

Vocational education and training in construction: low road or high road approaches to apprenticeship?



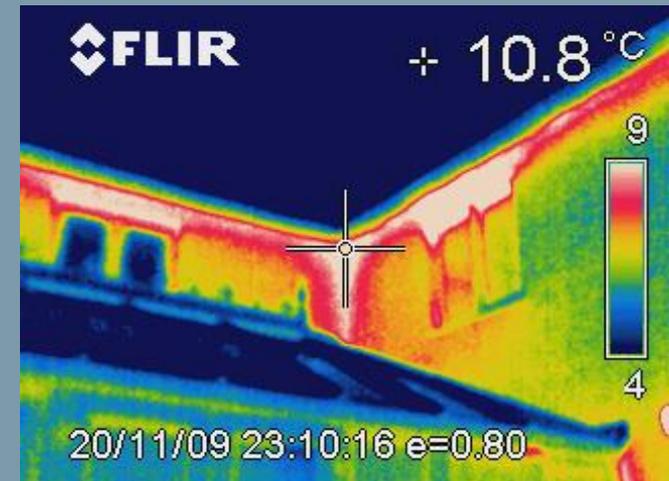
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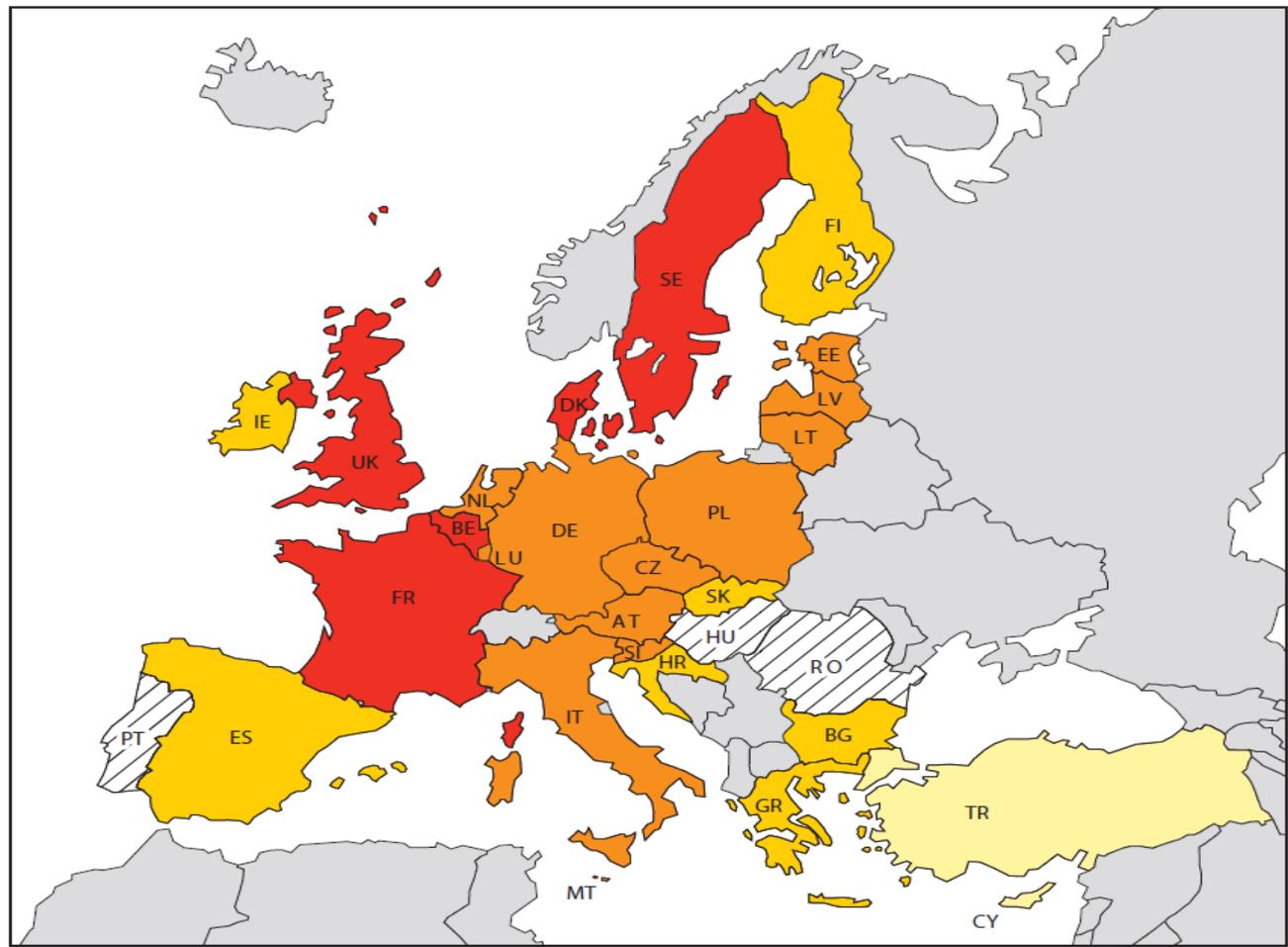


