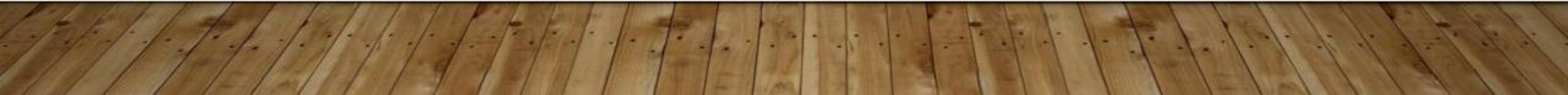


VOCATIONAL SKILLS FOR 'GREEN' CONSTRUCTION IN GREAT BRITAIN – HOW READY IS THE SYSTEM TO PREPARE THE WORKFORCE?

SKOPE SEMINAR, 24 FEBRUARY 2026

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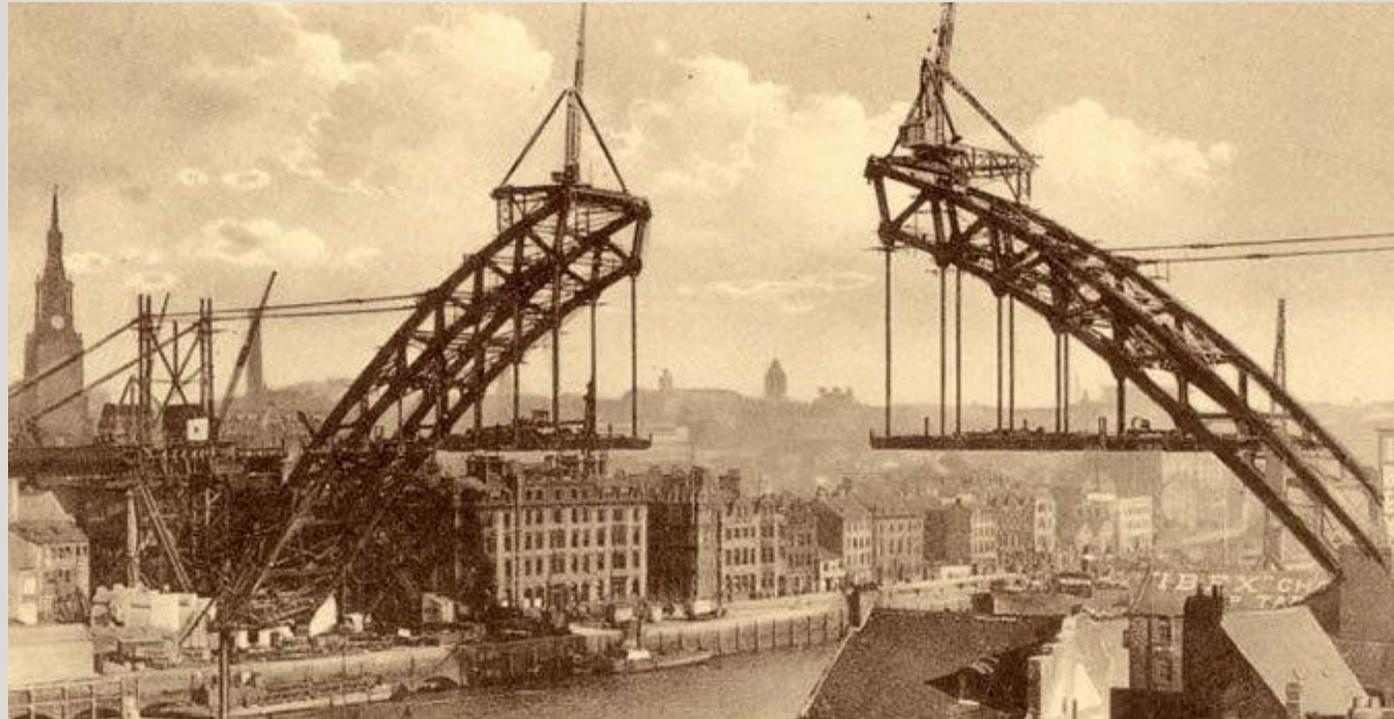


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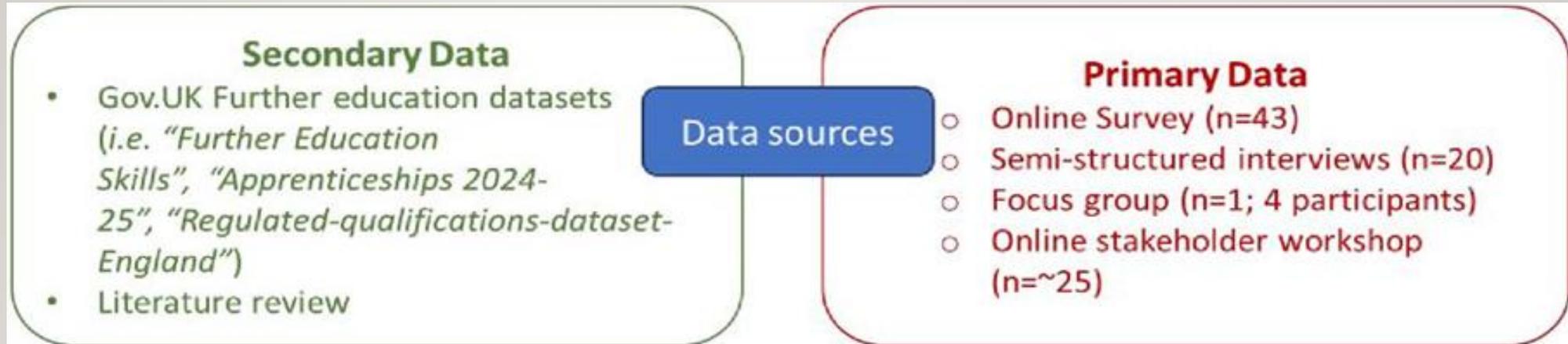
INTER-DISCIPLINARITY IN RESEARCH FOR 'GRAND CHALLENGES'



