museums or Cultural and Associative Elements (artefacts, archives, traditions, stories, and the intangible connections between places and historical events or people).
- **Leadership and Management:** Does the CPD course transmit climate leadership/management skills? This may also include research/innovation/funding skills.

2.5 Qualitative indicators not included in the Skills Mapping

- 2.5.1 In addition to the qualitative indicators outlined in section 2.4, the research yielded several other indicators, which are not included in the above list. The main reason for this was that the available information for the CPD courses was deemed insufficient to benchmark these indicators.
- 2.5.2 **Quality assurance:** Whether a CPD course is subject to systematic quality assurance processes is a pertinent question in any training context and an important indicator for skills mapping. However, it was close to impossible to find information on quality assurance for the identified CPD courses that were not offered by professional bodies and HE institutions. Since it is impossible to know in terms of PTPs, if this was due to a lack of (public) information or to an actual lack of quality assurance processes, it was decided to remove quality assurance as an indicator from the skills mapping exercise.
- 2.5.3 **Plausibility of learning outcomes:** To ask whether there is an evident discrepancy between learning outcomes and timeframes or learner workload of a CPD course may be described as a subsidiary dimension of quality assurance. Yet, on its own, this too is a valuable indicator. A curriculum which is not meticulous about delivering what it promises in terms of 1.) knowledge, 2.) skills and 3.) responsibility and autonomy – should not be regarded as formal learning content. Hence it was decided to leave out this indicator, because in most cases it would have required significant additional information which was not available. Moreover, few CPD courses in the sample applied learning outcomes in a systematic

manner. Therefore, to identify the actual learning outcomes on the levels of individual CPD courses, would have amounted to mere guesswork and even be downright impossible across some cases.

- 2.5.4 **Soft skills and Value and Ethics:** These skills may be considered a subset of transversal skills, which we called “core cultural heritage skills.” However, it can be quite challenging to find out about the specifics of transversal skills and identify those contained in a CPD course. Therefore, these skills are not considered, despite the research being aware of their significance.
- 2.5.5 **Qualifications of educators/trainers:** Processes need to be in place to ensure that educators/trainers have the relevant skills and knowledge needed to transfer knowledge and skills in climate action CPD courses. However, it can be quite challenging to find out about the qualifications and up-skilling requirements for teaching/training staff and their professional experience in real working environments. Therefore, this indicator was not considered.
- 2.5.6 **Organisational quality:** Does the education and training provider (educational institute, training provider, business/organisation) have the means to provide organisational key success conditions such as planning, systemic processes, and digital services. Whilst highly relevant as an indicator, due to the difficulty and the project timescale, identifying such a marker was deemed not analysis relevant.

2.6 Skills Mapping

- 2.6.1 While the skills mapping of quantitative or formal indicators usually does not cause an ambiguity, qualitative skills mapping will certainly do that. This is obviously since qualitative skills mapping always involves subjective assessment in how far a curriculum fulfils or does not fulfil a given indicator.
- 2.6.2 The research was of course fully aware of this challenge when designing the methodology for the qualitative skills mapping. Therefore, to objectify this exercise, the researchers developed the following safeguards:
- **Colour grading scale (see Table 1):** Rather than using a numerical benchmarking scale, the authors decided to employ the following colour grading scale to illustrate

the fact that the skills mapping was not an exact evaluation, but a careful appreciation of available information at the time.

- **Transparency:** Each indicator contains a short text that explains the reasons for its assessment in the skills mapping. In this way the research intended to make decisions more transparent and comprehensible to readers of this report.
- **Characterising rather than evaluating:** The research aimed at characterising CPD courses with this skills mapping exercise; it did not intend to evaluate their quality. Consequently, all statements should be read in this light.

2.6.3 Finally, it must be emphasised that the qualitative skills mapping must be read as the combined application of all indicators to one CPD course. Never should a single indicator be used for this purpose. This is again a major deviation from quantitative skills mapping, in which individual indicators do convey valuable information. Hence, in the qualitative benchmarking at hand, only the synopsis of all indicators carries informative value.

	The indicator is predominantly or fully met by the curriculum
	The indicator is partly fulfilled by the curriculum
	The indicator has some relevance for the curriculum, but not much.
	The indicator is of no relevance for the curriculum
	Lack of information to assess the indicator

Table 1 :Colour grading scale for skills mapping

3.0 UK CPD Heritage Related Climate Action Skills Training Provision

3.1 The Challenges of Defining Heritage Related Climate Action Skills

- 3.1.1 Climate resilience (mitigation and adaptation) requires a foundation of knowledge or literacy across several scientific areas including understanding and being able to consider, bridge, and apply knowledge drawn from climate change science, climate models, and local knowledge systems. Hence, climate action training is increasingly being integrated into CPD to upskill professionals in sustainability, net-zero strategies, and climate literacy.
- 3.1.2 Many organisations and professional institutions now offer CPD-accredited courses that allow participants to earn recognised certificates while gaining practical knowledge for their careers. However, the challenges of defining appropriate heritage related climate action skills in the context of training and education, surround the inter and transdisciplinary nature of both the historic environment and climate action fields.
- 3.1.3 From treating the historic environment not merely as a passive victim of climate change, but as an active knowledge resource for climate resilience, adaptation and mitigation, to leveraging long-term environmental data and traditional practices to requiring the integration of social sciences, humanities, and technical fields, which traditional educational and training silos often impede [8]; [9]. This has already been illustrated by International Council on Monuments and Sites (ICOMOS) University Forum [*Just Transitions: Heritage Education for Climate Adaptation*](#). They indicated that according to the [*Climate Action Competency Framework \(CACF v2\)*](#) – developed by the [*Adaptation Learning Network \(ALN\)*](#) – which describes 24 competencies, divided into five domains that range from Climate Adaptation Science to Leadership to Working together to Understanding the challenge faced to Climate Adaptation Planning and Implementation (Figure 2). There is a significant lack of standardised pedagogical models (i.e. the method and practice of training) and assessment tools, as most current climate plans focus on strategic implementation without establishing clear indicators for educational outcomes.

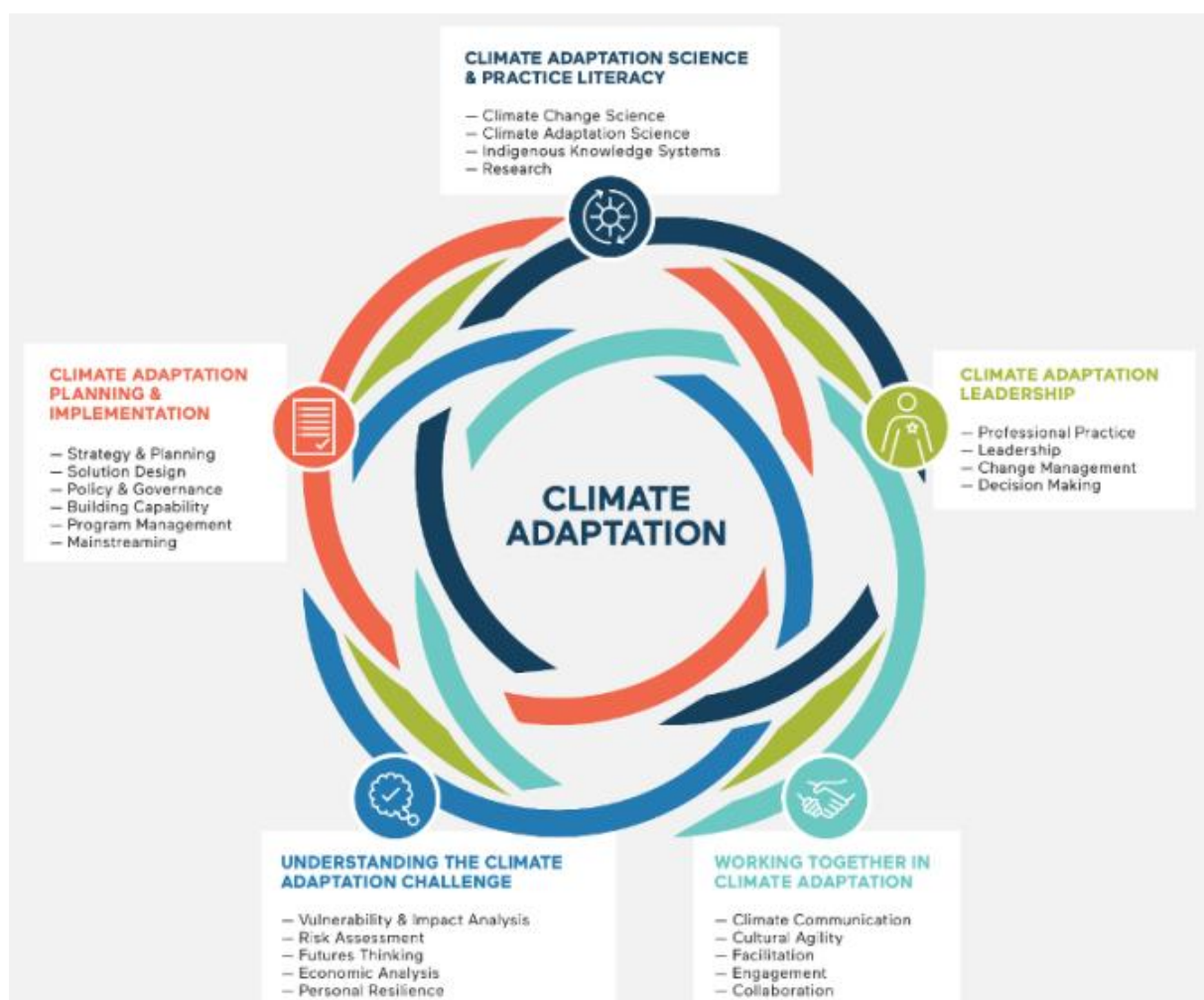


Figure 2 : Overview of the CACF competences

- 3.1.4 Adding to these challenges, is the lack of a UK single, unified mandatory "Climate Action Training Standards Framework" for all historic environment sectors; instead, standards are distributed across government guidance, voluntary accreditations, and specific sector mandates. Although, several wider sector frameworks exist: (1) the [Climate Change and Sustainability Education \(CCSE\) Framework](#) designed specifically for educators to embed climate action pedagogy into educational settings;(2) underpinned by the [National Climate Education Action Plan \(NCEAP\)](#) focused on three pillars: positionality, climate justice, and personal action; and (3) [ISO 14064 Standards](#) serve as the technical benchmark for climate change and carbon training, particularly for professionals in carbon accounting and emissions management.
- 3.1.5 Another key challenge is understanding the distinction between education and training particularly given the rise of the notion of competence as an outcome of training i.e. the performance of a task or role, within a work setting. However, although training and education are distinct concepts, the boundaries between the two are not clear in every case

(Table 2). In this climate action skills development context, training is for the short term CPD to fill the immediate skills shortages versus education (deeper learning) that pays off over the course of a career.

Education	Training
Theoretical	Practical
Academic	Vocational
Thought	Action
Pure	Applied
Knowledge	Skills
Understanding	Experience
Cognition	Competence

Table 2: Conceptual Dichotomies

- 3.1.6 A further two-pronged challenge which is interrelated to competence development, is the distinction between CPD accreditation (formal approval of a course or provider by an independent authority to ensure it meets rigorous professional standards) and CPD certification recognition given to an individual learner upon completing a course) as the terms are frequently confused or used misleadingly. Additionally, determining the validity of a course is difficult due to several interconnected factors, such as misleading terminology and the gap between marketing language and underlying reality. For example, vague marketing language such as "CPD compliant," "CPD recognized," or "CPD endorsed" is often used interchangeably and loosely to suggest general alignment with standards without guaranteeing formal approval by an independent accrediting body.

3.2 Quantitative Analysis of Formal Indicators

- 3.2.1 The formal indicators used to describe the climate action training provision relevant for the historic environment of the sample have been introduced in section 2.3 of this report. ***The table constituting the benchmarking of formal indicators is available within Appendix 2 of this report.***
- 3.2.2 We took the approach to utilise the Climate Change Committee's (CCC) - Climate Action Thematic Areas as laid out in [CCC Adaptation Monitoring Framework 2023–2025](#) - into account as Level 1 themes alongside adhering to the project scope (Climate Action Thematic Areas Level 2: as laid out in HES contract specification) when developing the initial scoping output of identified courses as part of the skills mapping analysis (Figure 3).