CEDEFOP Symposium, October 2021

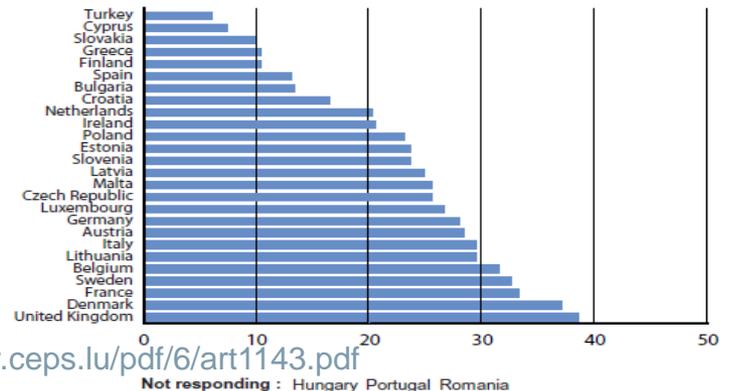
Industries set to experience the highest job demand growth (absolute) (ILO WESO 2018)

Sector	Jobs (millions)
Construction	6.5
Manufacture of electrical machinery and apparatus	2.5
Mining of copper ores and concentrates	1.2
Production of electricity by hydropower	0.8
Cultivation of vegetables, fruit, nuts	0.8
Production of electricity by solar photovoltaics	0.8
Repair of motor vehicles and motorcycles, repair of personal and household goods	0.7

EU
dwellings
built before
1945
generally
“Hard to
Heat”
Add “Fuel
Poverty”
HUGE
WORK
POTENTIAL



Dwellings built before 1945 (%)