BACKGROUND AND RESEARCH AIMS

- Client: Construction Industry Training Board (CITB)
- Methods:
 - desk study/ literature review
 - stakeholder meetings
 - training provider survey (n=43)
 - expert interviews (n=24)
- Duration: January – October 2025
- Aim: Conduct research to inform the creation of the first Sector Skills Plan for housing Repair Maintenance & Improvement (RMI)/retrofit
 - Summarise the training sector and how it operates
 - Discover what standards the sector operates to
 - Estimate the potential size of the RMI market in future
 - Assess the current quality of RMI training
 - Analyse how the training system might need to adapt to future needs

RESEARCH DATA



HOUSING, ENERGY, MARKETS & JOBS

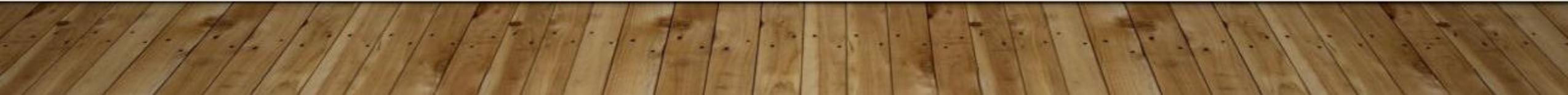
KEY FACTS AND FIGURES



CONTEXT I – BUILDINGS, HOUSING, ENERGY AND CLIMATE CHANGE

To decarbonise 30 million UK homes requires:

- Large-scale electrification of heating
- A fully decarbonised electricity grid
- Some level of building fabric upgrades
- A functioning RMI/retrofit market
- A competent workforce



CONTEXT 2 – TECHNOLOGY AND MATERIAL CHANGES

What does a low-carbon, sustainable home look like?

Current technology, and measures aimed at preparing for the impacts of climate change, can help new and existing homes to become low-carbon and ultra-efficient as well as adapted to flooding, heat and water scarcity.

Existing homes

Improving existing homes can help existing house-holders meet the challenges of climate change

- 1 Insulation**
in lofts and walls (cavity and solid)
- 2 Double or triple glazing with shading**
(e.g. tinted window film, blinds, curtains and trees outside)
- 3 Low-carbon heating**
with heat pumps or connections to district heat networks
- 4 Draught proofing**
of floors, windows and doors
- 5 Highly energy-efficient appliances**
(e.g. A++ and A+++ rating)
- 6 Highly water-efficient devices**
with low-flow showers and taps, insulated tanks and hot water thermostats
- 7 Green space (e.g. gardens and trees)**
to help reduce the risks and impacts of flooding and overheating
- 8 Flood resilience and resistance**
with removable air brick covers, relocated appliances (e.g. installing washing machines upstairs), treated wooden floors