Climate Action Thematic Areas Level 1: as laid out in CCC Adaptation Monitoring Framework 2023–2025 - https://tinyurl.com/4w868f5r	Climate Action Thematic Areas Level 2: as laid out in HES contract specification
Lands, Nature, and Food: includes Nature, Working Land (agriculture, forestry), Food Security and Seas (Terrestrial, freshwater, and marine habitats, plus and fisheries)	Biodiversity and nature-based solutions
Infrastructure and Services: includes Water Supply, Energy, Telecommunications and Information Communication Technology (ICT), and Transport systems	Energy and carbon management (include low carbon heating)
Social and Economic Systems: Health and Wellbeing, and Economy (business, finance, business supply chains, and the financial system)	Sustainable travel
	Circular economy
	Sustainable procurement
	Climate Literacy
	Impacts, risk, and adaption of climate change
Built Environment and Communities: covers Towns and Cities, Buildings, and Community Preparedness and Response (individual buildings and their occupants, covering over-heating and flooding)	Sustainable tourism
	Retrofit and energy efficiency of traditional buildings
	Building performance evaluation
	Impacts, risk, and adaption of climate change

Figure 3 : Overview of the Climate Action Thematic Areas Level 1 and 2

3.3 Qualitative Analysis of Formal Indicators and Skills Mapping

- 3.3.1 The following list of course and training providers available and relevant to historic environment stakeholders was established from our web-based searches (Figure 2). It is offered as a starting point at the date of this report so it can be revised and changed as new CPD courses become available or others cease and can for example, be transposed on to suitable websites or adapted for regional use.
- 3.3.2 **Thirty - six historic environment relevant CPD courses** were identified, provided by a range of private training providers, HE institutions, third sector organisations, professional bodies, and national heritage bodies – **29 no. in total** (Table 3). In some instances, such as Level 3 Award in Energy Efficiency for Older & Traditional Buildings provision was the same course delivered by several providers.
- 3.3.3 From the skills mapping analysis, covering the 10 no. climate action topics targeted by the research and relevant for the historic environment sector. Eight of the ten topics had available CPD courses. The most predominant type of climate action training CPD courses available was **climate literacy (n=10)**, however **8 of these courses are remarkably similar in nature** albeit a slightly distinct perspective dependant on the historic environment sector focus.
- 3.3.4 Furthermore, in terms of **retrofitting there were fifteen courses identified but only five distinct courses available**. With next most available surrounding **energy and carbon management (n=8)**, **biodiversity and nature-based solutions (n=8)** and **impacts, risk, and adaption of climate change (n=7)** . Followed by CPD courses covering **building performance evaluation (n=3)**, **circular economy (n=2)**, and **sustainable tourism (n=2)**. While two topics: **sustainable travel and sustainable procurement** had none which were sector focused.

Training Provider Domain	Training Provider	No.
National Heritage Bodies	Heritage Trust Network Historic England (HE) Historic Environment Scotland (HES) Museum Development England Museums Galleries Scotland (MGS) Society for Protection of Ancient Buildings (SPAB)	6
Professional Bodies	Chartered Institute for Archaeologists (CiFA) Chartered Institute of Building (CIOB) Royal Institute of British Architects (RIBA) Royal Institute of Chartered Surveyors (RICS) Soil Association Scotland/Scottish Land & Estates	5
Third Sector Organisations	The Carbon Literacy Project Culture for Climate Scotland Energy Trust Environmental Funders Network (EFN) and I.G. Advisors Inner forth landscape Keep Scotland Beautiful Retrofit Academy Verture	8
Private Training Providers	Elmhurst Energy Environment Study Centre Scottish Lime Centre Synergy Training Centre The Green Register of construction professionals Verdancy Group- Apex Training	6
Higher Education	Birmingham City University UK School of Management University of Oxford - Lifelong Learning University of West Scotland	4
Total		29

Table 3: Training Providers

3.3.5 The following sections categorise the CPD courses (title, provider, and duration) established from our web-based searches and as outlined in Table 3. The table constituting the benchmarking of formal qualitative indicators is available **within Appendix 3 of this report**.

3.4 Built Environment and Communities

Course Title	Training Provider	Training Duration
Level 3 Award in Energy Efficiency for Older & Traditional Buildings	Elmhurst Energy	20 hours
	Environment Study Centre	27-30 hours
	Energy Trust	27-30 hours
	HES	27-30 hours
	Retrofit Academy	27-30 hours
	Scottish Lime Centre	21 hours
	Synergy Training Centre	27-30 hours
	Verdancy Group- Apex Training	21 hours
Preserving Historic Buildings: Project Management	Chartered Institute of Building (CIOB)	8 hours
Building Conservation: Best Practice	CIOB	14 hours
Retrofitting Energy Efficiency	CIOB	6 hours
Retrofitting Traditional Buildings 1: Principles and Practice	The Green Register of construction professionals	8 hours
Retrofitting Traditional Buildings 2: Case studies	The Green Register of construction professionals	4 hours
Retrofitting Traditional Buildings 1: Principles and Practice	Scottish Lime Centre	8 hours
Retrofitting Traditional Buildings 2: Case studies	Scottish Lime Centre	4 hours
Total CPD courses available		5 (n=15 available)

Table 4: CPD courses covering retrofit and energy efficiency of traditional buildings

Course Title	Training Provider	Training Duration
Building Pathology	CIOB	12 hours
Construction and Performance of Traditional Buildings	SPAB	1 hour
RIBA Advanced Conservation Course	Royal Institute of British Architects (RIBA)	12 hours
Total CPD courses available		3

Table 5: CPD courses covering building performance evaluation

3.5 Built Lands, Nature, and Food

Course Title	Training Provider	Training Duration
Climate Friday series	Historic England	1-2 hours
Climate and Nature Planning Course	Museums Galleries Scotland (MSG)	6 hours
Contractor training	Inner forth landscape	No indication
Landscape Leadership programme	Soil Association Scotland/Scottish Land & Estates	No indication
Nature in the Historic Built Environment: How to Make the Most of it	University of Oxford - Lifelong Learning	7 hours
UK&I Water Management for a Carbon-Neutral Future	RICS	1-2 hours
UK&I Scotland – Webinar: NPF4 and biodiversity in the Highlands	RICS	1-2 hours
UK&I Scotland – Webinar: How peatland restoration benefits communities, careers, and the economy	RICS	1-2 hours
Total CPD courses available		8

Table 6: CPD courses covering biodiversity and nature-based solutions

3.6 Infrastructure and Services

Course Title	Training Provider	Training Duration
The Energy Efficiency Hierarchy	Historic England	2 hours
Heritage Carbon Reduction Webinars	Historic England	2 hours
Decarbonisation Plan Webinars	Historic England	2 hours
Heritage Carbon Reduction Network	Historic England	2 hours
Global Whole Life Carbon: The Basics Webinar	RICS	1-2 hours
Global Certificate in Whole Life Carbon Assessment Training Programme	RICS	140 hours
UK&I Sustainable Heritage: Reducing Carbon in Heritage Buildings	RICS	1-2 hours
Total CPD courses available		7

Table 7: CPD courses covering energy and carbon management (include low carbon heating)

3.7 Social and Economic Systems

Course Title	Training Provider	Training Duration
Carbon Literacy Train-the-Trainer course	Keep Scotland Beautiful	12 hours
Climate Emergency Training	Keep Scotland Beautiful	8 hours
Heritage Carbon Literacy	CiFA	8 hours
Heritage Carbon Literacy	Historic England	8 hours
Heritage Carbon Literacy	Heritage Trust Network/Keep Scotland Beautiful	8 hours
Icon Skills: Carbon Literacy Course for Heritage	Historic England	8 hours
MGS Carbon Literacy	MSG facilitated by Keep Scotland Beautiful	8 hours
Museum Development England	The Carbon Literacy Project	8 hours
Roots & Branches: Carbon Literacy & Climate Action Programmes	Museum Development England	Varying from 2hours – 16 hours
Total CPD courses available		2 (n=9 available)

Table 8: CPD courses covering Carbon Literacy

Course Title	Training Provider	Training Duration
Climate change and the historic environment	Historic England	No indication
Disaster Management and Heritage Management	Birmingham City University	12 hours
Leadership Lab programme	Environmental Funders Network (EFN) and I.G. Advisors	No indication
Using arts and culture to create a climate-ready future: a programme for local authority officers	Culture for Climate Scotland	12 hours
Planning Tools for Managing Climate-Vulnerable Heritage Assets	University of Oxford - Lifelong Learning	6 hours

Specialist Certification in Cultural Heritage and Environmental Conservation	UK School of Management	No indication
Becoming Climate Resilient	Verture (SNIFFER)	
Total CPD courses available		7

Table 9: CPD courses covering impacts, risk, and adaption of climate change

Course Title	Training Provider	Training Duration
Circular economy	Greenage	No indication
Resilient Heritage Business Modules	MGS	6-8 hours
Total CPD courses available		2

Table 10: CPD courses covering circular economy

Course Title	Training Provider	Training Duration
Heritage & Cultural Tourism	University of West Scotland	16 hours
Professional Certificate in Sustainable Tourism Development	Birmingham City University	12 hours
Total CPD courses available		2

Table 11: CPD courses covering sustainable tourism

4 Survey Findings

The following section examines the results from the completed Climate Action Skills Provision (CASP) Audit questionnaire. Captured from the desktop analysis, twenty-nine training providers respondents were identified and approached to undertake the survey. A total of sixteen respondents completed the questionnaire.

In terms of the research, this provided a return rate of 55% - statistically valid survey response rate needed to achieve a desired margin of error (typically $\pm 5\%$ at 95% confidence extrapolation) [10].

The following sub-sections present each section of the questionnaire: a) Demographic; b) Level of training delivery; c) Training provision content; and d) Training provision quality.

To provide result clarity, based on the questionnaire scoring frequency, the percentage scores for each question were calculated and are illustrated using a bar chart style denoting the relevant respondent numbers and percentage scores. ***(For expanded survey findings – see Appendix 4 of this report)***

4.1 Demographic

4.1.1 Of the 16 respondents, n=6 (37.5%) were external training providers (private, n=4 (approx. 25%) had an either a charitable or voluntary status, with an even spread of n=2 (12.5%) were arm's length government bodies, and n=2 (12.5%) being HE institutions, with the remaining n=1 (6.25%) either from a heritage trust background or a professional body. Given the focus of the research, most n=14 (87.5%) indicated their training services were in Scotland only. Although on closer analysis up to n=6 (40%) indicated they were in various regions spread across the rest of the UK (RoUK). Unsurprisingly, when questioned which UK regions they provide training services in n=11 (67.5%) concentrated solely on Scotland, although there was a substantial statistical spread across the RoUK as illustrated in Figure 4.

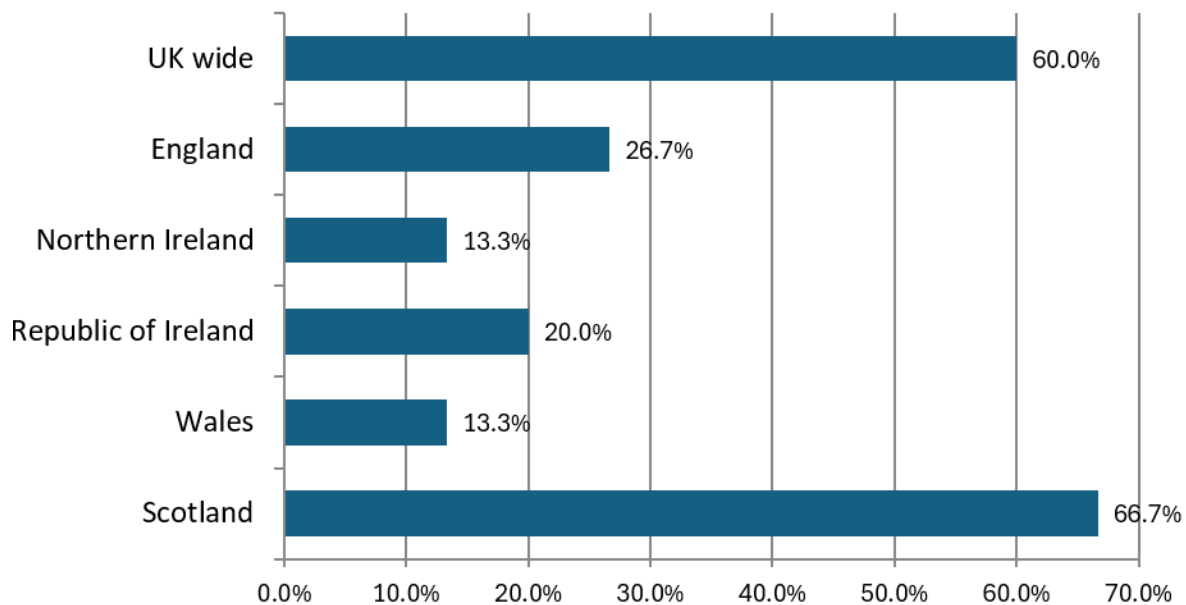


Figure 4: Overview of delivery regions

4.1.2 In terms of the number of climate action training courses delivered yearly, they ranged between 1 or 2 to 50 +, although n= 9 (60%) of organisations stated they delivered between 3 to 5 per year on average. The key delivery topics of - retrofit and energy efficiency of traditional buildings (n=11, 68.75%), impacts, risk and adaption of climate change (n=10, 62.5%), building performance evaluation(n=9, 56.25%), carbon literacy (n= 9, 56.25%), and circular economy (n= 9, 56.25%) appear to be the main training offerings. While several topics (i.e. sustainable travel, procurement, tourism, biodiversity and nature-based solutions and energy and carbon management) ranging between 31.25% (n=5) and 43.75% (n=7) of respondents indicated their courses did cover such topics. Suggesting they are more specialised climate action training topics targeted to specific organisational needs or industries.

4.1.3 It was therefore unsurprising that the learning content considered the least in demand surrounded sustainable tourism (n=6, 37.5%), closely followed by biodiversity and nature-based solutions (n=5, 31.25%). However, counter intuitively building performance evaluation was also indicated as least in demand (n=6, 37.5%), yet it was indicated as a key course offering. Suggesting there appears to be a delivery and demand disconnect, in terms of this topic. In terms of training content in high demand (n=9, 56.25%) retrofitting emerged, followed by both carbon literacy and impacts, risk, and adaption of climate change (n=7, 43.75%) (Figure 5).

