

Recommendations

CITB has a significant body of labour market intelligence on the skills needed to deliver low carbon house building and retrofit at scale, which will be helpful in supporting the Climate Change, Environment and Rural Affairs Committee's inquiry into Low Carbon Housing: the Challenge. We have drawn extensively on this evidence base to form this response.

Having appropriately skilled, environmentally-aware practitioners in Wales's built environment workforce is crucial to ensure that Wales meets the 20,000 affordable homes target in a way which adheres to the principles of the Well-Being of Future Generations Act. In order to achieve this, Welsh Government should:

- Address energy-related skills and knowledge gaps in Wales's built environment workforce, in particular, those relating to energy performance, as identified through labour market intelligence.
- Integrate low carbon and sustainability modules into all vocational training and apprenticeships as supported in the Qualifications Wales Sector Review of Construction.
- Ensure that skills requirements on initiatives are sufficient to drive demand for training and guarantee that appropriate measures are specified and properly installed, particularly on older properties. This should be alongside a renewed commitment to the skills needed for building maintenance.
- Engage with CITB and industry at the earliest opportunity on the detail of the proposed energy efficiency programmes so that appropriate training and qualifications can be identified and up-scaled.
- Create trust and certainty to stimulate the domestic retrofit market, through long term policy commitments and by providing the public and employers with information and expert advice to enable growth in the energy efficiency market over a sustained period of time.
- In conjunction with industry, undertake an initial assessment of the skills requirements to meet the delivery objectives of the strategy, particularly around offsite manufacturing and new technology.
- Ensure that the milestones for the commitments to meet energy efficiency and emissions reductions targets reflect anticipated capacity in the workforce, particularly in relation to current skills shortages.

Low Carbon Homebuilding

1. CITB welcomes the Welsh Government's ambition to ensure that all new houses are built to 'near zero' energy standards, with emissions reductions and high energy efficiency integrated from the start. Successful implementation of these goals will require industry and training providers to embed core knowledge, including new technology, energy efficient design, and consumer interaction and building performance into all relevant vocational and professional pathways.

2. The low carbon economy provides big opportunities for growth and jobs in construction. The Welsh Government can play a key role in growing the wider private-financed energy efficiency market by establishing conditions of market growth and increased confidence through long-term policy commitments. This, in turn, gives confidence to employers to invest in the necessary training.
3. Often energy performance improvements installed in both new build and existing properties can fall short of expectations¹. Errors in design and implementation have in many cases reduced the performance of new build properties and energy efficiency measures on existing properties. This can be combatted with the introduction of building maintenance modules within existing training.
4. Skills and knowledge gaps in the existing workforce, particularly relating to energy performance, need to be addressed, and the Climate Change, Environment and Rural Affairs Committee and the Regional Skills Partnerships are well placed to coordinate the response to this challenge. Our research shows that delivering low carbon buildings (new build and retrofit) at scale will require investment in skills and training, so that the construction industry can plug skills and knowledge gaps. The Construction Wales Innovation Centre (CWIC) and Supply Chain Sustainability School will have an important role to play in supporting the delivery of this training. By ensuring that tradespeople and professionals are trained to a level that will enable them to work efficiently and cost effectively, the Welsh Government can be confident that the workforce has the skills and knowledge to deliver his ambitious programmes.
5. The strategy should also take account of the special nature of Wales's building stock and the significant quantity of traditional buildings that require retrofitting measures to improve occupier comfort and reduce fuel poverty. In accordance with advice from heritage bodies, it is essential that buildings are in a good state of repair before energy efficiency improvements are made by retrofitting. Properties benefitting from investment schemes should be surveyed by a competent surveyor and sufficient provision allowed for in delivery budgets to repair any property prior to installation of any measures. Therefore, it is essential that surveyors have the necessary skills to ensure that buildings are not only sound but also ready to receive retrofitted energy efficiency products.
6. We recommend that the Committee and Welsh Government engages with CITB and industry at the earliest opportunity around the detail of proposed initiatives so that appropriate training and qualifications can be identified and up-scaled to support delivery.

