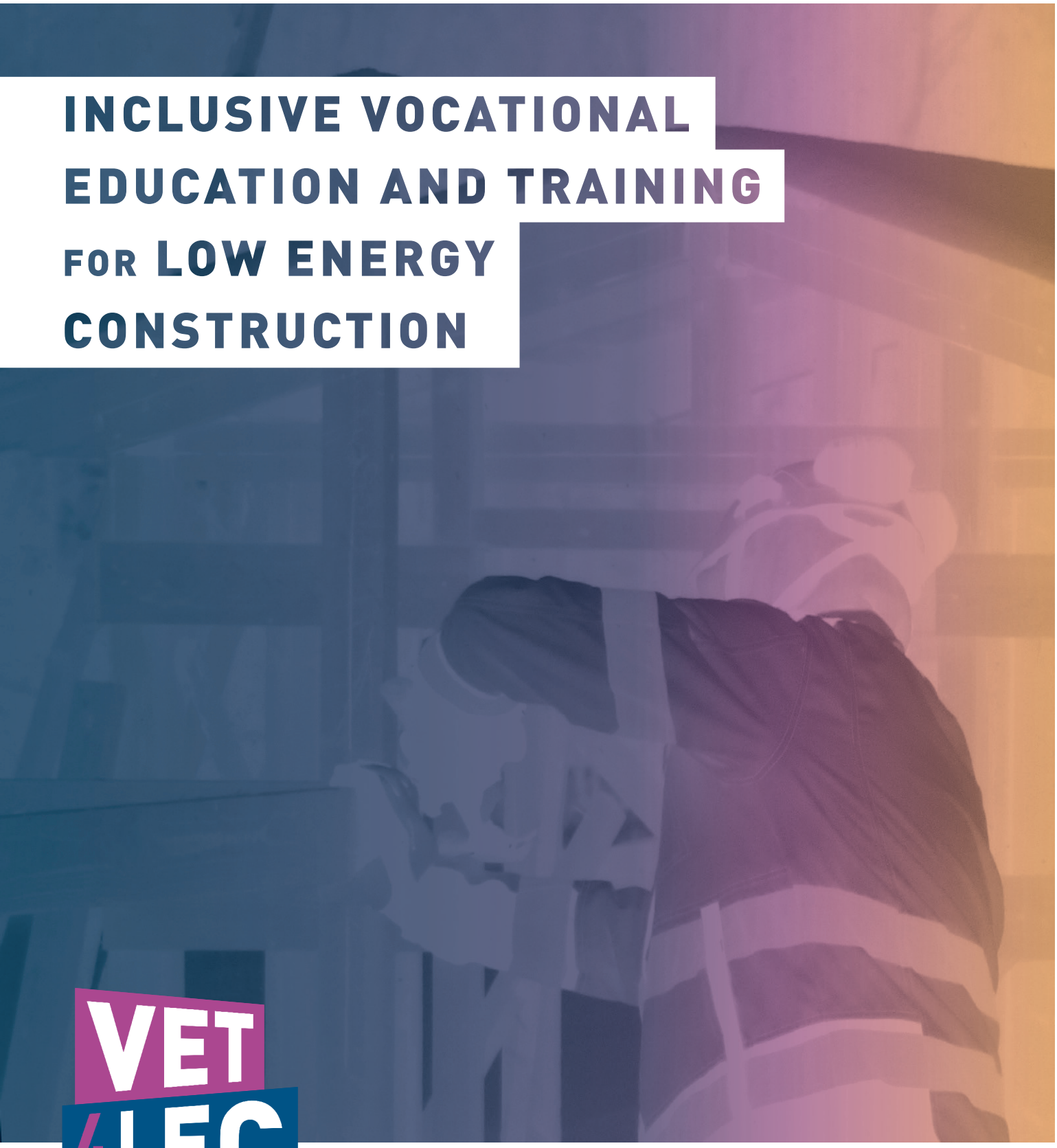
INCLUSIVE VOCATIONAL EDUCATION AND TRAINING FOR LOW ENERGY CONSTRUCTION



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COUNTRY SUMMARY HUNGARY
FEBRUARY 2019

European Federation
of Building
and Woodworkers

EFBWW

FIEC

THIS SUMMARY was prepared by the research team,
based on the Hungarian national report produced by EFEDOSZSZ.