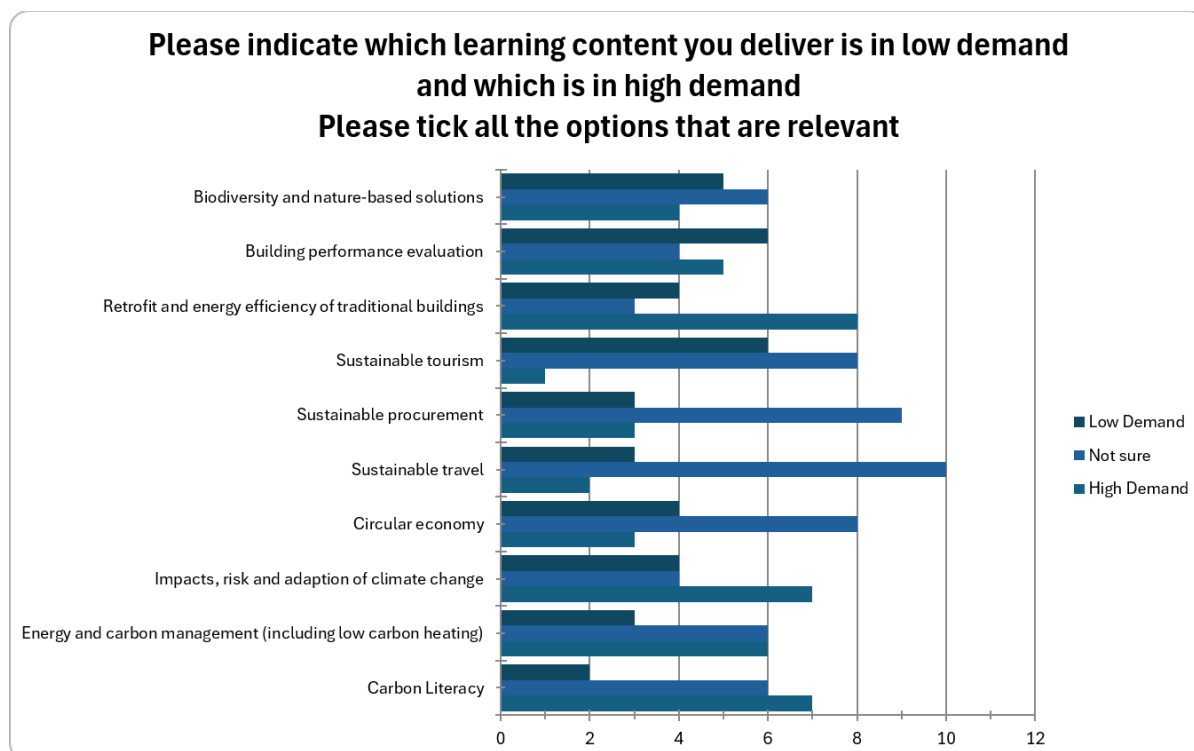


Figure 5 : Overview of High/Low Demand

- 4.1.4 However, the data suggests that there appears to be a delivery disconnect between energy, and carbon management, carbon literacy, and retrofitting, given their inherent interrelated relationship. Suggesting there requires the need to integrate these topics into a combined course, as in “real life” practice they cannot exist in isolation as they are mutually dependant and interdependent of each other.
- 4.1.5 Moreso, given, numerous reports have stated that retrofitting 25% of the UK’s traditional buildings over a period of 25 years could already reduce carbon emissions by 15.5 million tCO₂ and result in £2.5 billion savings in the endeavour to combat climate change [9],
- 4.1.6 When asked about the CPD course cost, over 50% were found to have no cost (free), while many ranged between a low cost of between £10 - £100 (68.75%). However, many respondents indicated their course cost ranged between £100 - £200 (62.50%), while several indicated their courses could range between £300 -£1000. Some even indicated costs at over £1000 and Price on Application (P.O.A) in some instances, suggesting such courses are customised to requirements (Figure 6).

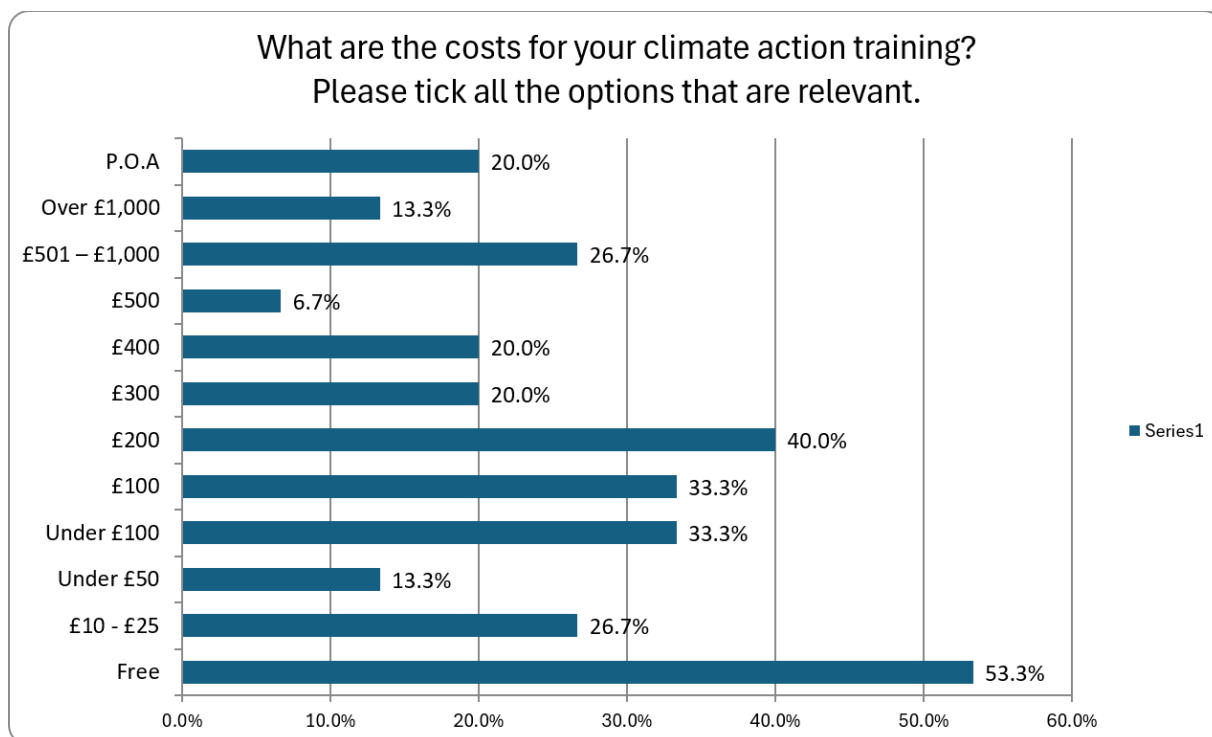


Figure 6 : Overview of CPD course costs

4.1.7 Nonetheless, n=9 (56.25%) of respondents remarked their training was funded. Whereby, the type of funding used to support attendance, was varied, ranging from professional body funding (n=4, 44.4%) to sectoral bodies (e.g. CITB) (n=3, 33.3%) to governmental climate change funding, whether at a local, regional or national level (n=3, 33.3%), as well as third sector funding (e.g. National Lottery Heritage/Community Fund) (n=3, 33.3%). While n=4 (44.44%) offered they were funded through private and public funding initiatives, however they highlighted this was no longer available for future courses, reinforcing the importance of having long term scalable funding mechanisms available to support the sector's skills development.

4.2 Level of Climate Action Skills Training Delivery

4.2.1 N=13 (81.25%) of respondents designated that the CPD courses they provided were defined as formal learning content (i.e. structured learning with learning outcomes), with the remaining (n=3, 18.75%) remarking the opposite. When asked about the level of audience their training provision was designed towards, they indicated their courses were pitched, in the main, towards two types of learner groups. Namely those with either no understanding of climate science (n=13, 81.25%) or had a limited understanding of climate science (n=12, 80%). Although n=11 respondents (68.75%) highlighted their courses were also relevant for those with a mid- level of expertise in climate science. While n=6 (37.5%)

indicated they were suitable for learners with a high - level of expertise in climate science (Figure 7).

- 4.2.2 This data suggests the current course design method was a “one-size-fits-all approach” potentially causing learner disengagement, whereby, experienced learners potentially waste time on known content while leaving beginners struggling with advanced concepts. This disconnect leads to dissociation, as generic scenarios fail to reflect specific role challenges, and results in poor knowledge retention because learners cannot effectively apply information that does not match their current skill set.

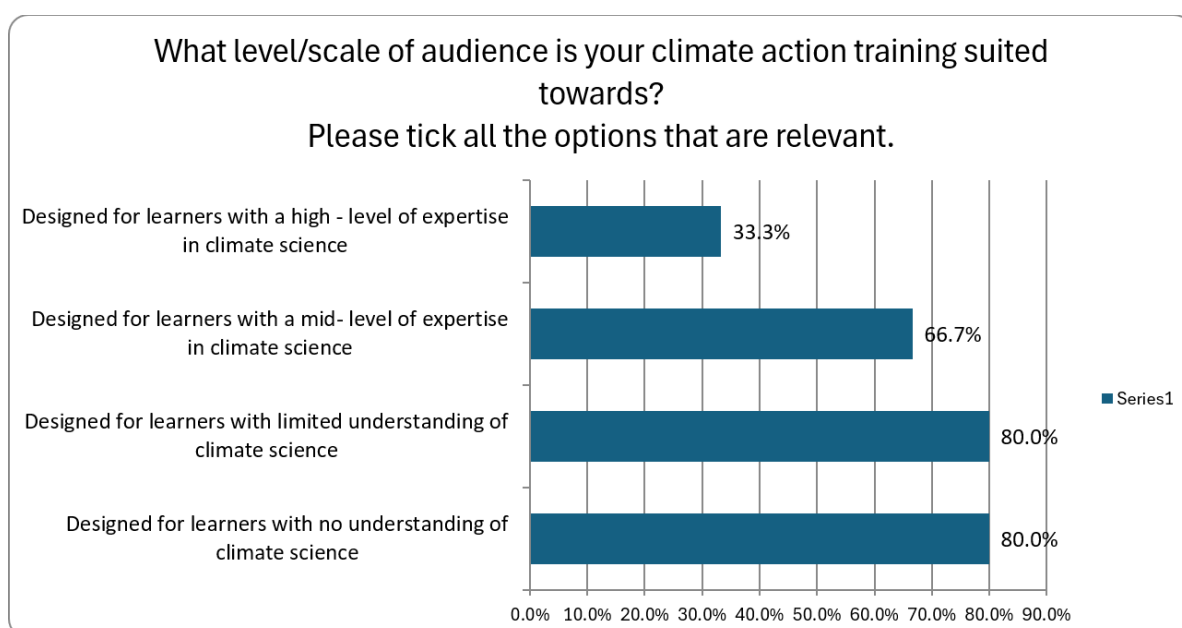


Figure 7 : Overview of CPD course learners

- 4.2.3 These further intimates that, when contemplating undertaking Climate action training, a key consideration should surround whether there is a need to ensure that training delivers tangible, observable results that can be assessed against specific business or educational metrics or is the aim to provide a broad intellectual understanding or compliance without requiring demonstrable behaviour change. Especially given, n=11 (68.75%) either stated that their typical audience was from a non-specialised industry workforce (meaning attendees were from a historic environment background but did not work in green or climate focused work processes) or were from the specialised industry workforce. Although from the data captured, the spread of the audience work roles was highly varied from supervisors/managers to professionals to leadership to charity/community groups (Figure 8).

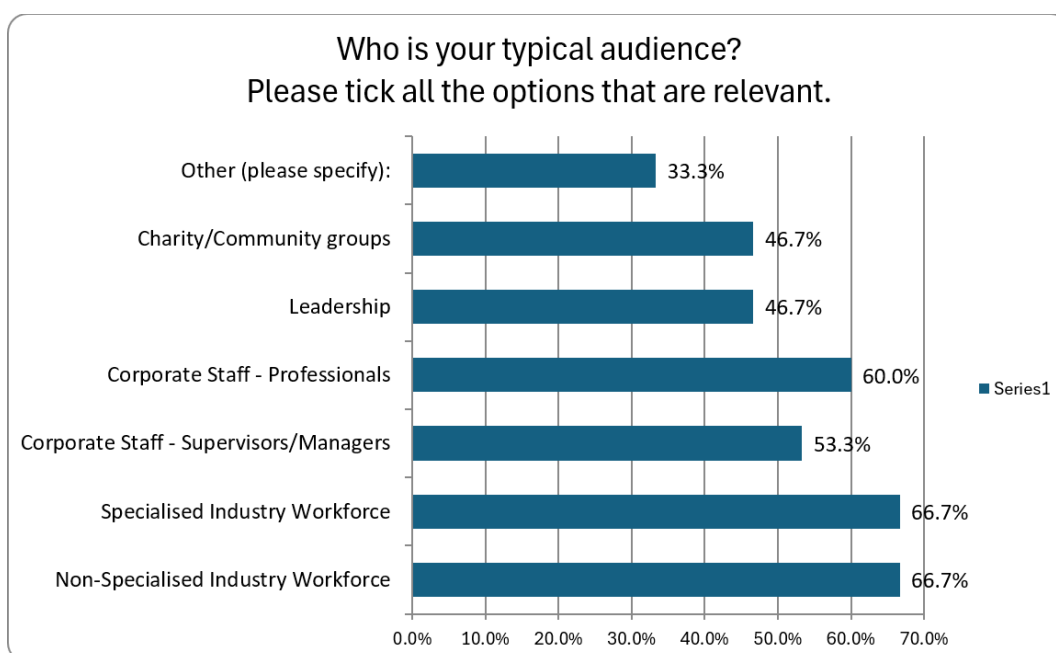


Figure 8 : Overview of CPD course audience

- 4.2.4 In terms of frequency of provision, n= 10 (62.6%) stated their courses were delivered when the demand was there (on demand). While n=5 (31.25%), offered weekly delivery, followed by n=4 (25%), offering monthly and n=3 (18.75%) bi-monthly delivery respectively, and either annually or scheduled (n=1, 11.11%). Suggesting that supply is meeting demand that reaches the market – and for certain types of Climate action CPD and in certain regions, demand exceeds supply – therefore accessibility to the right type of training is constrained, particularly for more specialist climate action skills.
- 4.2.5 As for the types of courses offered: in-house training and workshops each demonstrating they are the most dominate delivery mechanism (n=10, 62.5% respectively), with eLearning (n=8, 50%) being the next most common. While blended learning and seminars (each @n=7, 43.75%) are the next most frequent, while open courses and online self-service options made up a third of responses. Showing that providers invest in both face-to-face and remote delivery. Suggests a desire to offer flexibility for learners, affording them the chance to learn face-to-face as well as online. Signifying the learner audience see a continued value for interactive learning (see Figure 9). Correlatedly with the above data, respondents highlighted the most common CPD length was 1 day (n=9, 56.25%) with between 5 - 8hrs of total learning hours (TLH) gained. This was followed by either 1 or 2 hours (n=6, 37.5%); or on demand flexibility (n=6, 37.5%), suggesting an increased focus on personalised learning.