Source: GEODE 2005, <http://www.ceps.lu/pdf/6/art1143.pdf>

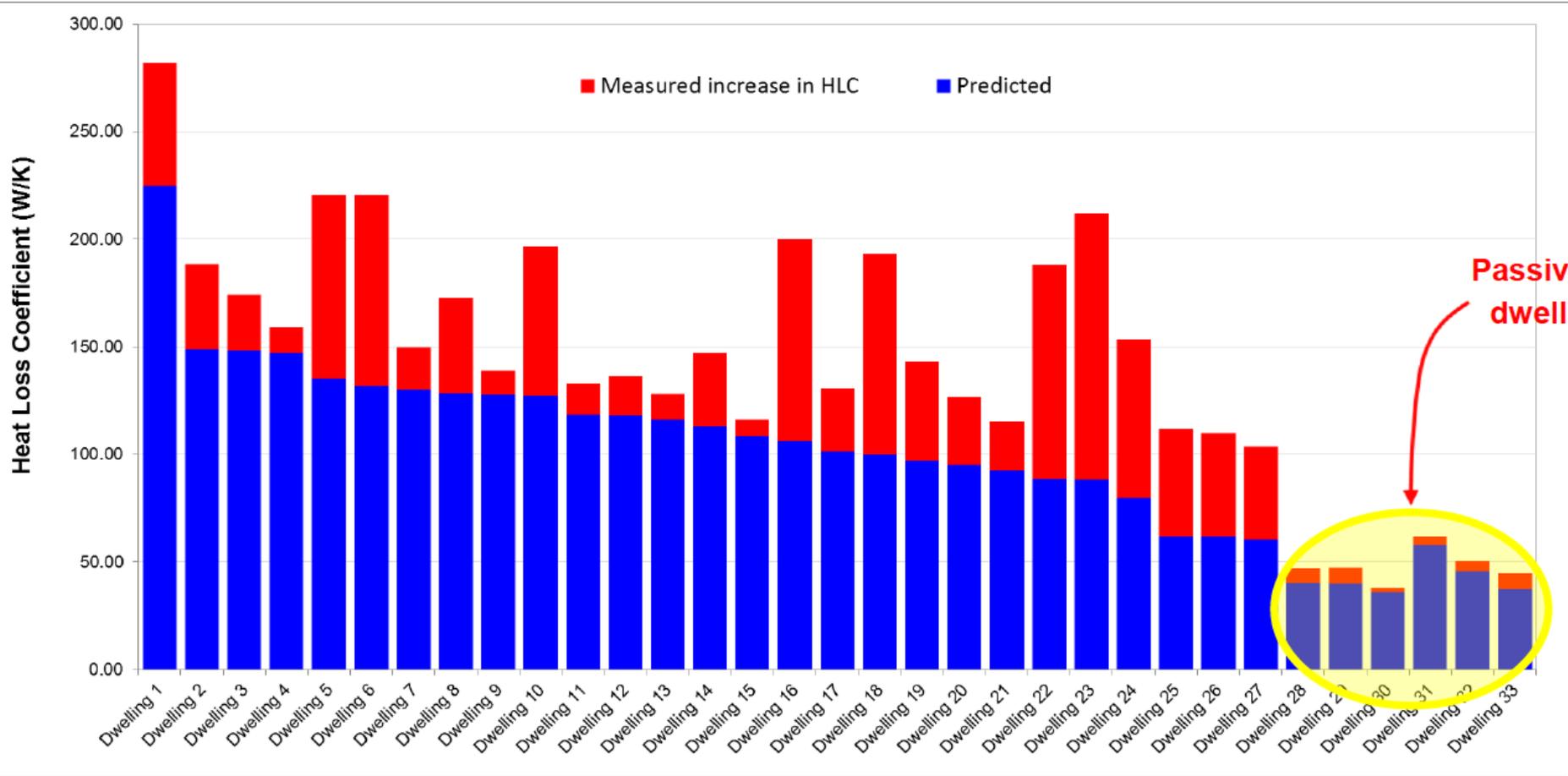
Policy context: European Targets

EU construction employs 14.5 m, 10.4% GDP,
D and UK =2.3m, IT=1.4m, DK= 0.3m

Greening the construction sector

- Construction responsible for 40% EU CO₂ end-use emissions
- Energy Performance in Buildings Directive: energy efficiency targets met through air-tight building envelopes & on-site renewables → Nearly Zero Energy Building
- European Green New Deal, (December 2019)

Energy Performance Gap



Vocational Education and Training for low energy construction (VET4LEC) project

Objectives :

- evaluate approaches to training in low energy construction including through apprenticeships
- provide criteria for curricula development and outline components of core energy literacy curriculum
- develop guidelines and recommendations addressing weaknesses

Research questions

- How can **occupational coordination** be improved to ensure successful construction of energy efficient buildings and reduce performance gap?
- How can **VET and apprenticeship opportunities be extended** to enhance attractiveness and inclusiveness of sector?
- How can **trainers become more aware** of VET for LEC requirements and difficulties of implementation?