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A SOCIAL DIALOGUE PROJECT (REF.: VS2016/0404) UNDERTAKEN BY

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COVER PHOTO: Carpentry trainee at Vantaa Vocational College/Finland

Project carried out with the financial support of the European Commission.

This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

HUNGARY

Construction Industry

The Construction industry contributes 4.2% to GDP, which is less than half the European average. There has been a decline in investment from 2006 due to austerity policies implemented following the financial crisis of 2008. During the recession (2007-2013), 85,000 workers left the sector, many moved abroad. The industry started recovering slowly in 2014-2015 due, primarily, to road, railroad and infrastructure projects financed largely from EU sources. There are other signs of recovery: the number of new completed dwellings increased to 10,00 in 2016, although this is still too low compared to the replacement rate of 40,000 required a year. Further expansion of the housing construction market is expected. There are 85,000 companies and 90% have no more than 5 employees. The sector is not considered to be profitable compared to infrastructure and civil engineering, and the number of loss-making and disappearing companies is high. Most companies have no financial reserves and no resources to contribute to training, innovation or other social initiatives.

Construction workforce

Depending on the definition, the construction workforce in 2016 was between 277, 800 and 317,500, while the number of self-employed stood at 39,700. Bogus companies using labour leasing and agency workers are widespread. Interest in training, retention and quality is very low. There are full time employed workers, 'hired' labourers in subcontracting chains, and those who are undeclared or partially declared. All occupations in the construction industry face skills shortages. An estimated 30,000 skilled workers are needed. A lot of workers do not have any qualifications. Working overtime is common practice. The quality of work produced and health and safety are big problems. Low wages are standard. Productivity is below EU average.

Vocational Education and Training (VET) system

Initial Vocational Education and Training (IVET) is the responsibility of the Economy Ministry and other ministries are responsible for specific vocational qualifications in their fields; the Human Resources Ministry designs learning outcomes and framework curricula. Social partners are involved in developing VET policy; they participate in advisory bodies such as the National Council for Vocational and Adult Training. The council consults on proposals and draft legislation. Business and industry participate in the consultation process as well as organising training. Apprenticeships, introduced in 2012, are coordinated by the Chamber of Commerce and Industry, whose role further expanded with the introduction of a guaranteed work placement scheme for learners in 2015.

Hungary operates a school based IVET system, although recent legislative changes have devolved more responsibility on to employers and a dual system form of IVET was launched in 2014, albeit on a very small scale. However, it is still difficult to find placements as the majority of employers in the construction sector are small enterprises with an irregular supply of work and unable to sign student contracts. Young people can enter VET from the age of 14. VET is available at Upper Secondary, post-Secondary and tertiary levels. At Upper Secondary level, it is a four–year programme and combines VET and general education. Learners can continue on to post-secondary VET or higher education. The other route is to complete a three-year practice oriented programme, followed by a two-year course to obtain the upper secondary school leaving certificate, and continue on to higher education. The completion of upper and post-secondary VET programmes involves passing a practice-oriented exam. A National Qualifications Register (NQR) was first published in 1993. Major changes were made to it in 2007 when modular, competence based qualifications were developed. The latest review of the register was completed in 2012 with the objective of eliminating overlaps and professional/content-related duplication

between qualifications. The modular principle and a competence-based approach were kept, vocational qualifications, partial qualifications and specialisations were retained, but the total number of qualifications decreased by half. The Hungarian Chamber of Commerce and Industry coordinated the development of the new NQR. The Government Decree of 2016 on NQR links VET qualifications to the Hungarian Qualifications Framework (HuQF).

Continuing VET (CVET) courses at all levels (secondary, post-secondary and tertiary) are also open to adults. Outside the formal school system, there are courses for adults run by economic chambers, which prepare for master craftsperson exams, mandatory CVET programmes for a given occupation, vocational programmes leading to NQR qualifications and courses for the unemployed and other vulnerable groups.

