Scotland's Draft Climate Change Plan (2026-2040)

Submission for the Scottish Parliament Local Government, Housing and Planning Committee - Professor Sean Smith and Professor Sam Allwinkle on behalf of the Chartered Institute of Architectural Technologists

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Background – The Chartered Institute of Architectural technologists (CIAT)

CIAT leads and promotes the discipline of Architectural Technology; sets and maintains the standards of education through Accreditation of qualifications at Undergraduate Honours and Masters degree level; sets and maintains the standards of practise through professional qualifications, the Code of Conduct and continuing professional development; collaborates with similar bodies to improve knowledge, skills and professionalism within the built environment; and recognises excellence in Architectural Technology through its AT Awards.

Charter & Status: Royal Charter bestowed by UK Government's Privy Council; protected descriptor 'Chartered Architectural Technologist'; Competent Authority for Chartered Architectural Technologists in the EU; principal member of the Association of European Experts in Buildings and Construction (AEEBC); full member of UK's Construction Industry Council; member of the UK Green Building Council (UKGBC).

What is Architectural Technology (AT)? AT is the technology of architecture; a creative, innovative design discipline rooted in science and engineering. As a design function, it relates to the anatomy and physiology of buildings and their production, performance and processes. This is based upon the knowledge and application of science, engineering and technology, which are compliant with regulatory, statutory and legal requirements. Architectural Technology achieves efficient and effective construction and robust sustainable design solutions that perform and endure over time.

Green Economy & the Built Environment: CIAT and its members are critical factors and delivery pathways of the green economy transition for the built environment, through the knowledge and specification they provide whether for net zero new build or retrofit works across all types of buildings.

CIAT is a global body with over 8500 Chartered Members, Associate members, Affiliates and Student members, each linked to a local Region (within the UK) or centre (overseas). Of these, 7,700 are based in the UK. The Institute's two Scottish regions (Scotland East and Scotland West), together have 778 members, including 289 fully qualified Chartered Members (or Fellow Members) and 230 Student members. In addition, there are 128 CIAT Chartered Practices in Scotland.

Background Prof Sean Smith HonFCIAT

Professor Sean Smith is an Honorary Fellow of CIAT, and previously led the CIAT Centre of Excellence at ENU and served on the CIAT Education and CIAT Research Committees. He currently serves on a range of advisory groups and committees for housing, net zero construction, climate change, skills and innovation.

He is Centre Lead for the UKRI Centre for Net Zero High Density Buildings and led the Housing, Construction and Infrastructure (HCI) Skills Gateway for the Edinburgh & South East Scotland City Region Deal. He is programme lead for the MSc on Future Infrastructure, Climate Change and Sustainability at the Edinburgh Futures Institute, University of Edinburgh and Chair of Future Construction within the School of Engineering.

Background Prof Sam Allwinkle FCIAT

Prof Sam Allwinkle is a Fellow of CIAT, Emeritus Professor Edinburgh Napier University, and Chair CIAT Education Board.

He is Chair of Association of Project Safety, Chair Scottish Government Building Standards Competency Steering Group and Member of British Standards Institute Built Environment Competency Committee

Written comments on Scotland's Draft Climate Change Plan (2026-2040)

1. **Overarching Introduction Aspects**

We welcome the 5-year cycle of reporting – given the annual changes in temperature, climate or economic fluctuations that can impact on the accuracy or relevance of short annual cycles of reporting. Also, the time to invest, skill up, deploy and deliver often extends beyond an annual cycle.

The focused structure of the document for the key sectors is also welcomed.

Our evidence below relates specifically to the Built Environment Sector and the aspects of Skills and Consumers.

We have also provided some additional commentary on some other aspects of the consultation document.

Skills & Workforce

2. **Skills Investment**

Skills is mentioned only once in the main document. It is mentioned in other sub-section Annex documents. Skills is a keystone for climate change adaptation and mitigation delivery and it is surprising to see the lack of mention within the main primary paper.

The mention of Skills in other Annex Sections does not state the planned additional investment by Scottish Government to support the growth in skilled workforce required.

A "Climate Change Strategy" can imply future developments. A "Climate Change Plan" would have context, data, investment proposals and pathways. This consultation "Plan" document does not provide sufficient context, investment or pathways to underpin the required skills needs.

Page 22 of the main consultation draft CCP document for "Buildings" states:

> “Growth in clean heating sectors will drive demand for skilled workers, and presents opportunities for upskilling and reskilling the current workforce, supporting a just transition for workers.” [Draft CCP 2025]

It is agreed that a policy to address climate change can and will help “drive demand for skilled workers” – carbon/energy policy alone would not deliver such an outcome.