New build homes

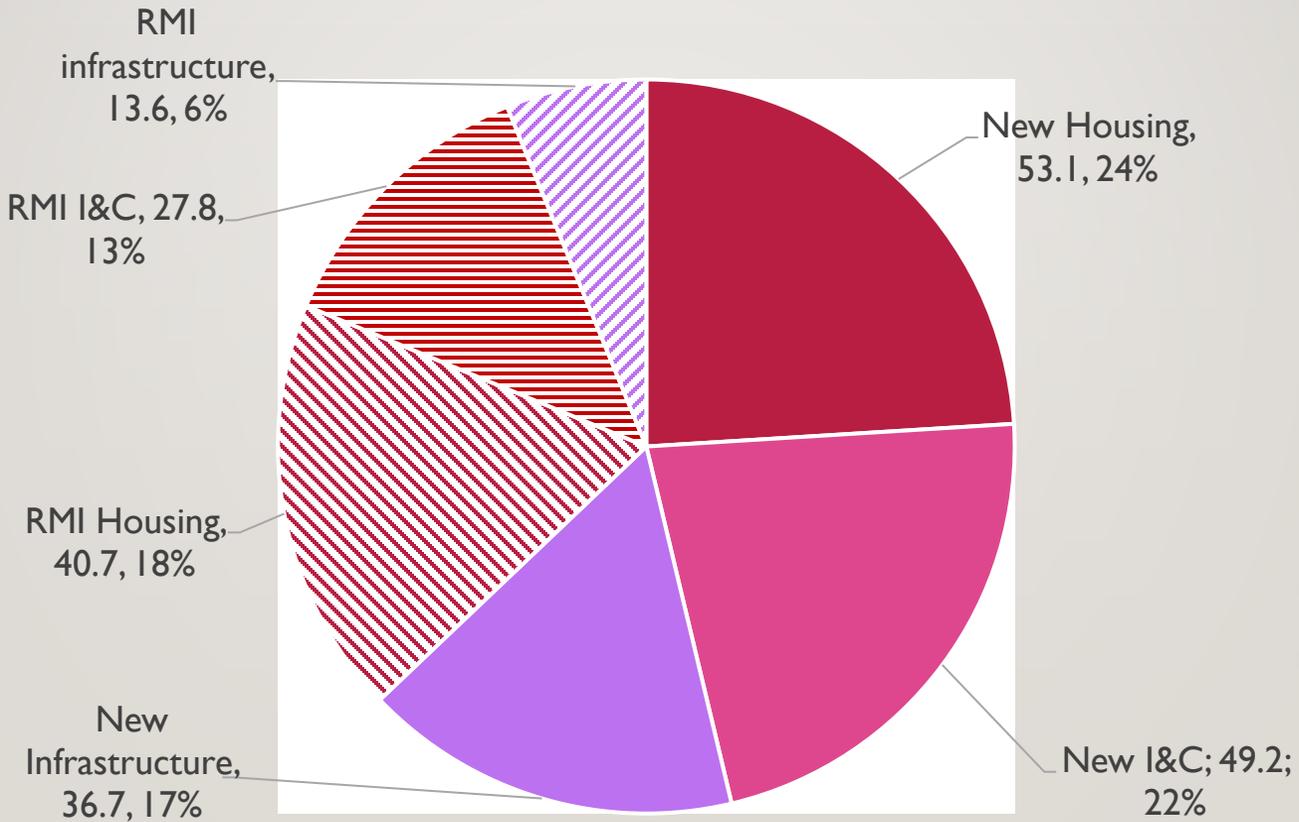
New build homes can and should meet even more ambitious standards in some areas

- A High levels of airtightness**
- B More fresh air**
with mechanical ventilation and heat recovery, and passive cooling measures such as openable windows
- C Triple glazed windows and external shading**
especially on south and west faces
- D Low-carbon heating and no new homes on the gas grid by 2025 at the latest**
- E Water management and cooling**
more ambitious water efficiency standards, green roofs and reflective walls
- F Flood resilience and resistance**
e.g. raised electricals, concrete floors and greening your garden
- G Construction and site planning**
timber frames, sustainable transport options (such as cycling)

24%
REDUCTION
NEEDED
IN DIRECT CO₂
FROM HOMES
BY 2030, FROM
1990 LEVELS

15%
REDUCTION
REQUIRED IN ENERGY
USED FOR HEATING
EXISTING BUILDINGS
BY 2030 THROUGH
EFFICIENCY
IMPROVEMENTS¹

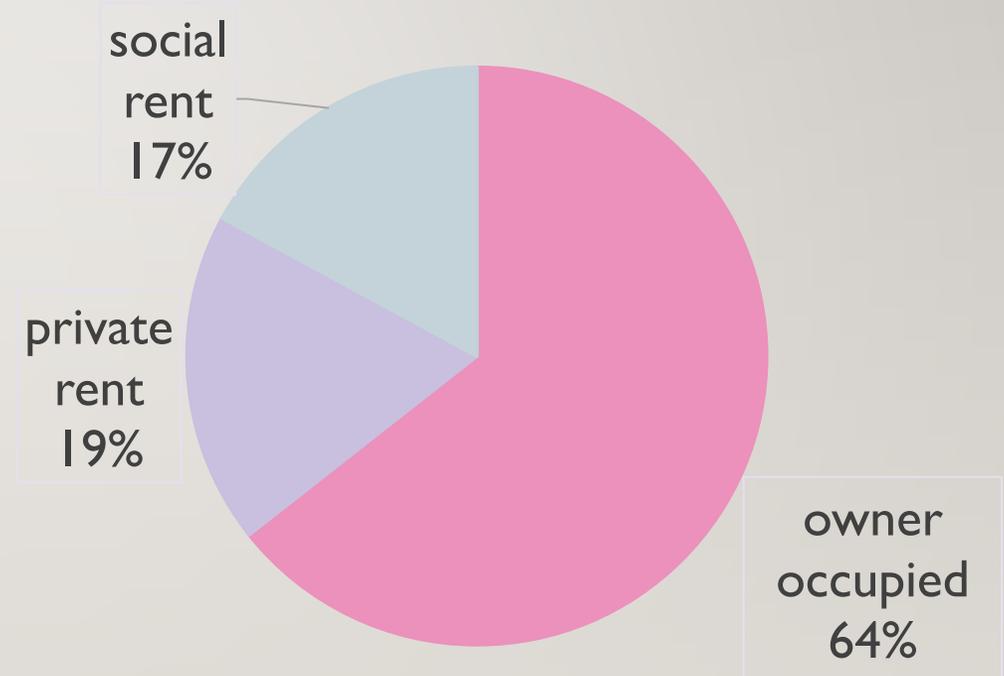
THE CONSTRUCTION INDUSTRY BY SUB-SECTOR



Construction output by sub-sector and type of work in GB in 2023, £bn

UK HOUSING & ENERGY POLICY BY TENURE

- The energy trilemma has 3 aims
 - Affordability
 - Decarbonisation
 - Consistent with economic growth
- In housing that translates into:
 - Policy and £ support
 - Attention on vulnerable households
 - Tightest controls in social rental sector
 - Tentative controls for private rental sector
 - Grants available for owner-occupiers