Skills

7. The majority of skills required to enable growth in the green economy are not new. In Wales the skills that we need to meet the goal of 20,000 affordable homes will often also be those necessary to achieve near zero carbon emissions in building construction. However, there will be sectors in which completely new skills are needed, some in new combinations, and for which new qualifications will need to be developed. Also, zero carbon developments often require more effort in labour hours because of the complexity of the buildings and processes to build them. It takes longer to ensure that the required technical and quality standard is reached.
8. There needs to be stronger links between industry and the educational world in order to ensure that the highest-level skills can be transferred. This will require greater numbers of technical

¹ https://ec.europa.eu/energy/sites/ener/files/documents/20130619-energy_performance_certificates_in_buildings.pdf
<https://www.epbd-ca.eu/outcomes/2011-2015/CA3-BOOK-2016-A-web.pdf>

specialists from industry being able to contribute to the Higher Education and particularly the Further Education sectors, in order to share best practice and expertise effectively.

9. Knowledge of the whole build process is often required of a low carbon construction. This includes an awareness of what other trades are doing to avoid conflicting actions that can damage work by other trades and/or cause delays therefore increasing costs. To increase awareness there needs to be less siloed training in traditional building, which includes elements of commonality.
10. There are professional skills gaps in the retrofit sector around ensuring that the energy efficient solutions implemented are appropriate for the building requiring retrofit improvements. These skills relate to energy assessment and building surveying.
11. Management skills including construction process sequencing are important to manage schemes cost effectively and find ways of offsetting the current additional cost of products. The internal works are where these skills can be particularly important as the number and range of trades is often higher than on more standard specification sites. There needs to be a focus on quality alongside safety.
12. There are many skills areas where there is insufficient provision for the existing workforce to meet the demand from employers. In particular there are shortages in the provision of air tightness, external wall insulation and associated impact awareness training for construction workers, and in the provision of an understanding of different technologies and their benefits.
13. To ensure skills and talent is in place to deliver near zero energy housing, we recommend the following:
 - Welsh Government and industry have active involvement in influencing and changing behaviour. This will encourage learners into careers within the low carbon economy and in homebuilding more generally.
 - Every skill set and qualification being developed with sustainability at its core and low carbon thinking and resource efficiency as a key component of training.
 - Through procurement encourage innovation in the delivery of construction projects in Wales to increase uptake of less labour-intensive modern methods of construction (e.g. lean and offsite construction).
 - Support the growth of offsite construction in Wales, with exploration into the skills necessary when bringing offsite materials onsite, for example with the use of Welsh timber.
 - Work to promote construction as a career option for school leavers in Wales by recognising construction as a STEM career in schools. We currently do this through a range of activities use GoConstruct as base resource.
 - Ensure a new focus on off-site construction and careers, which supports the development of sustainable construction.
 - Focus on the importance of building maintenance, particularly retrofitting, with targeted courses and modules.
 - Promote new ways of working, giving employers a more active role in training, including giving employers themselves training on new technologies so that best practice is shared more easily, and industry is more responsive to innovation.

Technology

14. There is not a lack of new technology in low carbon homebuilding; issues surround affordability, ease of use and training. In order to increase levels of innovation and energy efficiency in new builds there needs to be initiatives to ease the financial burden for early adopters and to increase the knowledge base of the workforce.
15. CITB Cymru Wales supports the promotion of Cardiff Universities' Solcer House as best practice in low carbon house building. Historically technologies such as photovoltaic panels have been retrospectively added to a building which increases cost and creates design complications. Integrating these panels during the initial build reduces expense and is more efficient. However, there needs to be more promotion and training around how to use these technologies.

Waste

16. To help the homebuilding sector reduce waste and promote the circular economy in Wales, construction managers, supervisors and workers on construction projects should be adequately trained and supported to work in a way that helps minimise environmental impacts of construction activities.
17. Construction companies are becoming champions of the circular economy and taking positive steps to significantly improve their resource efficiency but more can be done. Through initiatives and financial incentives from Welsh Government the construction industry can be encouraged to respond by training the workforce in associated environmental skills.

About CITB

CITB is the Industrial Training Board (ITB) for the construction industry in Great Britain (Scotland, England and Wales). CITB is working to ensure that construction employers have the right skills, in the right place, at the right time by investing funds and providing a wide range of industry-led skills and training solutions. It does this through employer engagement in training, providing labour market insights on future skills needs and developing standards and qualifications for the sector. For more details on CITB's work visit: www.citb.co.uk.

Our specific work to improve sustainability in the built environment includes:

- Supporting the Qualification Wales Sector Review of Construction with expert advice and evidence.
- Delivering the widely recognised Site Environment Awareness Training Scheme (SEATS) which help employers comply with environmental legislation
- Funding the Supply Chain Sustainability School to encourage uptake of sustainability learning through the supply chain.