To deliver the required carbon reductions requires both retrofit fabric changes to the building envelope to improve energy efficiency and also clean heating technologies. To achieve the best outcomes, these changes will need to be designed and implemented holistically, rather than in isolation.

The consultation section focuses on primarily heating and the absence of mentioning “fabric improvements” in the main document to Scotland’s 2.8 million homes and retrofit works required within this key area is concerning.

Many heating technologies and their operational costs are a key factor in terms of fuel poverty, as such the ability to increase the energy efficiency of the building is a key driver to lowering future heating operating costs.

Scottish companies and public sector are concerned about the lack of transparency for Apprenticeship Levy and outcomes of investment, whereas in England organisations can see or spend such funds, although the different system in England has also come under scrutiny.

It is recommended that given the scale of the workforce needs for the built environment sector for buildings, electrical infrastructure, transport EV, future data centres and energy storage infrastructure – that Scottish Government provides a wider holistic ring-fenced pipeline of investment funding to support the “green economy skills transition”. This could include short training courses, such as for welders for district heating pipework systems, project management skills for offsite construction and logistics which enhances sector productivity and delivery. Such an investment should be part of the Climate Change Plan.

3. Skills Structures, Attracting and Delivery of Workforce Required

CIAT welcomes the Scottish Government support to apprentices and graduate apprenticeships across Scotland’s colleges and Universities. CIAT worked closely with Skills Development Scotland and Scottish Government in the establishment of the Architectural Technology Graduate Apprenticeship Scheme. However, such crucial areas of apprenticeships and graduate apprenticeships is not mentioned in the consultation OR plans to grow the workforce numbers required.

The current (soon to be finished) excellent support, skilled workforce outcomes and funding model by Scottish Government via the Edinburgh & South East City Region Deal via the HCI Skills Gateway is not mentioned in the draft document – linking across Universities, Colleges, public sector and private sector. This is a very productive skills investment model which could be expanded across Scotland’s regions focused on workforce short courses and upskilling.

Architectural Technologists (AT) will play a crucial role in the specification of new build and retrofit of buildings to achieve net zero.

It is estimated that the current AT number of graduates would need to triple to meet the required delivery for the climate change plan.

It is recommended that the number of architectural technology graduate apprenticeships in Scotland is tripled to underpin Scotland's Climate Change Plan.

Over the past 4 years many of Scotland's colleges have reported an upsurge in applications for built environment sector trades and skills courses. But due to lack of investment there are insufficient places available to meet demand.

The Energy Training Academy (ETA) in Dalkeith, Midlothian is a state-of-the-art training facility to support the built environment low carbon transition. Primarily funded by industry and especially SMEs, such skills training academies struggle to source government funding, but yet they directly link to employers and Scottish companies.

It is recommended that to support the skills pipeline Scottish Government should offer "Skills Framework Funding Programmes" of 3-4 years to leverage existing industry training infrastructures, align government investment to its priorities and accelerate the required workforce growth and needs.

4. **Scale of Workforce Required**

The draft proposal mentions Jobs in the clean heat sector from a 2024 study:

> "Jobs: A study in 2024 identified 470 companies with 8,300 direct employees in the Scottish Clean Heat Sector, across activities including professional and consultancy services, manufacturers and suppliers." [Draft CCP 2025]

Again the focus of the area of jobs and skills is confined to heat only. As mentioned in Section (2.e to 2.h) in this submission the focus should be more holistic and encompassing to include the skills and workforce required for fabric improvements.

It is recommended that all professionals working in the sector are supported and upskilled to understand how their role contributes to wider delivery of a low carbon built environment.

In a recent study funded by Innovate UK for South East Scotland investigating the workforce and skills needs for the sector by the University of Edinburgh and West Lothian College (Smith & Earp 2025) the following key aspects were identified:

- 1 in 3 of all Scotland's future construction workforce over the next 15 to 20 years will be in south east Scotland.

- SE Scotland is dependent on 20,000 'daily' transient construction workforce mainly from North Lanarkshire and west of Scotland (see Figure 1)

- If the scale of retrofit and construction work increases in other areas of Scotland, then SE Scotland would be exposed to a reduction in transient workforce.