GB Housing stock by tenure type, 2022

HOME ENERGY EFFICIENCY – HIGH-PROFILE FAILURES

NEWS

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Business | Economy | Technology of Business | AI Business

'Failings at every level' resulted in botched insulation scheme, MPs told



The National Audit Office recently said nearly all 23,000 homes that had external wall insulation installed under two separate schemes will result in damp and mould if left unaddressed

Zoe Conway

Business correspondent

13 November 2025

A botched net zero scheme which has caused damp issues in thousands of homes was the result of "serious failings at every level", a UK government official has said.

Grenfell Tower Inquiry

GRENFELL TOWER INQUIRY: PHASE 2 REPORT

REPORT of the PUBLIC INQUIRY into the
FIRE at GRENFELL TOWER
on 14 JUNE 2017

The Panel:

Chairman: The Rt Hon Sir Martin Moore-Bick
Ali Akbar OBE
Thouria Istephan

September 2024

Volume 1

Part 1 – Introduction

Part 2 – The path to disaster

RESEARCH FINDINGS

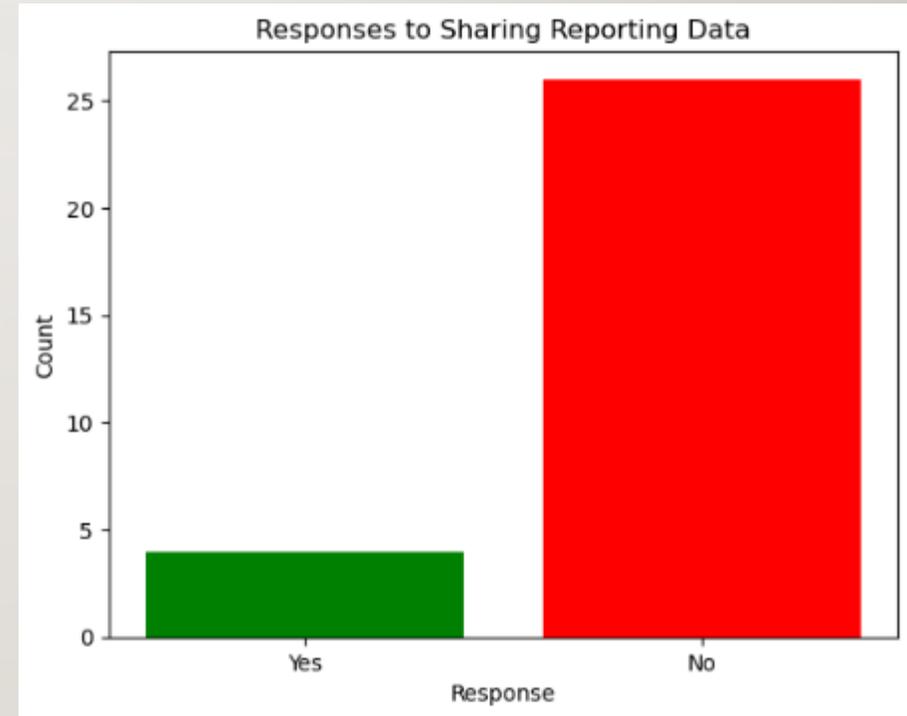
HEADLINE RESULTS