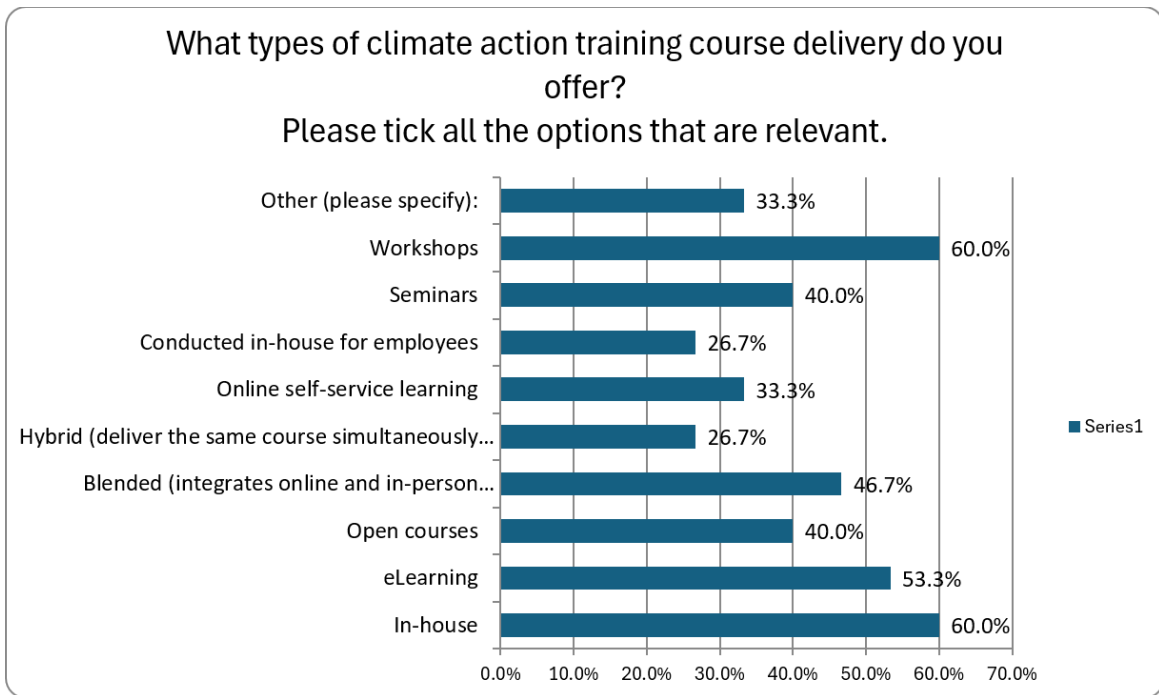


Figure 9 : Overview of CPD course delivery type

4.2.6 In relation to the training delivery methods: either in-classroom training (n=11, 66.67%) or live virtual training (n=11, 73.33%) are the most prevailing methods, but digital and flexible learning options appear to be gaining traction, with the amount of varied digital media options available to learners (see Figure 10). Overall, the picture is one of expansion. Training providers are not moving away from traditional methods, but layering in more options around them, creating a broader and more flexible teaching and learning approach. Suggesting a sustained demand for remote learning confirming its importance in modern training delivery. This reflects the pattern outlined previously - that flexible, self-paced learning is being championed.

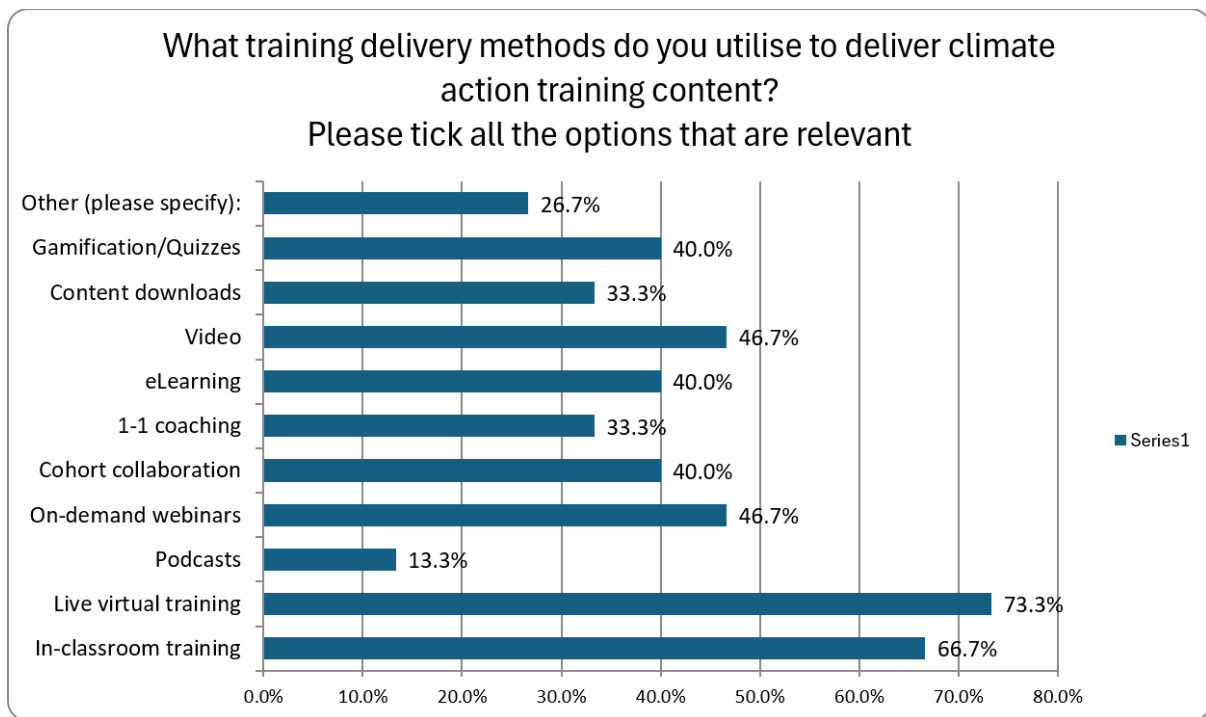


Figure 10 : Overview of CPD training delivery methods

4.3 Current Climate Action Skills Training Provision Content

Interestingly when posed whether the respondents used external organisations to provide information, resources or teaching to support the delivery of the climate action aspects of their courses, it was almost 2:1 split - those who did (n=10, 62.5%) and those who didn't (n=6, 37.5%). Those who did specified working with more than one external organisation, although overwhelmingly, they used the services of a climate professional (n=8, 80%). Local authorities (n=4, 40%) local FE or HE institutions (n=4, 40%) and heritage-based organisations (n=4, 40%) were the next most common external organisations that training providers worked with. Unexpectedly, the proportion of training providers who worked with a Climate Change Institute/Organisation was low overall (n=3, 30%) (see Figure 11). The responses suggest that organisationally there was a dependence on outsourcing of expertise.

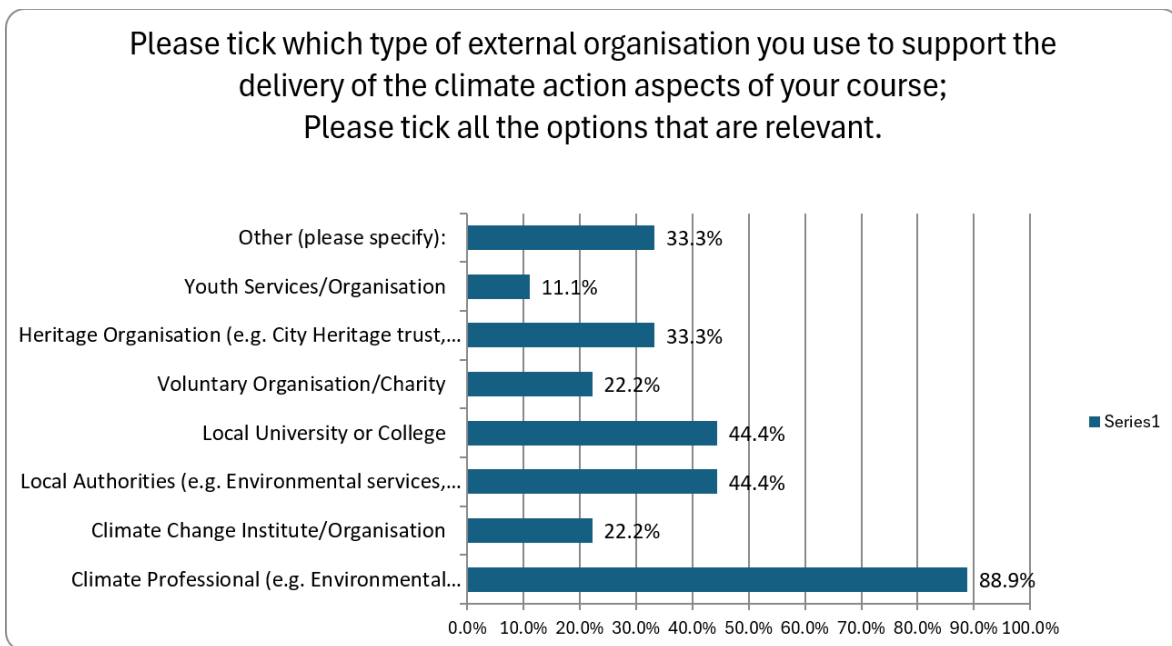


Figure 11 : Overview of external organisation used to support CPD training delivery

- 4.3.1 The overall data suggests even training providers were experiencing skills gaps implying there appeared to be a skills gap within training providers and educators, indicating that they themselves often lack the necessary resources, practical sustainability skills, and confidence needed to embed these topics into their curricula. Indicating that a lack of national-scale training and resources on practical carbon reduction methods. As providers appear to struggle to find materials that go beyond basic awareness, requiring external end-to-end delivery resources. Signalling that the training supply is not yet well-equipped to meet emerging needs
- 4.3.2 The respondents were asked whether any of the climate action aspects of the course were assessed. They indicated the assessment of the courses delivered was an even split - those who did (n=9, 56.25%) and those who did not (n=6, 43.75%). While, for those who formally assessed, over 25% used observations and questionnaires as the most common approaches – n=4, 26.75%, respectively. Less common were methods such as presentations, assignments, examinations, or reports – n=2, 13.33%. Coursework was used by n=1 (14.75%) provider, and those that indicated Other (n=9, 60%) was mix of no assessment (n=7) or using Carbon literacy trust (n=1) or third-party accreditation bodies(n=1)to assess and certificate the climate training. Nonetheless, many training providers specified using more than one method of assessment, with the modal class being use of two methods and covered a range of indicating the "length" (section 4.2.4) and "assessment" is determined by the depth of engagement and learning outcomes achieved, regardless of the format.

4.4 Current Climate Action Skills Training Provision Quality

- 4.4.1 The respondents were posed the question: “How often do you undertake quality assurance of course content to ensure it is up to date.” In total, n=6 (37.5%) stated yearly, while n=6 (37.5%) remarked they undertook a quality audit after delivery of each course, and n=3 (18.75%) stipulated bi-annually. “Other” was offered by n=1 (7.75%), however they did not provide further supplementary information. This data represents that for most training providers, quality assurance is regarded as a key measure, particularly given the reliance on external climate action expertise input, and can be inferred as reflecting the effectiveness, engagement, and financial viability of their CPD courses.
- 4.4.2 When posed a question surrounding trainer qualifications and how are they trained and evaluated. Many respondents have trainer qualifications and acknowledge that they *“have qualifications in their relevant field”* and *“as professionals must maintain CPD.”* However, only a small number of responses indicated they had relevant climate action qualifications, remarking *“for carbon literacy (CL) delivery they are CL qualified trainers/instructors.”* Given many use external organisations to supplement this apparent skills gap (see section 4.3.1), suggests that organisationally there appears to be a dichotomy between individuals maintaining CPD to update skills and meet professional body requirements, but this does not equate to the individual trainer or organisation itself holding relevant climate action qualifications. Yet, many respondents (n=10, 62.5%) denoted their CPD courses were eligible for professional certification and/or accreditation, with n=6 (27.5%) conceding they were not. Moreover, when posed if they provided before and/or after support only 50% (n=8) revealed signified they did, with some stating *“Yes clear pre work and onboard support with follow up to support accreditation included in training fee”*. Meaning the remaining 50% (n=8) either did not at all or either provided extremely basic level support, with one respondent remarking *“providing e-mail contact”*.
- 4.4.3 This data indicates not only a disconnect between generic academic qualifications and the specific changing climate skills needed, but also questioning the validity of the quality and relevance of the qualification itself. Although when questioned on whether their trainers’ have practical experience in the subject they deliver. Most of the respondents (n=12, 75%) indicated they had been engaged in roles focused on carbon management, environmental standards, and sustainability initiatives etc. Whilst only n=4 (25%) admitting they had not had hands-on work in a relevant climate action field. However, this must be interpreted

with some caution as there was no indication as to the depth of experience gathered. This is expected, given the inherent challenges of defining heritage related climate action skills (see section 3.5).