- In addition, as the retrofit workload for SE Scotland increases it will have to shift from 8,000 to min 21,500 by 2035, OR up to 34,000 by 2035, dependent on the fabric and heating technologies specified. (see Figure 2)

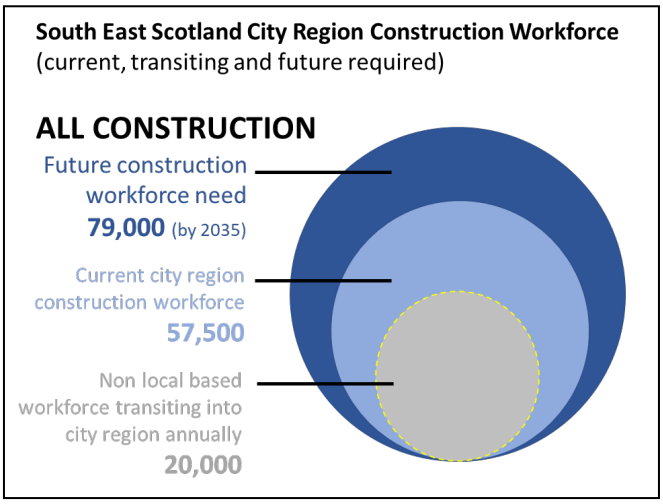

Figure 1: Forecasted total construction workforce need for south east Scotland by 2035 (All construction) - [Smith & Earl 2025]

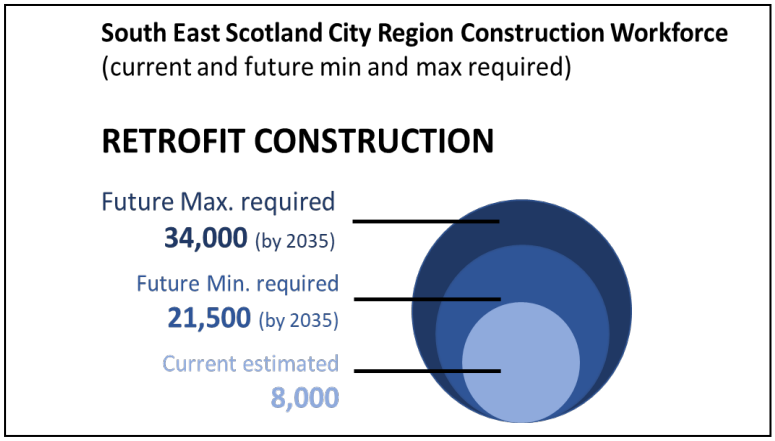

Figure 2: Forecasted retrofit construction workforce need for south east Scotland by 2035 (Retrofit only) – [Smith & Earl, 2025]

The current draft climate change plan significantly underestimates or doesn't fully incorporate the workforce statistics that are required.

Within SE Scotland the Integrated Regional Employability & Skills Board (IRES) has put forward a proposal (IRES 2027+) to Scottish Government to accelerate the required workforce via an investment of a Net Zero Accelerator Hub. The NZAH proposal links across all 4 regional colleges (Fife, West Lothian, Edinburgh and Scottish Borders) and partners with industry training facilities.

It is recommended that such 'regional focused' applications (e.g. IRES 2027+) to increase skills, training infrastructure and workforce for the regions is included in

such climate change plans which align to the future ‘Heat in Buildings’ proposals expected to be published in 2026.

5. **Skills & Heating Technologies**

CIAT welcomes the mention within (Annex 2 – Page 2) where it states:

> “A technology neutral approach – one which supports a range of clean heating technologies based on what is best for a particular home, location or set of circumstances – will give property owners control over the decisions that affect their lives. It will also accommodate Scotland’s differences in geography as well as across our homes and buildings.”

However, throughout the documents Heat Pumps are primarily stated and occasionally heat networks. There is a wide range of clean heat technologies which are not mentioned, such as: heat storage, heat generation (Infrared, RF frequency), some of which are manufactured in Scotland (e.g. Sunamp, Flexel International).

The CIAT membership currently specifies a range of clean heating technologies to reduce carbon emissions and deliver warmer, lower energy cost homes.

It is recommended that the final version of the Climate Change Plan and future Heat in Buildings Bill should be technology neutral and reference the range of heating technologies, avoid being technology bias and encourage innovation.

Skills Summary

- There needs to be greater investment in the tertiary sector and funding ring fenced to deliver a competent workforce (knowledge, experience, skills and behaviours). The current system such as graduate and other apprenticeships provides a useful basis to develop the workforce, however need (government policy), demand (industry) and supply (tertiary sector) need to be integrated better.

- It is important that both the need and supply parties recognise the industry capability and capacity, scale and structure to make the necessary stepped change and optimise the opportunities for the workforce.