TYPES OF 'GREEN' SKILLS AND 'GREEN' JOBS

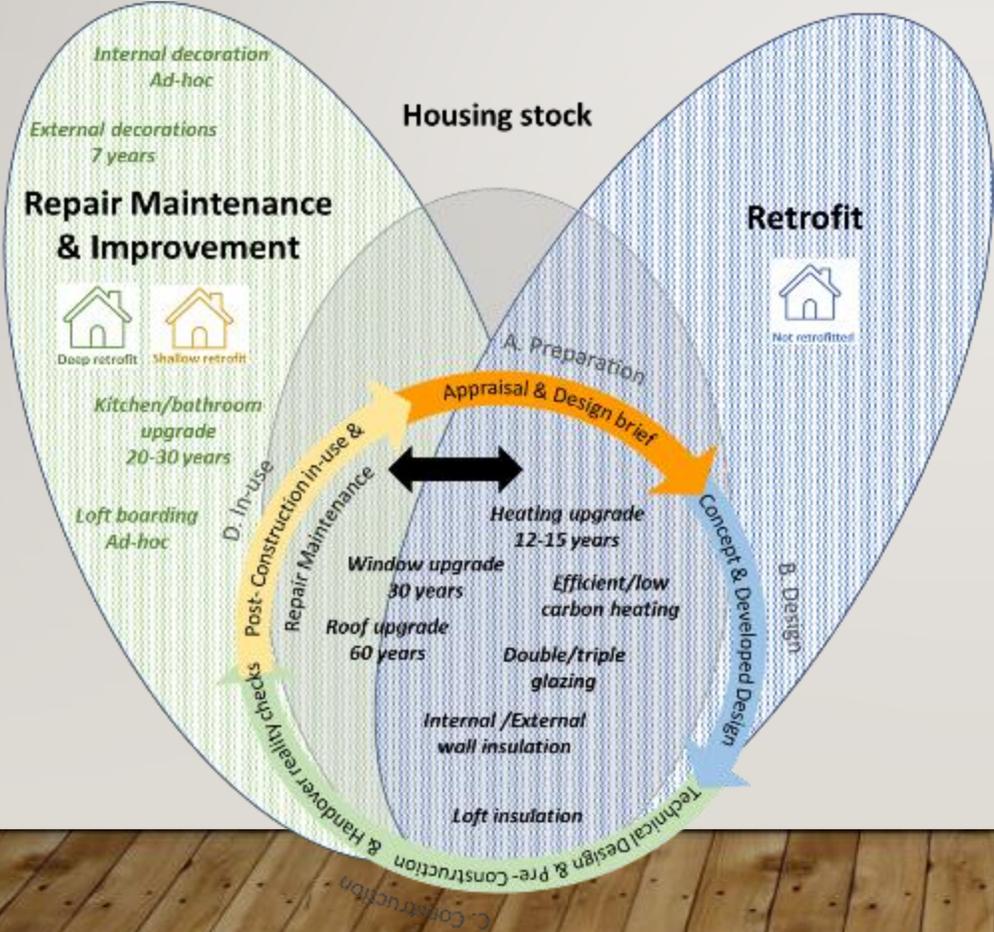
Type of occupation	Description	Example
Green new/emerging occupations (GNE)	new occupations, new tasks, and new skills requirements within existing sectors or in wholly new sectors	Retrofit Coordinator
Green enhanced skills occupations (GES)	existing occupations that could contribute positively to green objectives if new skills are learned and integrated into practice	Many construction trades - if they become T-shaped professionals with shared, foundational learning
Green increased demand occupations (GID)	where growth in a given sector will lead to more jobs and more need for skills training, but without significant changes to tasks or skills needs	Solar installer

DATA ON TRAINING AND TRAINING OUTCOMES

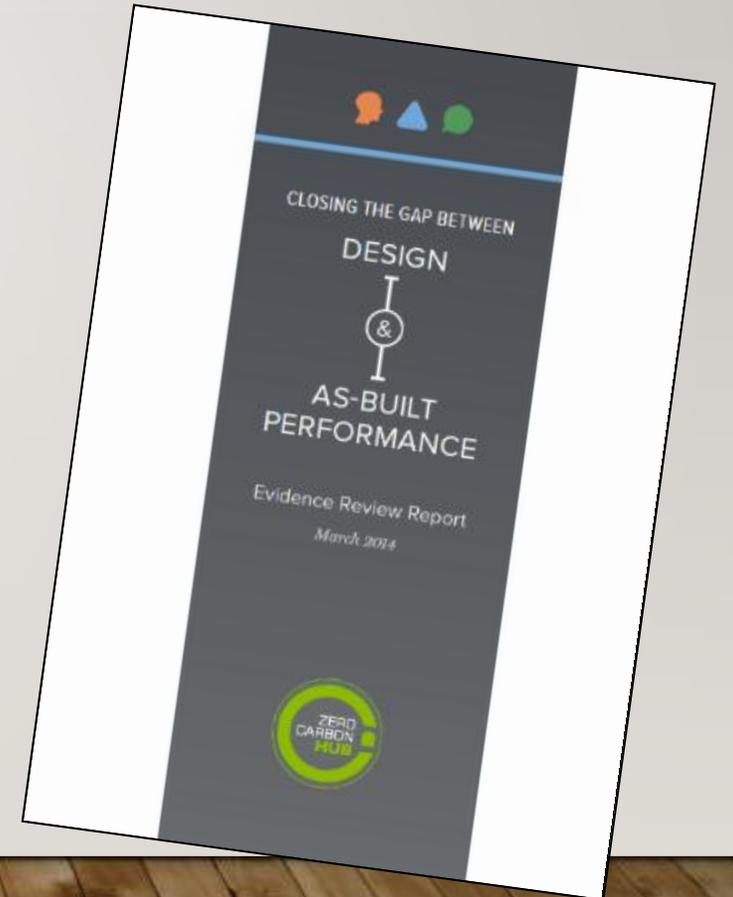
- Data on training is often reported, e.g. to funding bodies
- Data is not collated, analysed and published by government
- CITB, operating under licence from Dept. for Education, does not have access to DfE data
- We don't have an overview of training and training outcomes