4.4.4 In terms, of the challenges or obstacles they faced in the delivery of training sessions. Figure 12 illustrates the degree to which respondents considered the key issues. For each type of provider, the majority considered time constraints (n=14, 87.5%) and increasing costs (n=11, 68.75%) as the biggest challenges reinforcing the financial pressure many providers are operating under.

4.4.5 A number of training provider respondents acknowledged they faced more than one challenge, with almost 50% suggesting effective course promotion (n=7, 43.75%), closely followed by a third of respondents indicating increased competition (n=6, 37.5%) and the current cost of living crisis (n=5, 31.25%), being seen a key challenges. However, again almost 50% offered the response of "Other" (n=7,43.75%) which included a range of challenges and obstacles such as *"lack of subject matter expertise available and budget"*, *"free AI developed courses"*, *"is climate change/net zero a high priority for many cultural and heritage organisations given the current economic climate"* and *"number of very basic offerings being sold cheaply or free"*.

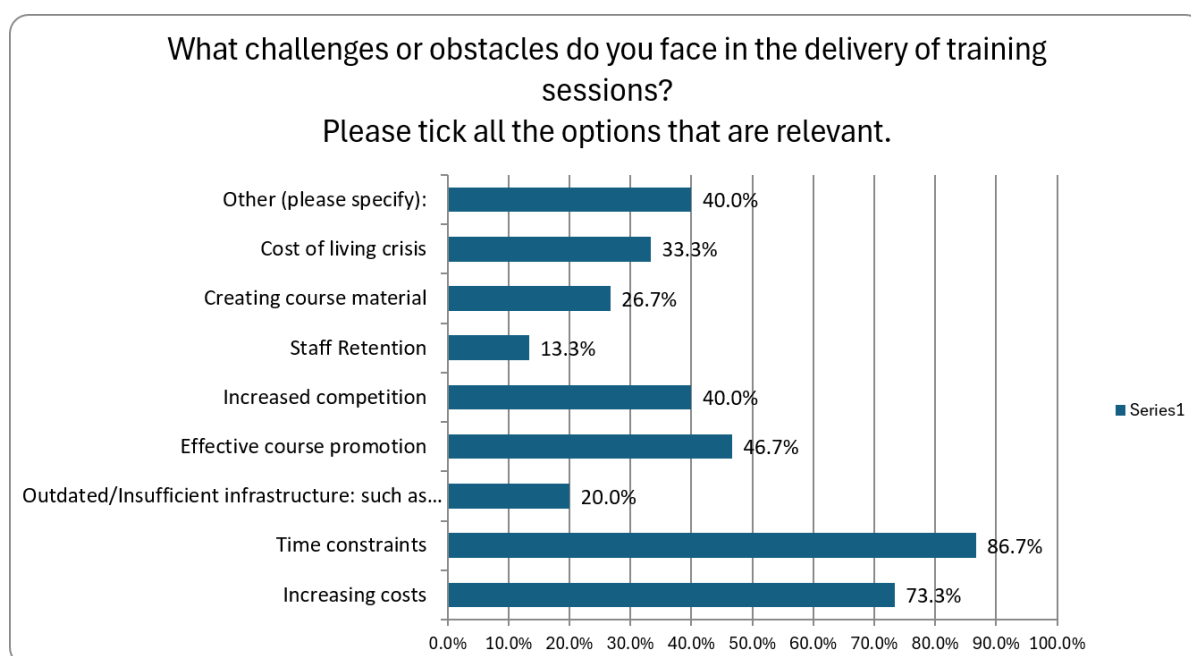


Figure 12 : Overview of challenges or obstacles faced in training delivery

4.4.6 Implied, increasing external pressures were potentially having an adverse effect on operational or financial measures, as well as course attendance and profitability. Implied these

obstacles are resultant from not only the multi-faceted nature and importance of climate action training within not only the sector, but from the wider societal, economic, and environmental needs. Pointing to the need for a growing focus on long term relationships rather than one-off outcomes.

- 4.4.7 The respondents were asked, “In what ways do you anticipate that the content, delivery, or structure of your course is likely to change in the future? (e.g. in response to changes in net zero, carbon or sustainability policies or funding).” The respondents made a range of comments about the ways in which they anticipated that their courses were likely to change soon. From *“a move more towards adaptation and the broader concept of climate resilience”* to *“increasing focus on transformational rather than incremental change”* to *“embed more case studies more impacts being delivered as a result of the training.”*
- 4.4.8 Over a third of respondents suggested adaptations would be made to their courses in response to government driven policy changes. For example, skills policy, with some speculating that this might lead to shorter, bite size content with more adaptable pathways to allow them to reach more diverse audiences with varied training needs as they would have the ability to provide “pick n mix” courses and content. As without role-specific or adaptive paths, employees fail to transfer training to practical situations, leading to minimal climate action behavioural change within organisations.
- 4.4.9 The respondents were asked, “to what extent is training content or delivery customisable to allow targeting towards a historic environment focused training programme? Level of Likelihood (1 – Extremely unlikely; 5 – Extremely likely)”. In total, only just over a third (n=6, 37.5%) of respondents considered training content or delivery to be potentially customisable remarking either likely (n=1, 6.75%) or extremely likely (n= 5, 31.25%). However, in contrast, n=3 (18.75%) considered it unlikely, with almost half being neutral (n=7, 43.75%) (see Figure 13).
- 4.4.10 Those that indicated neutral or likely or extremely likely, were then asked to state the “size of organisation you can cater for?” (within a historic environment context). From the 13 respondents, the spread was as follows: n= 11 (68.75%) can cater for medium-size organisations (up to 250 staff), n=9 (56.25%) can provide for micros (up to 50 staff), n=7 (43.75%) can satisfy large organisations (up to 1000 staff) and n=6 (37.5%) can offer customisable training to institutional organisations (over 1000+ staff). Although, it would be safe to

assume if a training provider can provide for and institutional level organisation, then they would be able to provide to the other three levels.

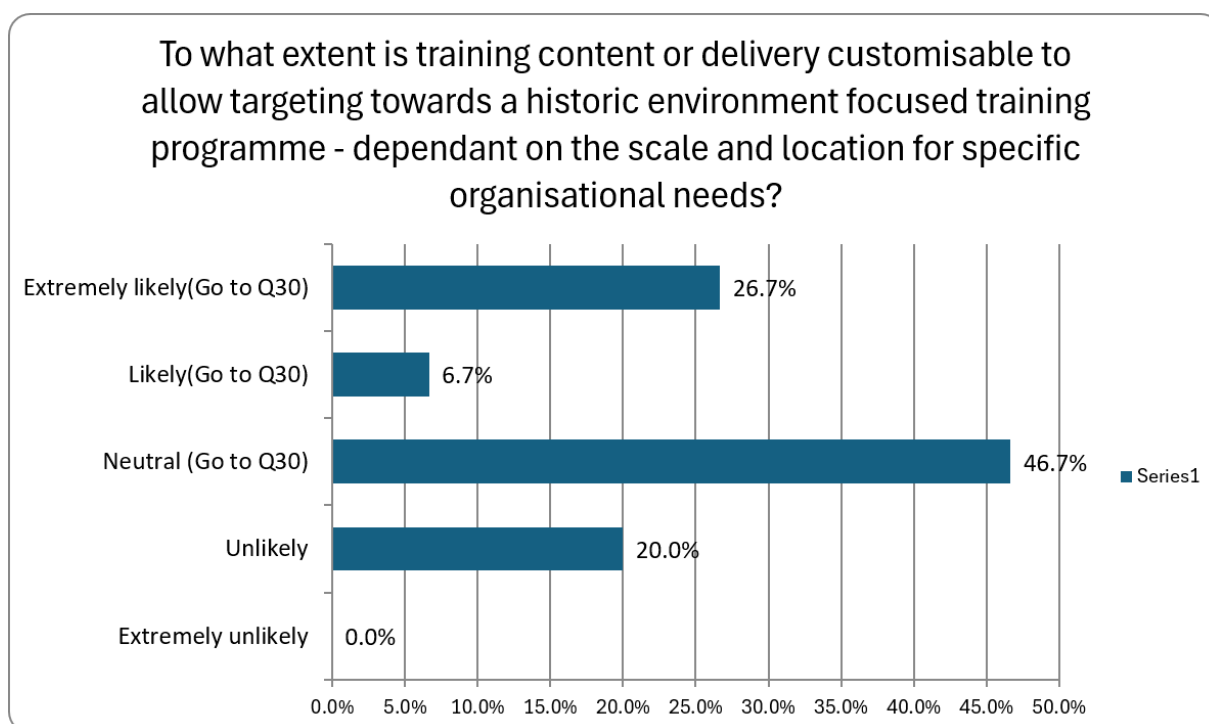


Figure 13 : Overview of responses

4.4.11 Nonetheless, it appears the many providers are only capable of delivering to two distinct levels (small to medium). Suggesting, while some training providers may focus on specific segments, the context highlights that for small and medium employers (including those in rural areas) may often face limited opportunities to access. Yet, these levels are interlinked, denoting the need for a balanced analysis, when deciding on the type of climate action training that considers the strategic picture alongside specific individual and organisational needs.

4.5 Summary

4.5.1 The overall picture concerning the existing provision of climate action training currently available to the historic environment sector, is a divergent one. As the survey data suggests, there appears to be a disconnect on multiple levels, ranging from a delivery and demand disconnect (e.g. between energy, and carbon management, building performance evaluation and retrofitting, given their inherent interrelated relationship) to courses' targeted at differing levels of experience as a "one-size-fits-all approach" to training providers experiencing skills gaps and the specific changing climate skills needed to deliver courses effectively.

- 4.5.2 Moreover, training providers face increasing external pressures potentially having an adverse effect on operational or financial measures. As such, to circumvent these challenges in some ways digital and flexible learning options are gaining traction, reflecting the pattern that flexible, self-paced learning is being championed.
- 4.5.3 Despite these apparent disconnects, and training provision challenges, the data suggests the need for a balanced analysis, when organisations are deciding on the type of climate action training required. By considering their organisational strategic picture alongside specific individual, workforce and organisational needs they can either ensure that training delivers tangible, observable results that can be assessed against specific business or educational metrics or is aimed to provide a broad intellectual understanding or compliance without requiring demonstrable behaviour change.
- 4.5.4 It should be centred on ensuring adoption of best practice, enhancing culture, and engaging with climate action specific training, targeted towards roles as opposed to being driven by economics and coordination.

5 Interview/Workshop Findings/Discussion

The following section describes the findings of the research: using a thematic approach considering data that was gathered across all the interviews. Several key issues were cross cutting throughout the interviews, although the approaches and thoughts about these issues was varied. It is as important to state the differences and divergences in the experiences and opinions across the sector, alongside the similarities

5.1 Introduction

5.1.1 In parallel to the methodological climate action skill training provision scoping review, and the survey analysis of desk-based identified organisations providing climate action. A series of individual and group based semi-structured interviews were undertaken (10 number in total) along with a workshop with key historic environment stakeholders' (6 number in total) surrounding their opinions, perceptions, needs, and the behaviour of the current system provision (see Table 12).

<i>Respondent</i>	<i>Role</i>
RA	Head of Skills and Development
RB	Senior Net zero manager
RC	Director
RD	Skills Manager
RF	Senior Sector Development Adviser
RG	Training Manager
RH	Senior Policy Lead
RJ	Climate & Nature Development Manager
RK	Senior Policy Lead
RL	Training Manager
RM	Head of Climate Change
RN	Technical Research
RP	Science Manager
RQ	Climate Change Policy
RS	Skills Planning Manager
RT	Skills Planning Manager

Table 12: Profile of Interviewee

5.1.2 To enable relevant themes and emerging concepts to materialise during the interview process; an interview guide was produced - which provided a roadmap of research questions (RQ) surrounding four main areas of discussion: (1) training provision key challenges, barriers, obstacles and drivers that prevent relevant Climate Action skills training within the Scottish historic environment sector; (2) skills gaps and needs preventing organisations from putting a greater emphasis on climate change impacts, risk and adaption requirements; (3) awareness of the overarching strategic, operational, financial and resource needs; and (4) identify opportunities and suggest recommendations (i.e. leverage point identification across the training system). The entire interview question guide is in Appendix D.

5.1.3 Based on the data outputs, seven fundamental strategic themes emerged from the thematic content analysis of the data captured across all four research questions, as illustrated in Figure 14.