- The industry is under resourced, more than 90% construction companies less than 7 staff, more than 50% workforce self-employed, 90% of consultants less than 5 staff and this profile must be recognized and models developed to ensure that Scottish companies can benefit from this new market.

- CIAT has a key role in the specification of fabric and heating technologies within buildings. Without a sufficient workforce both in scale of delivery and knowledge to deliver such specifications for the range of the types of buildings, building fabric solutions and technologies the architectural technology sector may be limited in what it can specify.

- Thus, early investment in the skills and workforce for short training (upskill) courses and apprenticeships, additional graduate apprenticeships funding for

architectural technology and general sector skills are required if the climate change plan is to be delivered.

Consumers

6. **Consumers – Supporting Engagement & Building Archetype Knowledge**

Within the main document the ‘consumer’ is not mentioned.

Given the significant potential impacts (both positive and negative) of the delivery and achievement of net zero and addressing climate change it is essential to have a strong engagement and involvement with society, households, energy consumers and building users (public and private sector). The current draft does not sufficiently represent this key group.

To support consumers, households and specifiers the Centre for Net Zero High Density Buildings is undertaking testing on key Scottish building archetypes, such as: timber frame homes, stone buildings, 4-in a block and tenements.

The study results will be published in partnership with ‘Retrofit Scotland’, managed by BE-ST, to provide a single large resource of publicly available information and support retrofit pathways.

Consumers are more likely to plan, have confidence and adopt a retrofit approach if the retrofit solution has been tried and tested and aligns to their home or building type (archetype), although context specific design expertise will remain integral to successful delivery.

To avoid the past and current industry failures e.g. External Wall Insulation (EWI) will require greater focus on compliance and enforcement particularly for retrofit projects.

Too many homes have damp or structural issues which are not being addressed due to the focus and timelines on accessing government grant funding for energy efficiency retrofit measures.

Irrespective of the focus or the intervention to improve thermal performance there must always be a wholistic evaluation to ensure other parts of the building are not compromised. The Grenfell fire disaster was the result of a failed retrofit project exposing industry failings and one in particular lack of competence.

It is recommended that all energy efficiency measures to buildings must also include ‘building condition surveys’ as mandatory prior to specification, grant award funding and works being undertaken.

Currently the majority of R&D funding of architectural technology solutions for Scotland’s retrofit solutions and architectural technology specifications is being funded by UK Government.

To maximise and accelerate solutions for the Scottish archetypes and build on existing expertise in Scotland it is recommended that Scottish Government should fund further archetype solutions via engaging with local authorities and housing

associations. This could accelerate consumer and industry knowledge, industry growth, emissions reductions and reduce fuel poverty faster.

7. **Consumers - Safety**

Gas fitting and gas decommissioning has a registered approved list of skilled workforce via the Gas Safe Register (previously known as CORGI some years ago).

However, electrical works are not given the same safety coverage, approved installer or legislated for.

As Scotland transitions from fossil fuels to predominantly electrical based heating systems then it is essential that the installer or workforce making electrical changes within a household or common stairwell such as for flats is listed on an approved national register.

Scotland is fortunate to have organisations such as SELECT and other sector organisations which accredit and qualify electrical workers. However, there is no ‘singular’ electrical works mandate on households, building owners or building operators to ensure the health & safety of the works being undertaken are by an approved/accredited installer.

Design professionals such as Chartered Architectural Technologists can specify clean heating technologies. Given the “electrical enlightenment” journey Scotland will undertake to address the climate change needs it would greatly assist all construction specifiers if they can also directly state in the specification that works must be undertaken by a certified and approved contractor (which has legislative underpinning).

Many consumers may opt for light touch interventions, including low carbon heating changes which do not require an Architectural Technologist specifier. It is vital that measures are put in place so that these consumers be protected and know what to request’.

It is recommended that the government establish a singular portal where electrical approval bodies can be listed to inform consumers that all electrical works in buildings must be undertaken by an approved / certified electrical installer.

Currently there is not a ‘common/singular’ joined-up approach for ALL households, house purchasers or renters that requires an electrical safety sign off for an existing home or building. There is some protection for multiple occupancy rented homes and social housing. With 55% of the housing stock in private ownership and owner occupied there is a significant “safety gap”.

Given the scale of new electrical appliances, rewiring within homes and other measures to deliver the climate change plan over the next 20 years – for the fundamental reasons of health & safety for ALL building occupants and purchasers – it is recommended that for any building which is rented or sold, should have an electrical safety survey undertaken, which is certified by an approved electrical provider. The electrical company undertaking the work is approved via government website of approved accrediting organisations.