RMI & RETROFIT – OVERLAPPING AND CYCLICAL ACTIVITIES



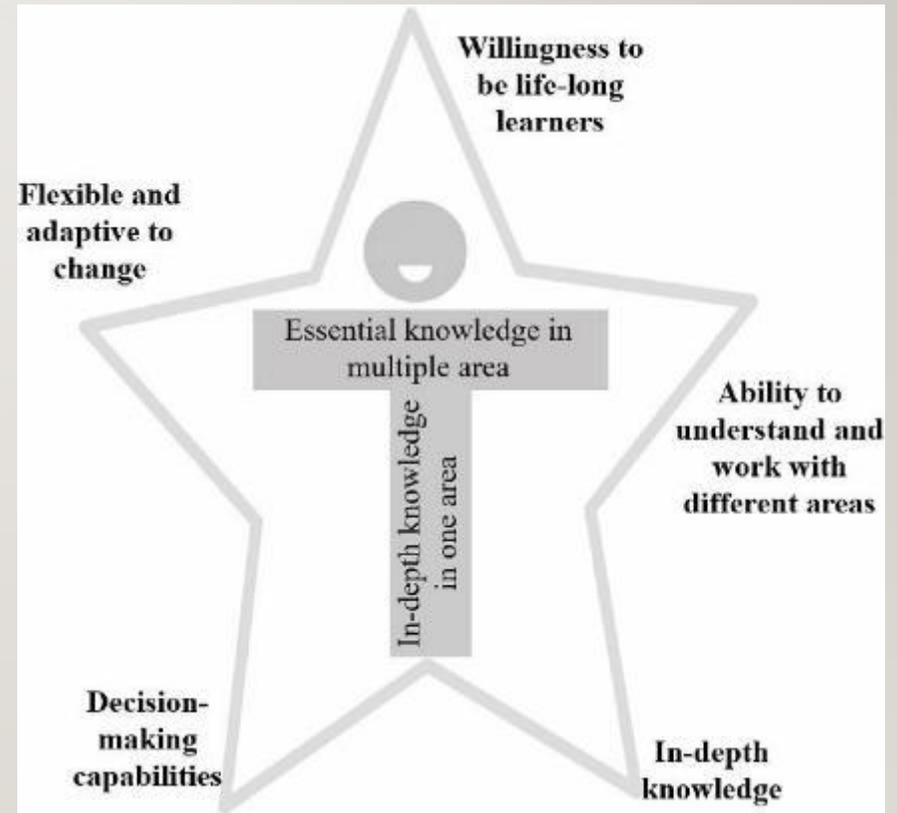
RETROFIT QUALITY MATTERS



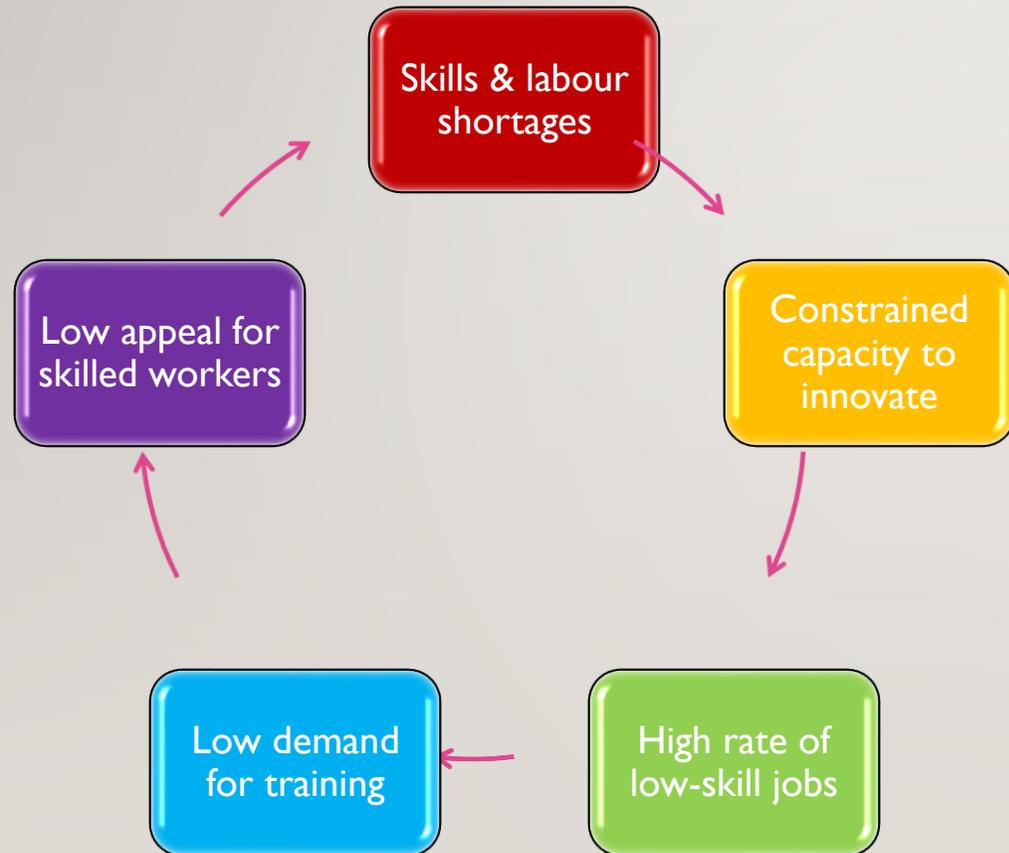
COMPETENCE AND THE T-SHAPED PROFESSIONAL

Competence combines:

- **Skill** – practical capability
- **Knowledge** – underlying principles
- **Experience** – gained at work
- **Behaviour** – integrity, honesty, self-evaluation, reflexivity
- Validation/assessment is key



SKILLS & JOBS



	Low demand for skills	High demand for skills
High level of skill supply	Over-qualification	Professionalism
Low level of skill supply	Low-skills equilibrium	Under-qualification

Killip, G. (2020) 'A reform agenda for UK construction education and practice', *Buildings and Cities*, 1(1): 525–537.

