Executive Summary: Build it Green European report

The European report aims to assess how far both climate and energy literacy are embedded in the VET systems of different European countries. Climate literacy means greater awareness of why zero energy and zero carbon standards are required and what role each worker has in fulfilling these, implying greater participation of workers, represented by their respective unions.

European context

- In Europe the building sector accounts for approximately 40% of energy use and 36% of greenhouse gas (GHG) emissions. Addressing this, the Energy Performance of the Building Directive (EPBD) requires nearly zero energy buildings (NZEB) across the European Union (EU) from 2020. Further the target of the Renewable Energy Directive is that 49% of building energy use be from renewables. To support the development of NZEB competencies, the EU launched the Build UP skills initiative, revealing varied approaches to preparing the construction workforce, from long-term efforts to mainstream climate and energy literacy within vocational education and training (VET) programmes to add-on modules.
- The report details this variation with examples from six European countries, from the 'occupational' approaches of the coordinated market economies (CMEs), heavily dependent on the state and educational institutions (Belgium, Sweden) or more reliant on social partnership (Denmark, Germany), to the 'skill-based' approaches of liberal market economies (LMEs), whether involving employers and unions (Ireland) or entirely employer-based (Britain).
- The size of the EU construction workforce is 22m, whilst that of each country varies - Germany (3m), UK (2.2m), Belgium (500,000), Sweden (465,000), Denmark (168,000) and Ireland (128,000). Each country reports serious labour shortages. Where the sector is composed of a myriad of micro firms and self-employed (e.g. Britain, Ireland), the training infrastructure is weaker as firms have difficulty monitoring trainees' work experience and providing a range of activities. The converse holds in the Denmark, Sweden, Belgium and Germany, where proportions of self-employed and small firms are lower.
- The overall rate of unionisation is highest in Sweden (68%) and Denmark (67%), followed by Belgium (50%), Ireland (26%), UK (25%), and Germany (16.3%), compared with Canada (30%) and US (11%).

Sweden

Swedish VET represents a state-funded, school/college-based system, providing *students* with three years initially in a public, private, or industry-run school/college, followed by one-two years' work-based experience in a firm. Curricula relating to particular construction occupations contain little enhanced climate and energy literacy, though employers seek more detailed technical knowledge. Barriers identified include training the trainers and the time taken to update curricula.

Denmark

Danish construction VET is governed by social partners and is leading in the EU in embedding of energy literacy in the curriculum. Trainees generally have the status of apprentice, and the system is well-equipped, of high quality and comprehensive, combining work and college-based learning on an alternance basis in blocks of about six months. For the main trades (e.g. carpentry and bricklaying), the total duration is 3.5 years and for electricians 4.5. As elsewhere, there is a growing problem to obtain work placements.

Belgium

Belgian construction VET is a hybrid of a college- and social partner-based system, with responsibility assigned to *Constructiv*, financed through social security and employer contributions. *Constructiv* leads the development of detailed occupational profiles (not including building services), indicating the underpinning knowledge required for each training pathway to draw up educational profiles. A distinctive feature is the overlap provided between different but related occupations. Curricula are drawn up by schools/training organisations, responsible for meeting learning objectives. Though there is as yet no specific climate literacy module, the detailed modules for each occupation incorporate NZEB elements and refer to climate change.

Germany

The dual VET system for construction in Germany is regulated by the social partners with the state responsible for setting the legislative framework and supervision and unions and employers associations involved formally in training and education bodies at all levels, though low unionisation means unions have limited capacity to intervene. The broad structure of VET provides scope for updating and overseeing the curricula to include climate and energy literacy, whilst social partnership ensures relevant perspectives are represented and detailed pedagogic materials cover both practical and theoretical elements of VET for NZEB. The system encompasses over 20 construction occupations, with trainees applying to a company and levy-

funded training divided between the company (practical), training centre, and vocational school (*Berufschule)*. The programme lasts at least three years and is stepped, whereby trainees begin the first year with a broad introduction to different construction occupations, then specialise in the second into finishing, building or civil engineering, and in the final year in an occupation.

Ireland

Although union involvement is relatively weak, VET for NZEB in Ireland has the benefit of state support coupled with membership of the EU. As a result of the strategic advantage taken of the EU's Build-up Skills initiative, the Foundation Energy Skills (FES) programme has subsequently been rolled out nationally. There is ever-increasing participation in the varied NZEB VET courses provided for construction workers, including through well-equipped NZEB training centres for new build and retrofit. Ireland provides a good practice example of how VET – in particular continuing VET for the existing workforce - for NZEB can be put in place through the involvement of a range of stakeholders.

Britain

Besides the UK government, key stakeholders in developing, providing, and monitoring VET for NZEB are the unions, employers, clients, Further Education (FE) colleges, regional and local authorities, environmental partnerships, and training, qualification and awarding bodies. In the absence of a coordinated government policy and extensive FE funding, VET for NZEB initiatives are piecemeal, and more effective in Scotland and Wales than England. The employer- and market-based nature of the VET system marginalises unions and employer associations and hampers stakeholder efforts in planning for the VET required to create a qualified NZEB workforce with the knowledge, skills, and competences to reduce energy consumption and carbon emissions. The weakness of the work-based training infrastructure also means that most construction trainees are full-time in FE colleges rather than apprentices and struggle to obtain the work experience needed to qualify. Though more advanced for the building services, the VET system is at a low level of development in incorporating climate and energy literacy into the curricula of the different construction occupations due to lack of government regulation and recognition of occupational standards. The many initiatives by different stakeholders represent attempts to overcome these restrictions.