Social-partner project (FIEC & EFBWW), EU funded
10 countries: BE, BG, DE, FI, HU, IR, IT, PL, SL, ES

- **Analysis and reviews** of construction sector, workforce and VET4LEC developments, including apprenticeships
- **Visits** to Belgium, Germany, Finland, Bulgaria, Poland, Italy and Ireland:
 - investigating VET4LEC provision with VET providers and social partners
 - exploring LEC sites and interviewing LEC builders

Build UP Skills (2010-2017)

EU Programme –30 countries:

- Pillar 1: establish status quo in VET4LEC provision, identify needs and develop national action plans
- Pillar 2: Funding for initiatives addressing gaps

Barriers identified

- ‘weaknesses’ of VET systems/ unsatisfactory interdisciplinarity
- ‘shortage cross-trade knowledge and skills’, ‘insufficient coordination’
- lack of holistic understanding for house/building as integrated system

VET4LEC and Labour Market Characteristics

VET4LEC	Country Groups	% self-employed	% SMEs	% Medium-Sized firms
Mainstreamed	Belgium	25%	89-90%	20-22%
	Germany	11%		
Embracing VET4LEC	Ireland	37%	86-88%	13.2%
	UK	49%	95-98%	

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'High road' NZEB Adaptation: Belgium and Germany

Both countries well-equipped for NZEB oriented apprenticeships

Belgium: occupational profiles turned into curricula

- Social partnership approach to occupational profiling/updating
- Recognition of occupational overlaps
- Divisions into knowledge, know-how and attitudes
- Good CVET for workforce to support apprentices in workplace

Germany: LEC embedded in curricula

- Social partnership approach to occupational design and curriculum development derived from national profiles
- Highly structured 'Lernfelder' approach
- Existing curricula detailed and reviewed and updated
- CVET through local employer networks, supporting apprentices in workplace

'Low Road' adaptation: Ireland and England



Ireland

- Derived from Build Up Skills project
- Moderately detailed generic curriculum but less detailed than German VET curriculum
- Can be used for VET/ apprenticeship or CVET activities with adaptation

England: Leeds guidelines

- Not curriculum but could serve as indicative content
- Not the detail of an occupational profile
- Can be used for apprenticeships, VET and CVET
- Graded into operative, supervisory, management and designer levels
- Can be reconfigured according to country needs

LEC training and apprenticeships: considerations

Low energy performance is ‘socio-technical’

- Communication vital
- On-site quality control must be optimised
- Achievable by supervision (‘low road’) and/ or self-project management (‘high road’)

What is needed for ‘high road’ apprenticeships

- Broadly based VET qualifications
- Robust consultative structures for upgrading VET/ apprenticeships and qualifications
- Financial mechanisms for innovation in workplace, workshop and classroom
- Relatively well-qualified workforce
- Upgrading existing qualifications and development of new CVET curricula for supervisory level

Differences and similarities in challenges and solutions for VET/apprenticeships for LEC

- Each country has own solutions but core elements and common requirements across EU
- Variety of different approaches to apprenticeship
- Development of VET4LEC ongoing

Complex picture:

- Different labour market constraints, particularly impacting on work-based training
- Different VET systems of governance, with varying state and social partner involvement
- Different structure of VET/apprenticeship, from dual to school-based

Need to consider:

- Capacity
- Existing workforce know-how and attitudes
- Work design
- Country-specific priorities

Common challenges to embedding energy literacy in construction apprenticeships

- Large numbers of **micro businesses** making mobilisation of resources for VET4LEC/ work-based elements difficult
- Significant **unregulated activity** undermining VET
- **Under or unqualified segments of workforce** hindering effective work-based apprenticeship learning
- **Structural issues:** communication difficulties (connected with multi-lingual working environments, age profiles, narrow recruitment profiles)
- **Specific skill shortages** and need for response to rapid technological developments

Adaptation to NZEB

- Apprentices need high quality workplace, workshop and classroom experience
- Apprentices depend on quality support in college and workplace from experienced trainers/ colleagues
- Quality of workplace support depends on how well equipped for NZEB existing workforce is, which in turn depends on good CVET
- Potential 'benign circle' of good CVET → good work experience for apprentices → up to date workforce to support future apprentices

Photos: Belgian college workshop equipment and low energy house simulation



Conclusions



- Apprenticeship emphasis on ‘operational’ work experience well-placed to develop NZEB abilities
- Importance of workplace as a site for learning as well as classroom and workshops
- Workforce quality key factor in quality of workplace learning
- Development of NZEB apprenticeship needs to go hand in hand with development of existing workforce, well equipped workshops and classrooms

Photos: Irish training workshop and class for existing workforce on insulation