Adapted from: Green, A. (2016) Low skill traps in sectors and geographies: underlying factors and means of escape, Institute for Employment Research, University of Warwick, September 2016

OUR SUMMARY OF THE 'SKILLS GAP' IN THIS SECTOR

There is not a 'skills gap' that can be easily resolved by simply putting on more training courses. Instead, there is a dysfunctional system between skills training and jobs: the trained people do not necessarily do the jobs for which the training was intended, and the people working in the sector do not necessarily have any (or appropriate) training.

VET SYSTEM: CONFLICTS OF INTEREST & THE 'RACE TO THE BOTTOM'

it is unregulated. Anybody [...] can do whatever they want (I03)

there was a [...] scheme set up where people would say 'we'll do all the paperwork for you. You pay us £100 a property or project or whatever it is' [...] you know they never leave the office or the bedroom. We call them 'pyjama coordinators.' And you know, [there's] no one on the site (I01)

the situation where the learning provider, [who is] being funded to deliver the apprenticeship, says when the apprentice is ready and finished [...] that's a dangerous relationship [...] especially when Ofsted are also breathing down their necks for achievement rates (I13)

VET SYSTEM: CONSTRUCTION APPRENTICESHIPS COMPARED WITH OTHER SECTORS

Learners' reasons for non-completion of apprenticeship	Construction only	All sectors
Salary was too low	44%	22%
Fired or made redundant	37%	17%
Learner, employer or provider thought the learner would not pass the end point assessment (EPA)	18%	9%
Learner 'very satisfied' with the quality of learning from the provider	26%	45%
Learner believed that any support would have helped them remain on the apprenticeship	19%	38%

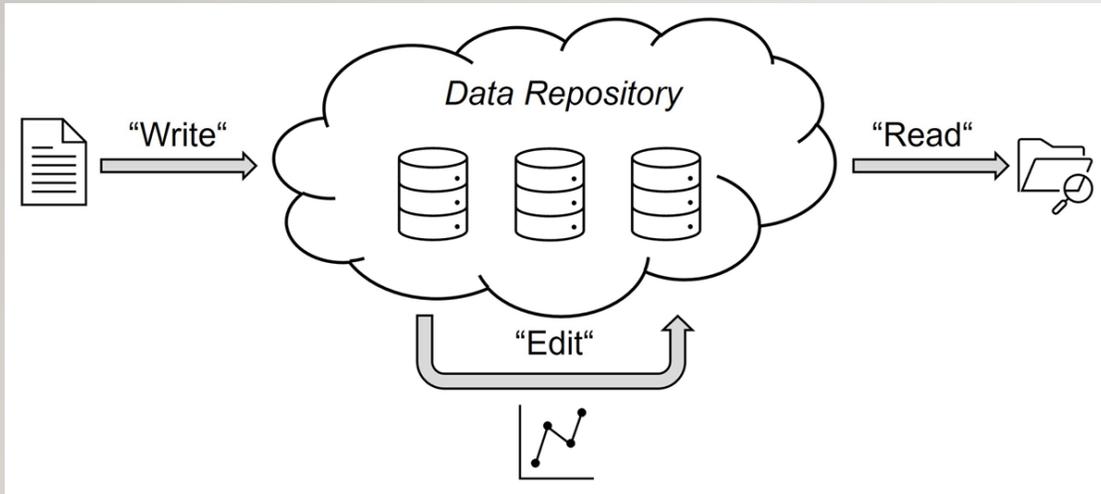
- The table comparing apprenticeship non-completions was compiled and published by an Awarding Body using own data
- Such analysis is hard because data is generally
 - not granular enough
 - not shared openly
 - not analysed and reported

DEVOLUTION & PLACE-BASED APPROACHES

- Retrofit training & skills agenda intersects with Devolution agenda – implications for governance, funding, delivery.
- Devolved nations - Compare & learn from different place-based approaches (strengths & weaknesses)
- Differences in funding, approach, capacity – England’s devolved regions
- Place-based approach > strengthen local/regional supply chains
- Questions around access to training when unevenly distributed
- Localised, industry-led initiatives, e.g. Green Skills Advisory Panel

	England	Scotland	Wales
Governance	Centrally driven	More coordinated	Central & regional
Funding	Short-term competitive grants, industry bodies	National budgets, apprenticeships & centre capital	Gov-led funding & targeted training strands
Key Institutions	CITB, National Retrofit Hub	Skills Development Scotland, National Retrofit Centre	Welsh Gov, CWIC & regional partners
Programmes	Warm Homes Skills Programme, LSIPs	Heat in Buildings, National skills strategy (+link to regional delivery)	Optimised Retrofit Programme
Delivery	Colleges & Private Providers	Colleges & apprenticeships, specialist providers.	Regional providers & specialist programmes

DIGITAL SKILLS AND SERVICE INNOVATIONS



Buchholz, M. and Lützkendorf, T. (2023) 'European building passports: developments, challenges and future roles', *Buildings and Cities*, 4(1): 902–919.