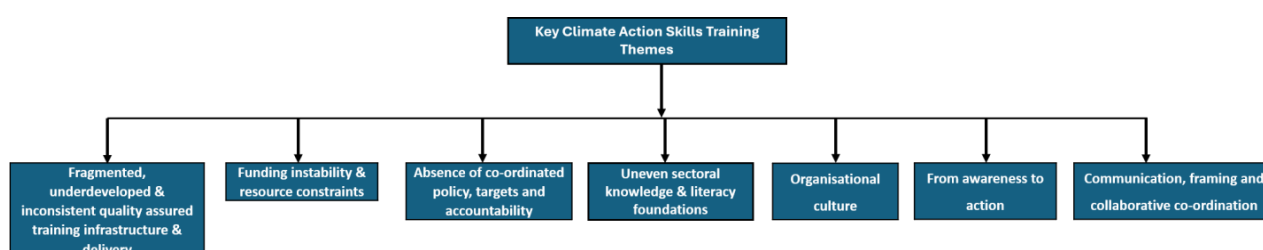


Figure 14: Thematic Framework of Strategic Themes

5.1.4 From the thematic analysis, there was a consensus among the participants, that the theme of ***Fragmented training infrastructure & delivery*** was a fundamental area that required addressing, closely followed by ***an absence of coordinated policy/targets***, with ***uneven knowledge/literacy foundations***, ***organisational culture (reactive vs. leadership-led)*** emerging as the next most, followed by ***funding instability & resource constraints***, ***communication, framing & coordination***, and ***awareness to action*** (see Table 13). The findings and a subsequent discussion of each key theme and sub themes categorisation now follows.

Overarching Theme	Count
Fragmented training infrastructure & delivery	16
Absence of coordinated policy/targets	10
Uneven knowledge/literacy foundations	9
Organisational culture (reactive vs. leadership-led)	8

Funding instability & resource constraints	7
Communication, framing & coordination	7
Awareness to action	7

Table 12: Overarching Theme Count

5.2 Key Climate Action Skills Training Issues

5.2.1 In the interviews (10no.) and single workshop (6no. participants), several challenges, obstacles, barriers, and drivers emerged, with a total of fourteen key issues identified, which were classified under six key themes, deemed the broader cross-cutting strategic sector issues. The issues ranged from the sector having an underdeveloped training infrastructure, to a lack of coordinated leadership, harmonisation, and policy direction, to translating complex knowledge into practical implementation (see Figure 15).

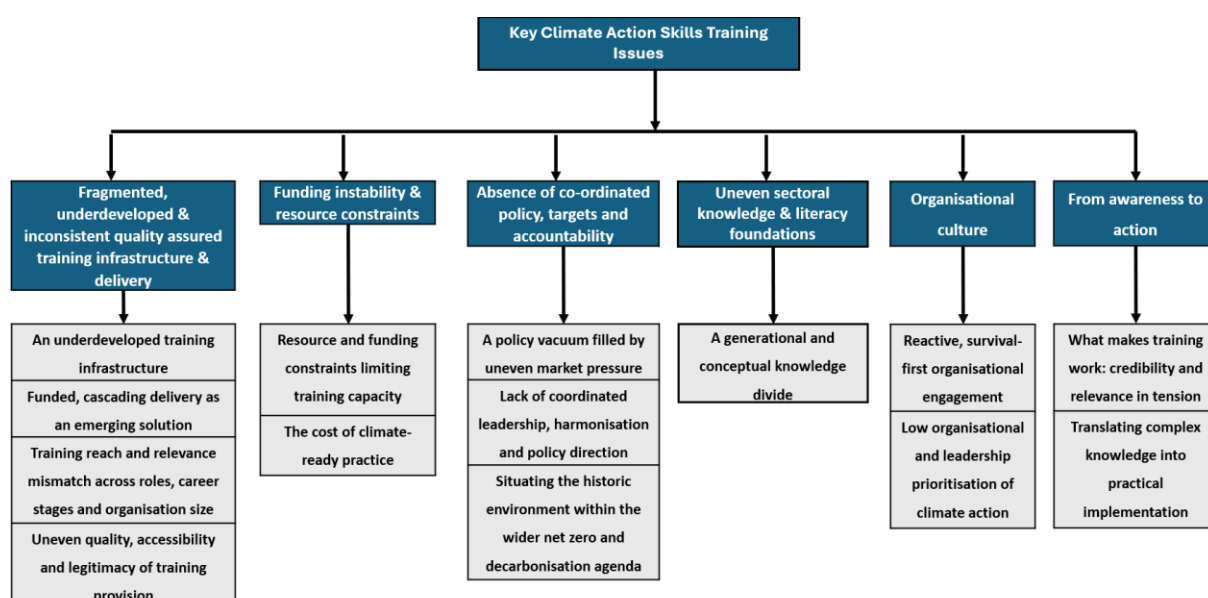


Figure 15: Thematic Framework of Key Climate Action Skills Training Issues

5.2.2 The replies from the respondents, suggest that they had a consistent idea amongst their own group of the key issues facing climate action training provision (see Table 13), and were consistent in their view that two of these issues were major concerns.

5.2.3 Namely: (1) Training reach and relevance mismatch across roles, career stages and organisation size; which impacts heritage organisations of all scales and denominations, in their aim to help meet their climate related business and project objectives; and (2) What makes training work, i.e. how does training become effective, given it need to satisfy two conditions that sometimes pull in different directions: formal legitimacy (standardisation,

accreditation, etc.) on one hand, and practical, role-specific relevance, on the other, suggesting potential tension in CPD credibility and relevance.

RQ1-Strategic Overarching Theme	Examples
Fragmented, underdeveloped, and inconsistently quality-assured training infrastructure and delivery	<i>“We would want to see something like a formal framework that can be mapped to national occupational standards. So that if you are attending a CPD course it adds a little bit more formal structure to how people are learning.”</i> <i>“We look at current training solutions and commonly, they lack industry recognition, they lack accreditation, and ask ourselves what's the reliability of this provision... it actually stops organisations from procuring training because they really don't know what targeted quality training looks like”</i>
Funding instability and resource constraints	<i>“For us, the biggest issues are taking a day off work to come & undertake training, coupled with the cost of training and its Initial/upfront costs function as a major deterrent ('turnoff')”</i> <i>“The current ad hoc short termism funding approach kind of hamstrings everything that needs to be achieved”</i>
From awareness to action: translating knowledge into embedded, practical delivery	<i>“Translating complex, specialist climate/sustainability vocabulary (e.g. scope 1/2/3, upstream/downstream) into accessible content for non-specialist heritage organisations is key for us.”</i> <i>“The sector continually takes a static rather than dynamic/adaptive approach to skills development”</i>
Absence of coordinated policy, targets, and accountability, filled by market- and client-led pressure	<i>“We see first-hand the inconsistent prioritisation/value placed on climate skills across Scotland, which we view as key to limiting progress.”</i> <i>“It seems to be a system issue, as such a top-down, bottom-up approach is required as opposed to this sort of percolating from the top.”</i>

Organisational culture	<i>"It appears as though in many organisations there is a constant tension between the need for reactive, low-prioritised engagement versus emerging leadership-led and grassroots change"</i> <i>"No organisation has come to me, saying we've got this sufficiently robust, measurable, specific sort of criteria around actually their workforce development surrounding climate action training never"</i>
Uneven and generational knowledge and literacy foundations	<i>"there's a lot of technical obstacle & barriers, but I think that the biggest ones are lack of knowledge or understanding of what it actually means to kind of transition the sector or what climate skills really are, what that looks like."</i> <i>"The phrase lifelong learning, seems to be banded about and I think we're starting to see early or emerging career people in terms of their understanding, whereas the more advanced or mid to late career people have limited understanding"</i>

Table 13. Key Interview Themes and Interview Extracts

5.3 Skills Gaps and Needs

5.3.1 Regarding skills gaps and needs, the interviews/workshop revealed that organisations seemed to differ in terms of their perception of the key skills disparities in terms of climate action training provision and actual role specific practice. Offering fifteen interrelated gaps and needs, such as the inherent gap between theoretical and practical training, or the fragmented understanding of the need for connected, systemic knowledge across all levels and roles. These were classified under four key themes (see Figure 16), deemed the broader cross-cutting strategic sector issues.

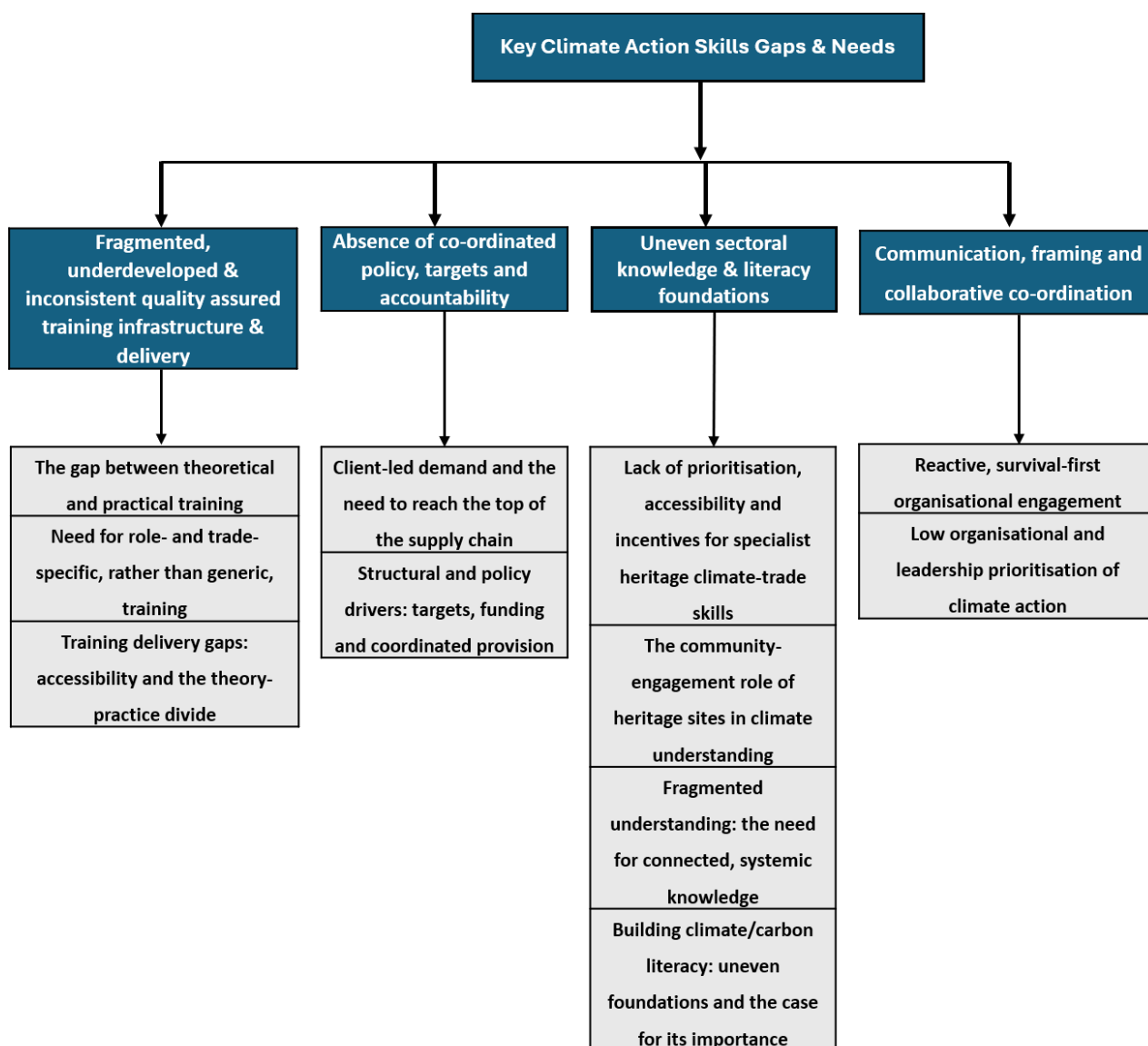


Figure 16: Thematic Framework of Key Skills Gaps and Needs

5.3.2 Regarding the former, the differences lay in their own organisational training strategies, the scope of available climate action training, the duration and availability of these courses throughout a given programme of study, and in their relevance to the subject matter expertise of their workforce (see Table 14). Moreover, the skills gaps and needs, are further compounded by the shifting legislative landscape and the complex and fragmented landscape of the historic environment sector.

RQ2-Strategic Overarching Theme	Examples
Fragmented, underdeveloped, and inconsistently quality-assured	<i>"I think it's really hard to find a trainer that knows the heritage sector and understands the heritage sector in the context that</i>

training infrastructure and delivery	<i>we work in to deliver relevant training for us as heritage people.”</i> <i>“Technical barriers exist, but the primary barrier identified is lack of knowledge/understanding of sector transition and climate skills”</i>
Absence of coordinated policy, targets, and accountability, filled by market- and client-led pressure	<i>“We don't have the models currently to really allow that transferability of skills, ensuring that people can fluidly pick things up.”</i> <i>“I think given the chop and change of policy in Scotland and out with Scotland in from UK government – this policy instability undermines employer confidence to invest in climate-related skills training.”</i>
Uneven and generational knowledge and literacy foundations	<i>“I think Skills/knowledge gaps need framed as sector-wide rather than individualised, spanning multiple topic areas (climate impacts/risk adaptation, energy/carbon management, sustainable tourism, circular economy).”</i> <i>“It's trickier for people to really learn the skills and retain the skills, because I think if you're doing all these workshops, learning these climate skills, if you're not actually putting them into place, it doesn't seem worth it.”</i>
Communication, framing and collaborative coordination	<i>“Ambiguity in defining 'the sector' and differing training needs (e.g. technical retrofit vs. low-carbon business models).”</i> <i>“Changing practices and establishing new norms takes time; this should be about change of behaviour and the processes needed”</i>

Table 14. Key Interview Themes and Interview Extracts

- 5.3.3 The respondents identified skill gaps in general awareness, organisational leadership, communication. Adding substantial technical skills are needed across the practical delivery chain. While climate financial literacy, business case development, and risk/adaptation assessment are identified as needed skills for reframing climate action as a core, strategic, financially literate part of running an organisation rather than a fringe concern including

working with clients, communicating climate action plans, engaging communities, and driving behaviour change. Moreover, many respondents indicated that the core need is for systems thinking, not just specific skills. Suggesting *“training should focus on how to think about complex problems (e.g., long-term values, decision-making under uncertainty), not just providing niche technical answers.”* These areas recur both as a description of the problem and as a specific, named training need.