Overall

NZEB means transforming VET systems to encompass deeper knowledge of energy efficiency, higher technical and precision skills, and a holistic approach, conceiving the building envelope as a single thermal unit involving social interaction between different occupations. The high-quality construction process required involves teamwork and cross-occupational coordination, implying interdisciplinarity and transversal abilities. Above all, climate and energy literacy are needed to give meaning to the knowledge, skills and competences acquired, so that trainees and workers are empowered and can appreciate why they are doing what they are doing and recognize their contribution to creating a safer, more equitable society. Climate literacy is thus tied to social equity and climate justice, comprising affirmation of the social contribution and responsibility construction workers, their unions, and the industry must have to reduce emissions.

Each VET system has strengths and weaknesses. Whilst the construction curriculum of the Swedish school-based system is underpinned by climate literacy and the inclusion of transversal abilities, it is insufficiently detailed. The curriculum of the largely school-based Belgian system succeeds in mainstreaming NZEB elements, breaking down broad occupational profiles into knowledge, know-how and attitudes and developing transversal abilities, so facilitating trainees to work independently and in teams across broad interfaces. Yet, climate literacy is not directly embraced. Germany has the advantage of a stepped programme of gradual specialisation, helping trainees to understand the whole building envelope and covering climate change relating to different occupations, but is weakened by low unionisation and dependence on individual employers taking on trainees. Though the market-constrained VET systems of Ireland and Britain, where unions play a marginal role, are disadvantaged in their ability to meet NZEB requirements and incorporate climate and energy literacy in curricula, they are less constrained in developing new initiatives. In Ireland, though curricula lack emphasis on climate literacy, the state is pivotal in supporting NZEB and a training programme for construction workers has been successfully rolled out nationally. In Britain, though suffering from insistence on an employer-based VET system, lack of regulation and narrow curricula, unions play a role in promoting NZEB elements in building services curricula, and politically accountable local authority direct labour building departments together with the FE colleges provide an alternative model.

Lessons from Europe for embedding climate literacy into the Canadian Building Trades?

The European Team has been tasked with investigating the different approaches to incorporating climate and energy literacy into vocational education and training (VET) systems in Europe to inform the efforts of the Canadian Building Trade Unions (CBTU) to update the building curricula. To this end, the European team identified and analysed examples of VET for trainees and apprentices, as well as for workers already in the industry, in six European countries: Belgium, Denmark, Germany, Ireland, Sweden and the UK. Examples from these countries, and how they compare with the Canadian VET system can provide important lessons to consider for future development. These include:

1. The wide variation in VET models

As shown in the European report, VET systems for construction vary considerably. There are those that are 'school-based' and part of the education system, as in Sweden and Belgium in our cases, as well as France, Poland, and other European countries. These rely on work placements to provide work experience and those participating have the status of students. Then there is the Danish social partner-based system, which probably bears the closest resemblance to the Canadian system, certainly in terms of terminology, as those training are regarded as 'apprentices', the construction occupations remain rather demarcated, especially the carpenters, and are termed 'trades', whilst those completing an apprenticeship are called 'journeypersons' rather than skilled workers, denoting a terminology that has been replaced in most of Europe. In Germany, for instance, with the 1969 *Berufsbildungsgesetz* setting up the so-called 'dual' system between the social partners and the state, VET was conceived as a sector of tertiary education and those participating have the status of 'trainee' (*Auszubildener*) as distinct from apprentice (*Lehrlinge*). In Britain, obstinately maintaining an employer-based system, the more the state promotes apprenticeship, the fewer appear to be the number of apprentices, certainly in the construction sector as the work-based training infrastructure steadily erodes through self-employment and extensive subcontracting so that those seeking a career in construction sign up as full-time trainees in FE colleges and then struggle to obtain the necessary work experience. What is notable is that high levels of unionisation, in the cases of Sweden and Belgium, go together with school-based systems, whilst the German system remains social partner-based despite low levels of unionisation.

2. The fragmentation of the labour market

In Denmark, with its high level of unionisation, apprentices may also lose their employment given the fragmentation of the labour market, and so cease to be 'apprentices' until colleges succeed in finding an alternative. This is a scenario replicated across Europe, accentuated by labour shortages so that, with the free movement of labour in the EU and the multi-national nature of many construction firms, the construction labour market increasingly becomes a European-wide labour market. The European Qualifications Framework, intended to facilitate the recognition of different qualifications, has succeeded in establishing an equivalence in terms of the level of qualification across Europe and in framing the qualifications of the different VET systems in terms of knowledge, skills and competences or attitudes. But it has not succeeded in establishing core competences for different occupations and ignores the scope, breadth or depth of knowledge, skills and competences embedded in the different occupational profiles.

3. The duration and location of VET

It is generally accepted across Europe, especially by the unions, that to become a skilled construction worker requires at least three years VET, and for the building services closer to four years, to obtain a Level 3 or 4 qualification. This is also evident from the cases given. However, what differs is the nature of the VET provided. In Sweden, for instance, students spend most of the time in a classroom or workshop setting, and work experience comes mainly later, particularly in the fourth and fifth year of training as an apprentice in a firm. In Denmark, VET alternates in blocks, with the classroom and workshop (or simulated) element lasting many months at the beginning, even up to a year, and only gradually reducing. Whilst in Germany, VET is divided almost equally between classroom, workshop and workplace, again on a block release basis. In Britain, in contrast apprenticeships rely largely on day release to a college, though this was not the case up to the 1990s, when the popular Standard Scheme for construction training was in place, consisting of blocks of approximately 13 weeks. With the growing requirement for higher levels of qualification as the labour process becomes more abstract and requires greater knowledge, know-how and precision, the classroom and workshop elements of VET have inevitably increased, not least because of the pressures of working on site, the difficulties of providing adequate work experience, and the importance of developing a climate and energy literate workforce.