- Energy systems in buildings alter the materiality of the building
- Physical changes to the building may affect energy demand
- How to ensure that the RMI workforce
 - works with (not against) digital systems?
 - accurately updates data repositories when needed?
- What are the risks of getting it wrong?

CONCLUSIONS AND RECOMMENDATIONS



CONCLUSIONS AND POSSIBLE NEW DIRECTIONS

- Retrofit policy is inadequate
- The industry and VET system are not well prepared to deliver the necessary quality
- Data on training is not published
- Inconsistent standards, conflicts of interest and 'race to the bottom' practices undermine quality
- The situation is fragmented and confused
- On jobs:
 - Industry needs to focus on quality of outcomes not quantity of inputs
 - New policy (e.g. trade licensing) could help raise standards, stimulate demand
- On developing competence:
 - Coordinate action across Skills, Knowledge, Experience, Behaviour
 - Independent quality assurance in assessment is needed
 - Take account of future skills needs

RECOMMENDATIONS

- A. For UK & Devolved Governments
- B. For CITB Governance & Strategy
- C. For the Housing RMI Sector Skills Plan

A. POLICY RECOMMENDATIONS

1. Create a national retrofit strategy across Government jurisdictions and departments
2. Develop effective, joined-up policy for the improvement of existing housing
3. Create delivery models for the national retrofit strategy with resources and responsibilities
4. Work with industry to develop a policy framework for long-term investment in Retrofit/RMI training and workforce development
5. Strengthen coordination and knowledge exchange across nations
6. Publish a consultation paper on quality assurance in construction projects, to include the consideration of a licence to trade.
7. Collect, analyse and publish data on training and jobs in sufficient detail so that the system can be understood by sector (construction) and sub-sector (Retrofit/RMI)

B. CITB STRATEGY RECOMMENDATIONS

1. Revise the guiding principle of CITB to be ‘quality-led’ instead of ‘industry-led’.
2. Better integrate advice from outside the construction industry into CITB’s strategic decision-making (e.g. on health and social welfare, regional economic development)
3. Develop a future skills capability within CITB
4. Commission and publish a programme of research on quality assurance for training and industry practice for housing Retrofit/RMI
5. Make a long-term commitment to housing retrofit/RMI (alongside other sub-sectors)
6. Learn from under-represented voices in housing Retrofit/RMI debates (e.g. SMEs, trainees, ethnic minorities, women etc.)

4 PILLARS OF AN SSP FOR RMI/RETROFIT



Use the 'T-shaped professional' model as a framework for competence



Apply standards consistently (building regs, occupational standards, PAS etc)



Design training to achieve quality of outcomes, not just inputs



Assure quality with independent, consistent accreditation and assessment; design out conflicts of interest

C. SECTOR SKILLS PLAN RECOMMENDATIONS (1/2)

CITB should prioritise the allocation of funds to projects that do 1+ of the following:

1. Focus on the quality of outcomes in retrofit/RMI work in relation to training.
2. Promote and protect the principles of competence frameworks: skills, knowledge, experience, behaviour and independent assessment.
3. Focus on the shared knowledge and skills needed for collaborative working, (as shown in the concept of the 'T shaped professional').
4. Combine existing qualifications with other resources in ways that support a shift towards improved competence and better quality outcomes

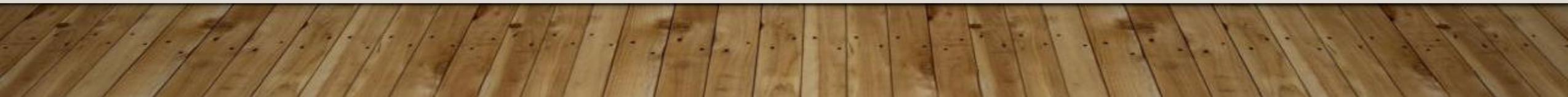
C. SECTOR SKILLS PLAN RECOMMENDATIONS (2/2)

5. Identify and design out conflicts of interest in existing systems
6. Improve & coordinate all aspects of the VET system, not just training provision
7. Propose innovative ways to raise standards and competence, with a strategy for long-lasting impact of the work beyond the period of funding under the SSP.
8. Support place-based approaches using innovative delivery models and partnerships that build capability and enable quality-driven outcomes.
9. Coordinate & promote sharing of good practice and continuous learning in the housing RMI sector.



FUTURE RESEARCH

COLLABORATIONS WELCOME!



SOME OF OUR RESEARCH IDEAS IN THIS AREA

Supply, demand and use of skills

- What combinations of policy, practice and culture change could improve career pathways?
- How can systemic feedback and learning become better embedded?
- How are practices and competences constituted in other sectors of the 'green' economy?

How do governance arrangements in E&T systems affect outcomes?

- How are arrangements diverging across UK devolved administrations?
- What can be learned from international comparisons?

Critical thinking and new technology

- What combinations of technology, education & training, and workplace practices could support better outcomes (for learners, for buildings, for occupants, for the environment)?
- How could the rise of AI affect 'green' construction?

Labour market regulation

- How would labour market regulation work?
- What would be the risks and benefits?
- Can lessons be learned from other sectors?

THANK YOU.
ANY COMMENTS, QUESTIONS, IDEAS?

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