- 5.3.4 Skills gaps and needs cannot be “solely plugged” as described by several respondents alike, by an increase in the training provision, individually given the intrinsic link to skills shortages across the sector. Especially given climate policies, and heritage organisations observed do not have robust, measurable, specific workforce development criteria for climate action training. Training is frequently either high-level theoretical or overly generic, and knowledge is quickly forgotten unless embedded in practical, field-based application; there is a felt need to 'bridge' theory and practice rather than treat them as separate skill gaps.
- 5.3.5 For a climate curriculum to be relevant for the historic environment sector, it must have high applicability, either for practice or job role, and ideally for both. A curriculum which lacks relevance and hence does not support practice or job role goals, would clearly be unfavourable. Moreover, there is an important caveat when it comes to assessing sector relevance. Organisations should carefully look at the “heritage practice or role,” and not just at the climate change impact at large, by assessing their significance for the ten climate action functions as defined by this research. Failing that, certain occupational profiles and training offerings which are highly relevant to historic environment sector, but less so commercially, could easily be overlooked and ultimately become extinct.
- 5.3.6 Identifying and addressing these gaps involves a structured organisational skills gap analysis to pinpoint specific competency deficiencies, followed by a training needs assessment to determine appropriate interventions. Primary strategies to close gaps include upskilling and reskilling existing staff and adjusting working practices. Proactive assessment is critical, as heritage organisations that regularly evaluate their climate action skill needs are significantly more likely to identify and mitigate these gaps, whereas those who lack robust assessment mechanisms, will continue to be unaware of their status and engage in reactive ad-hoc training interventions.

- 5.3.7 However, adopting broader criticality systems thinking approaches, as a core skill as part of climate action training will support understanding the interconnectedness of climate resilience, allowing organisations to not only frame where they are positioned within the historic environment ecosystem but also enable widespread horizon scanning.
- 5.3.8 Suggesting, in reality, to truly realise a suitably skilled workforce and long-term planning of resources to meet policy and sector requirements; perhaps adopting a holistic interdisciplinary approach to practice and training, is a way of providing a path-way for the workforce to not only gain the necessary skills and knowledge needed to achieve successful climate mitigation and adaptation, but also circumvent the existing deficiencies in the specific training provision shortages, in order to support improvements in organisational needs.

5.4 Strategic, Operational, Financial and Resource Needs

- 5.4.1 With regards, the participants understanding and perspective about the overarching organisational/business strategic, operational, financial and resource needs required to drive Climate Action skills training within the Scottish historic environment sector. They suggested twelve key areas, ranging from joined-up strategic planning and systems thinking to embedding climate responsibility within operational plans to funding as a critical enabler to tailoring training provision based on a role-specific rationale. These were classified under six key themes (see Figure 17), deemed the broader cross-cutting strategic sector issues. The perspectives of the sixteen sector experts demonstrated they have a coherent idea amongst their own organisation's evaluation of the importance of these various needs (Table 15).
- 5.4.2 However, despite this range of organisational/business needs, there were two key fundamental demands, in one form or another, which consistently scored the highest, during both the interview sessions and the workshop with the respondents, namely, *co-ordination and collaboration (from internal working groups to sector-wide systems thinking)* and *structured, reusable and scalable training delivery*. Many participants stressed the organisational need for high-quality learning to grow climate related skills without linearly increasing cost or administrative workload was inextricably linked to the key need for sector communication and collaboration and from their perspective both were of equal standing, as such, these two key fundamental needs are discussed.

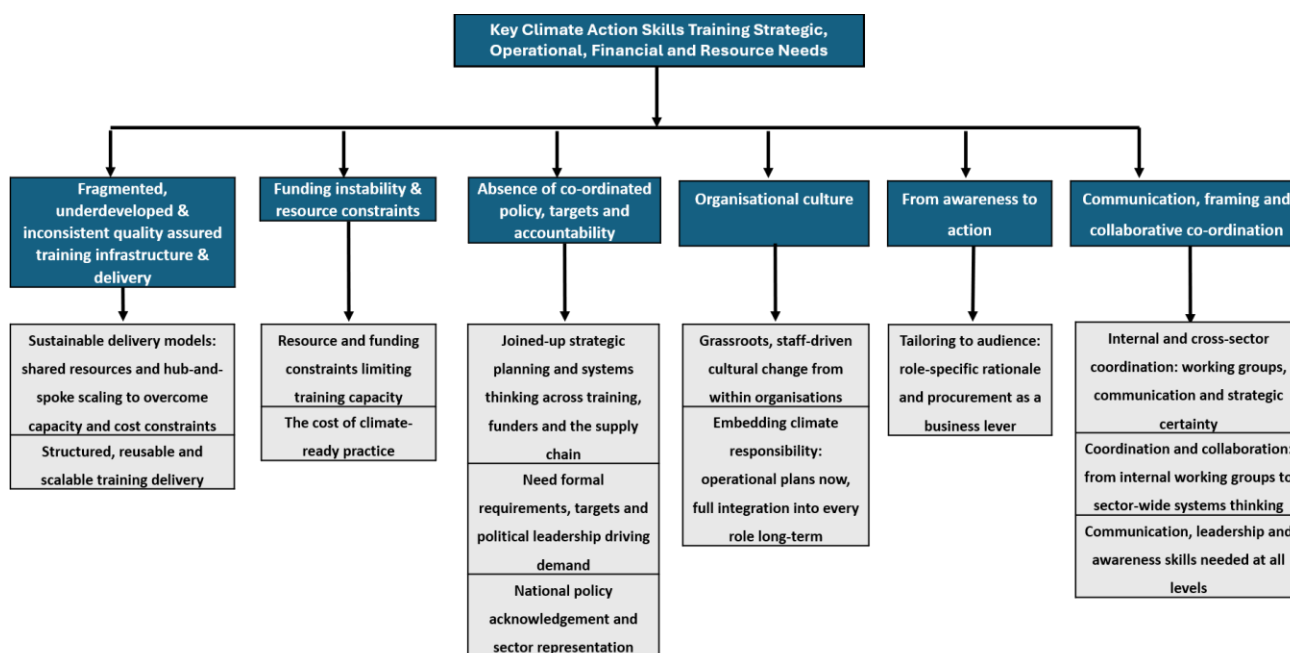


Figure 17: Thematic Framework of Key Strategic, Operational, Financial and Resource Needs

RQ3-Strategic Overarching Theme	Examples
Fragmented, underdeveloped, and inconsistently quality-assured training infrastructure and delivery	<i>"We need to develop a network or community around this subject area where we could be sharing good practice, training opportunities, and training resources."</i> <i>"For us, we need training sustainability, if a lead organisation was able to develop or just take what others have developed and tailor it our sector - sort of almost have it sitting there as a framework that then different heritage organisations could just come and pick off the shelf, I think that would be a very sustainable way of delivering it."</i>
Funding instability and resource constraints	<i>"We can't always keep going asking back for more investment monies, we need to be a little bit more innovative in the approaches "</i> <i>"I think in terms of finance, the expensive part of it is always in that development, that R&D phase, that's the biggest cost when we're ever doing training and CPD development."</i>

Absence of coordinated policy, targets, and accountability, filled by market- and client-led pressure	<i>"Needs to be more collaborative frameworks and guidance created. So, for example, kind of have shared targets or shared metrics and standards that kind of meet all the goals."</i> <i>"It is feasible or tangible to set objectives and targets for the supply chain, the professionals, the contractors, and potentially internally in an organisation. I think forward planning is a huge part of it."</i>
Organisational culture	<i>"It's typical to take a reactive, survival-first organisational approach, however we need sustainability-driven change to be increasingly emerging organically from within organisations, rather than solely imposed top-down"</i> <i>"Individually and collectively as organisations, we need to embed climate responsibility within operational plans now, with full integration into every role long-term."</i>
From awareness to action: translating knowledge into embedded, practical delivery	<i>"We have our Climate Action Working Group, which means every couple of months we're talking there about sort of creating some toolbox talks."</i> <i>"The sector needs tailored training towards role-specific rationale and use the procurement process as a business lever towards training credibility and relevance"</i>
Communication, framing and collaborative coordination	<i>"Yet really, it is about that communication piece, how you talk to external colleagues, and external stakeholders about the threat"</i> <i>"Opening our horizons within the heritage sector so it's not just within and having a more wide, extensive approach to it."</i>

Table 15. Key Interview Themes and Interview Extracts

5.4.3 In terms of co-ordination and collaboration, participants noted that this key need was also a continual issue within the sector. Yet, from the responses given, which provides evidence, to the belief, that there is potential and opportunity, to adopt a stronger perspective on pro-active communication and collaboration, will in turn create a better appreciation of sector harmonisation, co-operation and sharing of resources. Hence, for high-quality

climate action training delivery and provision improvement there must be a move towards a strategic call for the whole sector to adopt joined-up, systems-integrated thinking and shared standards, while still respecting that “no one size fits all.”

- 5.4.4 Concerning structured, reusable, and scalable training delivery, based on the comments and attitudes from the interviews and workshop, the emergent discourse illustrated that most participants involved in climate action training, currently tend to source provision from scratch each time its required. Although there are individual organisations who pro-create and build their own internal training offerings. Indicating there is an opportunity to co-design training, whereby relevant domain specific historic environment organisations partner to develop training that directly meets their needs.
- 5.4.5 As such, many participants indicated their preferred delivery approach would favour several options such as off-the-shelf resources, hub-and-spoke models, and structured, role-specific training routes. Suggesting the need for skills training routes and pathways, replacing the current ad hoc approach to staff training. This in part, could explain why it was not an increase in the amount of training delivery and/or provision that was required but a raising of dedicated climate-specific roles to drive action, to achieve the collective, combined training delivery performance objectives of time, cost, technical relevance and quality, all within a context of an existing training model, such as the current Historic England model (i.e. Climate Change and the Historic Environment programme), centralised and adapted towards nation-specific guidance for Scotland.
- 5.4.6 However, many participants felt the longer-term goal should be embedding climate responsibility into every job rather than requiring specialist roles and training. Adding that “peer learning and sharing failures are critical.” Indicating, that practitioners need safe spaces to discuss challenges and learn from "maladaptation" (mistakes), given they are rarely documented but offer the most valuable lessons.

5.5 Opportunities and Recommendations

- 5.5.1 In terms of opportunities and recommendations, the participants, despite organisational differences in needs and scale of training interventions. Overwhelmingly agreed that while to some extent the current “strategic” approaches to training, in essence, were somewhat effective and pertinent to undertake. There are opportunities to create a robust set of organisational strategies that build upon the existing OPOF and [SIP](#). They offered sixteen

options (see Figure 18), remarking that it was difficult to separate these from either being an opportunity or a recommendation.

- 5.5.2 Nonetheless, the responses provided ranged from “ensuring effective training design” to “utilising policy and procurement levers to drive training uptake,” to “addressing inconsistent terminology, moving beyond binary “climate crisis” messaging,” to “safeguarding sector certainty/confidence that training funding and direction are secure long-term” (see Table 16). Such from the thematic analysis, despite this difficulty, there was a consensus among the participants, that they were deemed the broader cross-cutting strategic sector issues under five key themes (see Figure 18).
- 5.5.3 Given the consensus of participants, they alluded to two key fundamental prospects/suggestions, namely: (1) improved collaboration, communication, and framing alongside (2) efficient, scalable, and sustainable delivery. With regards the first key option, respondents collectively positioned as central to overcoming the skills crisis — from shared foundational knowledge models and diverse delivery formats, to pooling resources and addressing organisation-specific blockers, to leveraging HES's existing training reputation — but is held back by the sectors siloed territorial resistance and requires a dedicated, consistently-used space to become genuine rather than superficial.
- 5.5.4 Implying there is a demand for the major heritage sector bodies to come together to conduct research and develop strategies for addressing these needs. For example, English Heritage along with over 20 other organisations established the [Historic Environment Forum \(HEF\)](#) Green Skills in Heritage Task Group to connect heritage jobs/careers to the green jobs market, and to understand, gather evidence and seek to stimulate demand of the breadth of green skills required by the sectors.
- 5.5.5 However, this group only operated between December 2023 to December 2024, and as such, despite its good intentions (provision of **mapped green skills needed for sustainability**, delivery of a **Regional Skills Symposium** in Norfolk, commissioned **net zero investment research** and contributed to the **Heritage Sector Resilience Plan**). The limited window impacted the overall success, longevity and scalability of the group's delivered outcomes.
- 5.5.6 Concerning the second key opportunity/recommendation, while many respondents collectively challenged the lack of a cohesive, collective, and structured approach to training provision. They were steadfast in their perceptions that to better meet not only environmental

goals but to also align with social and economic ambitions. The preferred path to efficient, scalable delivery is licensing and adapting content that already exists across the UK, ensuring delivery partners are genuinely competent and cost-effective, and helping people navigate and signpost the substantial training that already exists via a single authoritative organisation or directory.