The certificate of electrical safety could be able to be passed on to other future renters or purchasers provided there were no electrical works undertaken in the previous period of ownership or occupancy.

8. **Construction Waste**

Currently Scotland's construction sector accounts for 50% of all waste to land fill.

However, on closer examination of the SEPA waste statistics approx. 73% is soils, 21% is aggregates and stone, thus leaving 6% as the more complex construction waste.

It is recommended that the focus of the tackling construction waste should be on this more complex multi-factorial construction waste.

In demolition works approximately 90-97% is reused, recycled or transferred into other products and processes.

New Build:

The most positive action to reduce waste in future and for future generations happens as early as possible in the design phase.

Aspects such as offsite construction can significantly reduce waste by over 90% through controlled design, specification and manufacturing.

Also Designing for Future Disassembly can greatly help future generations to reduce the impacts from waste and provide deconstruction opportunities, also reducing dust and pollution from avoiding current approaches.

CIAT members can design for offsite construction and also design for future disassembly and assist in spearheading this sector shift.

It is recommended that procurement by government, public bodies and developers should specific offsite construction processes and designing in for Future Disassembly.

Retrofit:

Given the 2.8 million existing homes and 350,000 non-domestic buildings in Scotland one of the greatest increases in future construction waste will be in the buildings retrofit sector.

Approaches to retrofit such as Archetype Retrofit can reduce waste, avoid incorrect specifications and increase sector productivity of delivery.

A greater emphasis on retrofit can also reduce the need for new build, reducing embodied carbons (and waste from unnecessary demolition, where possible).

There is no current approach to encourage and track the embodied carbon saved through restoring, converting or adapting existing buildings. This is probably the

highest embodied carbon savings of any industry sector, but the construction sector has no current domain to declare this.

It is recommended that Scottish Government develop a standardised tracking and reporting methodology for construction waste, working with Zero Waste Scotland and industry bodies such as CIAT. This would also underpin and support the Scottish Government Circular Economy Act 2024.

It would also be very valuable to the sector and reuse-recycle methodologies if a study was undertaken on current waste streams from retrofit works and how this can be reduced or site materials and offcuts channelled into other uses. Such a study could help provide the routemap to support the Scottish Governments plans to reduce construction waste.

9. **Resilience for Climate Change**

Whilst much of the draft climate change plan discusses adaptation for net zero and reducing emissions it does not outline or plan for additional resilience measures to buildings and infrastructure.

Globally due to the increasing climate change impacts of flooding, storms, wind damage, drought, water shortages and wild fires there is increasing concern amongst insurance companies, infrastructure operators and public organisations that resilience measures on existing buildings and infrastructure require to be accelerated.

There is an opportunity to enhance existing buildings to reduce wind and storm impacts (e.g. additional bracing of roof structures and gable walls), to enhance the collection of water from intense rainfall (such as water butts for buildings and increased drainage capacity for downpipes and gutters.)

Much of this work (very often low cost) could be undertaken in parallel with some of the net zero works and could avoid significant remediation costs due to such climate impacts. This can be delivered efficiently when co-ordinated by a skilled design professional, such as the Chartered Architectural Technologist.

Buildings which allow damp and intense rainfall to penetrate through facades, roof gutters and spill over the damp proof course (DPC) level (currently min 150mm) will impact the health of building occupants and lead to considerable remediation works.

It is recommended that building regulations for drainage should be redefined and aligned to the current intense rainfall patterns now being experienced over the past 5 years.

It is recommended that a guide is produced for consumers, households and building occupants of the “do” and “do not” for their building. Focusing on common errors such as installing garden decking which reduces the DPC minimum height, which then causes dampness and moisture to seep into the building.

To address the increasing threats from Climate Change on Scotland’s infrastructure (such as buildings, rail, power, water, telecoms, natural infrastructure such as forests

etc..) a new forum was recently established the Climate Ready Infrastructure Scotland (C.R.I.S.) Forum.

This is a world first for any country bringing all major infrastructure operators together to share knowledge, resilience planning and future designs and operational aspects to tackle climate change.

The forum has aligned goals through the climate impacts both in co-located geography / place of infrastructure and also common climate change challenges such as flooding, storms or wild fires.

The current draft documentation doesn't include sufficient mention of the climate readiness and adaptation required for Scotland's existing and future infrastructure.

It is recommended that Scotland establishes a "National Climate Change Resilience Committee" to help current and future governments, industry, public bodies and society plan, invest and design for "readiness" and deliver major enhancements to Scotland's infrastructure, health, economy and societal needs.