- 5.5.7 Interestingly from their viewpoint, they alluded that potential resistance to their perceptions centred more on the economics and coordination of implementing a new strategic approach or model, as opposed to communication, collaboration, and transparency. Suggesting, collaboration, and communication can be framed as the central solution to the skills crisis by jointly developing shared cross-subsector content and toolkits within Scotland, and addressing the current lack of a network or community for sharing good practice
- 5.5.8 Moreover, in terms of the opportunities and recommendations made, there were several valid points raised, particularly, that to better meet environmental ambitions. The historic environment CPD training system, organisations, employers, and policy makers requires several key needs such as harnessing “Big data” to identify future skills needs, monitor the outcome of CPD interventions, to ensure as the CPD system strengthens identify CPD courses at risk of being curtailed and seek to integrate innovation and technology in CPD delivery and provision.
- 5.5.9 Best practice climate action training, therefore, should meet certain minimum requirements on content, delivery, and duration. Intimating those potential future frameworks and standards development, should focus on competency development, educational pedagogy, and technical skills measurement. However, this needs to be balanced against accreditation and quality control (especially around climate resilience-critical content), supported by tools like a self-assessment instrument for measurable competency and clearer signposting of which training is reputable and genuinely matched to role-specific needs.

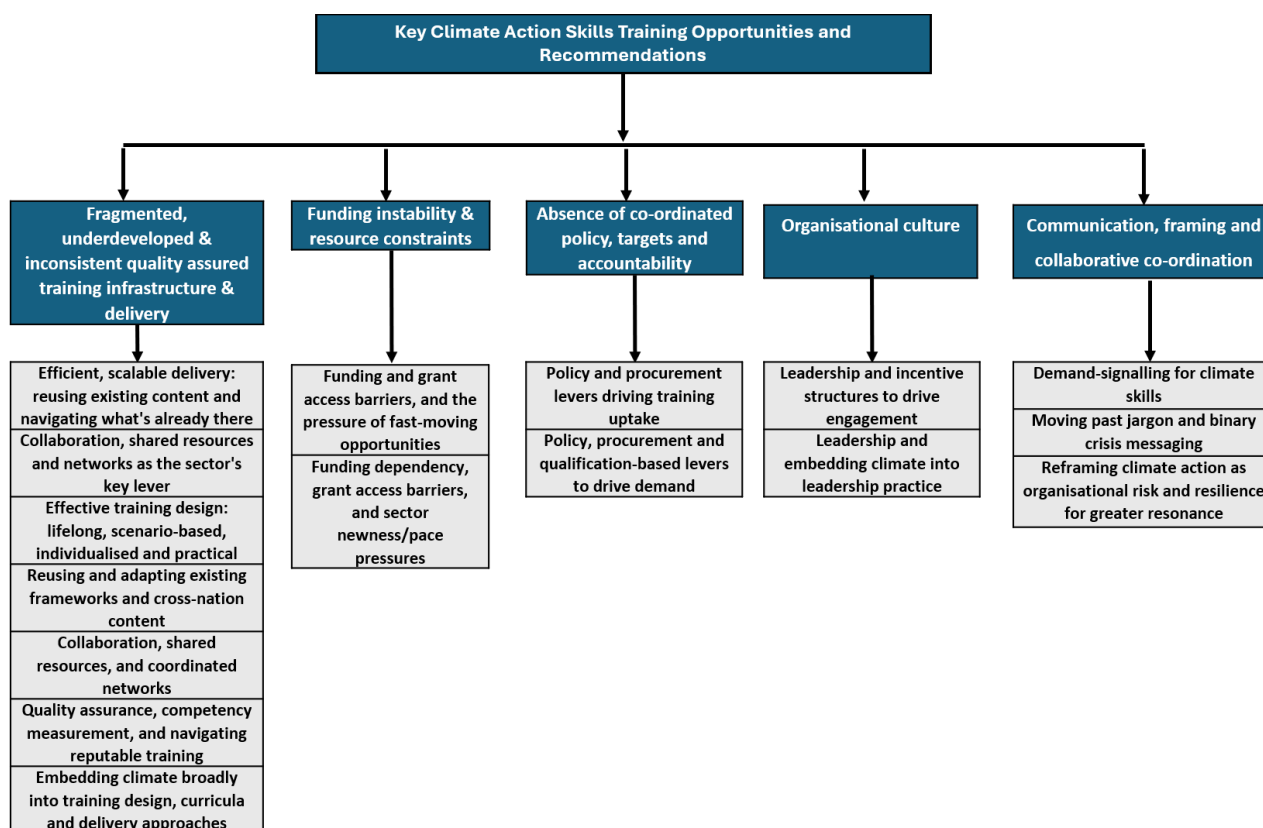


Figure 18: Thematic Framework of Strategic Themes

RQ4-Strategic Overarching Theme	Examples
Fragmented, underdeveloped, and inconsistently quality-assured training infrastructure and delivery	<i>“Rather than building new provision from scratch, we can re-use existing content and navigate what's already there, and look to develop or adapt an existing framework into shared, off-the-shelf sector resources”</i> <i>“Normalising lifelong learning given how fast climate knowledge evolves, and building scenario-based, interactive, individualised and practical (typically short) training.”</i>
Funding instability and resource constraints	<i>“Concrete mechanisms for driving climate skills uptake including things such as anticipated competence requirement changes, tying circular economy skills to procurement incentives to reward skills development.”</i> <i>“Provide long term funding in general, for not only technical skills, but also for innovation - kind of having new ideas and new goals and new collaboration will make a difference.”</i>

Absence of coordinated policy, targets, and accountability, filled by market- and client-led pressure	<i>“Harnessing “Big data” to identify future skills needs, as well as monitor the outcome of CPD undertakings individually and organisationally”</i> <i>“It's trickier for people to really learn the skills and retain the skills, because I think if you're doing all these workshops, learning these climate skills, if you're not actually putting them into place, it doesn't seem worth it.”</i>
Organisational culture	<i>“Visible senior leadership action is undoubtedly key to driving sector buy-in, alongside embedding climate-related leadership financial skills.”</i> <i>“With individual motivation to engage in climate skills training depending heavily on visible leadership commitment and incentive; senior executives must undertake training themselves and when reinforced through internal communications, staff buy-in follows”</i>
Communication, framing and collaborative coordination	<i>“Simplify language and diversify communication approaches beyond direct 'climate crisis's framing”</i> <i>“Embedding climate visibly into job descriptions and all business-as-usual updates (not just awareness) and using clear signalling and understanding of 'the why' to build genuine demand.”</i>

Table 16. Key Interview Themes and Interview Extracts

6.0 Actionable Recommendations

Upon conclusion of this research study, the project team proposes the following five actionable recommendations, which align with and support the delivery priorities of [Our Past, Our Future](#) – the Strategy for Scotland’s Historic Environment (OPOF) and the [Skills Investment Plan SIP](#), as well as needs identified via the SIP Employer Skills Survey 2025.

6.1 Action 1 - Build Climate Confidence: Grow Literacy, Anchor Values, and Think in Systems

Evidenced by the findings from the interview series, and to some extent both the survey and the scoping review of currently available sector specific training. The overall picture concerning the existing provision of climate action training currently available is a divergent one, which has a disconnect on multiple levels. **Action 1 focuses on three interconnected areas: building climate confidence by growing climate literacy, through promoting a value-driven approach, by developing a systems thinking mindset, to secure widespread individual and organisational buy in.**

Motivating heritage-based organisations, businesses, and workforce to engage in and value climate action upskilling and reskilling requires increased climate literacy. As well as structured, role - specific training routes which includes not only a basic awareness of climate change, but also local and regionally specific climate risks and impacts (direct, indirect, complex, and cascading), along with action mitigation and adaptation basics. Further there is a need to understand and apply systems thinking to a range of climate adaptation issues and opportunities, including potential or existing strategies, initiatives, and policies.

Potential Tactics:

- Organise a federated working group, potentially led by Historic Environment Scotland (HES), that includes various historic environment related partners such as professional, educational, training (public and private) and sector bodies, organisations, and institutions to explore options, opportunities, and incentives to advance cross-sectoral collaboration.
- Launch nationwide climate action training campaigns, highlighting the business and economic advantages of integrating climate action competencies and/or creating climate-related roles.
- Develop and support access to climate action training courses and resources that are free, adaptable, and accessible, and support enhanced and widespread climate literacy.
- Develop a systems thinking framework that aims to bridge the "knowledge-behaviour" gap by developing self-efficacy, collaborative and horizon scanning skills to support actionable climate action knowledge while acknowledging the need for a cumulative, iterative, and coevolutionary process rather than static outputs.

6.2 Action 2 - Unite Stakeholders to Build Clear, Confident, and Consistent Frameworks

Evidenced by the findings from the interview series, combined with the survey and the scoping review findings. ***Action 2 focuses on the sector adopting a collaborative approach to developing training frameworks to enhance consistency and confidence.***

All key stakeholders affected by climate action workforce development initiatives (heritage organisations, training providers, employers, and workforce) will benefit from additional consistency, certainty, and transferability regarding (a) what specific short-duration training credentials represent, and (b) what specific competencies are needed (including how they might be assessed), both generally and for specific sectors or industries.

Potential Tactics:

- Create a national framework that clearly defines the diverse types of short-duration programs, supports credential mobility, and has mechanisms to recognise prior learning to further validate the new skills acquired.
- Validate, refine, and publish a climate action competency framework that can be used to inform competency-aligned, CPD climate action-related education, training, and initiatives.
- Draw from and extend existing climate action competency frameworks to develop and publish sector-specific competency frameworks, prioritising key sectors (e.g., archaeology, museums, built heritage etc) using recognised processes and structures for open competency frameworks to support consistency across these frameworks.

6.3 Action 3 - Reinforce Collaboration, Communication, and Governance for Unified Sector Alignment

Evidenced by the findings from the interview series, and the sporadic availability and distributed nature of training providers.

Action 3 focuses on and builds further on the sector increasing its current successful attempts to collaborate, through more formally aligned and governed communication channels. However, this action poses some challenges related to the how best to coordinate initiatives to maximise accessibility, efficiency, and unnecessary duplication, such as how to support the portability of CPD, and how to address skills gaps within an ever-evolving subject area.

Potential Tactics:

- Explore and foster partnerships between private training providers, FE & HE institutions, third sector organisations, professional bodies, national heritage bodies, climate change institutions, education and training bodies (e.g. SDS), and employers, to create a coordinated approach to climate action capacity building.
- Investigate the potential of attempting to have a singular organisational driver/convenor and/or multiple smaller drivers/convenors organised by region or sector.
- Create longer-term funding mechanisms and opportunities that support such collaboration, both in determining needs, gaps, and credentials, and in the design and delivery of relevant training and education.

6.4 Action 4 - Pinpoint and Address Emerging Job and Competency Gaps

Evidenced by the findings from the interview series, suggesting the need to harness “Big data” to identify future skills needs, and monitor the outcome of CPD interventions. This combined with the survey data suggesting an apparent disconnect across multiple levels, with many courses’ taking a “one-size-fits-all approach to learning content delivery.” **Action 4 focuses on the need to identify job and competency gaps** stressing effective climate action upskilling and reskilling requires cross-sector, cross-region collaboration and communication.

Workforce development research needs to continue, both through the lens of specific role/job vacancies, and by addressing gaps in climate action skills & competencies across sectors and across roles. To date, limited work has been conducted to identify and develop skills for climate adaptation and for specific historic environment sectors – and the project team recommends additional focus be placed on climate resilience (mitigation & adaptation) specifically.

Potential Tactics:

- Develop or leverage existing mechanisms to facilitate cross-sectoral collaboration and coordination at the national and regional levels, to support the identification of climate adaptation competency gaps, prioritising those that are or will be in high demand regionally, based on climate risk assessments.

6.5 Action 5 - Build and Share Deep, Role-Ready Expertise Across the Sector

Evidenced by the findings from the interview series, particularly the need for clearer signposting of reputable training and genuinely matched to role-specific needs via a single authoritative organisation or directory. There is no one-size-fits all when it comes to upskilling and reskilling initiatives, as different learners, professions, and employers have different capacities, needs, and preferences. **Action 5 builds on Action 4 and focuses on developing and delivering sector and role-specific expertise.** Intimating building a climate-ready workforce will require both general climate action competencies (skills, knowledge, experience, behaviours (SKEBs), and sector- and role-specific climate action competencies. Along with addressing the issues of accessibility (e.g. related to cost, delivery mechanism/modality, timing, etc.), found in the survey data as well as the interview responses

Potential Tactics:

- Engage post-secondary institutions and other education and training organisations in a coordinated response to the job and competency gaps identified above. Ensure that programs address the unique challenges and nuances present for employers within various sectors and/or regions, and that programs offer value in career progression, mobility, and/or readiness for workers.
- Ensure that all upskilling and reskilling initiatives, training, and education include a focus on developing competencies related to collaboration and engagement, including critical thinking, systems thinking, consensus building, conflict management, communication, and effective
- Offer financial support (e.g., bursaries, training grants such as the Stronger BC Future Skills Grant or the Canada-Ontario Job Grant) or proactively subsidise courses, to support more equitable access. Offer incentives to FE & HE institutions and training organisations for the development of climate action-focused credentials. This could and should involve both federal and provincial government incentives.

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Annexes

Three annexes (2, 3 and 4) summarising the available training resources were produced to complement this report. They comprise two spreadsheets and one pdf and can be shared upon application to ourpastourfuture@hes.scot.