Hungarian Build Up Skills – LEC training needs

The Build Up Skills Status Quo Analysis (SQA) was restricted in evaluating the training needs of the workforce as detailed data on the training and qualification levels of the workforce, existing LEC-related training provision, and workers trained and employed in energy efficiency (EE) and renewable energy systems (RES) installations were not available. Based on interviews with a non-representative sample of construction companies, the SQA stated that there is a shortage of LEC trained building workers in all construction occupations, including building technicians, central heating and plumbing installers and insulation installers. As the sample was dominated by HVAC specialist companies, very few commented on carpenters, building frame, door and window installers, roofers or plasterers. The report concluded that for some specialisations there is no LEC related VET at all, and that existing VET provision is in need of a general upgrade including: a review of training materials, development of advanced training for teachers, standardisation and accreditation of adult learning, and promotion of practical training in collaboration with construction companies. Other recommendations include raising awareness of energy efficiency in the construction sector as well as among the general public, promoting the benefits of CVET, and developing cooperation between vocational schools, professional institutions and the industry.

VET for LEC developments

In Hungary, LEC topics have not yet been introduced into mainstream IVET. The report suggests that there are short, CVET courses in renewable energy though information about providers or course content is not available. Employers play an important role in providing CVET courses in general as well as energy efficiency related short courses, though these are likely to be in-house and not accredited. In Hungary, the Build Up Skills investigation provided the impetus for developing capacity for VET for LEC. As part of Trainbud, the BUS Pillar II project, CVET courses were developed for HVAC workers who had already had some initial training in order to support and consolidate the emergence of a trained workforce. Trainbud facilitated the establishment of the Sustainable Construction Skills Alliance to support the long-term continuation of training schemes developed and further enhance the validity of VET qualifications.

Initiatives related to VET for LEC

Following on from Build Up Skills Status Quo Analysis and the Roadmap (BUSH), Hungary developed *Trainbud (2014-2017)*, a voluntary qualification scheme (quality labelling) for HVAC skilled workers. It created a database of qualified workers and sought to raise awareness of energy efficiency measures and the importance of installation and maintenance by appropriately qualified personnel, and to encourage workers to invest in training in EE and RES. The project was jointly developed and run by the Sustainable Construction Skill Alliance (SCSA) with representatives from professional organisations, manufacturers and training institutions. 400 trainees took part in training of varying length and intensity, depending on existing training and qualification levels. Partners of the SCSA were enthusiastic contributors to VET development and VET institutions plan to continue to run courses. A register of qualified HVAC professionals can be found on the Trainbud website[1].

Hungary Green Building Council, affiliated to the World Green Building Council, a not-for-profit organisation, campaigns for radical transformation of the built environment, provides information on sustainable practices, facilitates learning and communication, and organises training courses for professionals and stakeholders engaged in the construction industry.

1 https://ec.europa.eu/energy/intelligent/projects/en/projects/build-skills-trainbud

HUNGARY – NZEB definition

OFFICIAL STATUS	Under development
RESIDENTIAL/ NON-RESIDENTIAL	✔
SINGLE FAMILY HOUSES	✔
APARTMENT BLOCKS	✔
OFFICES	✔
EDUCATIONAL BUILDINGS	✔
HOSPITALS	✔
HOTELS/RESTAURANTS	✔
SPORT FACILITIES	✔
WHOLESALE AND RETAIL	✔
BUILDING TYPOLOGY	New build
BUILDING CLASS	Private/public
BALANCE	E demand/E generation
PHYSICAL BOUNDARY	Single building
HEATING DHW	✔
VENT, COOL, A/C	✔
AUXILIARY ENERGY	✔
LIGHTING	✔
PLUGS, IT, APPLIANCES	?
CENTRAL SERVICES	-
ELECTRIC VEHICLES	-
EMBODIED ENERGY	-
ON-SITE RES	✔
OFF-SITE RES	✔
EXTERNAL GENERATION	✔
CREDITING	✖
PRIMARY ENERGY INDICATOR (kWh/m²/y)	✔

Source: based on European Commission (2016a) *Synthesis Report on the National Plans for Nearly Zero Energy Buildings*, JRC Science for Policy Report

National NZEB definition

According to the European Commission's Joint Research Centre for Policy Report (EC 2016a), Hungary's NZEB definition is currently under development.
In its applied definition, Hungary defines NZEB for both residential and non-residential buildings, including 8 subcategories: single family houses, apartment blocks, offices, educational buildings, hospitals, hotels and restaurants, sport facilities, and wholesale and retail (ibid: 16: Table 4).
In terms of building typology, classification, balance type, and physical boundary, Hungary refers to new buildings, private and public buildings, energy demand versus energy generation, and single building respectively (ibid: 17-18: Figure 3).
Hungary's definition includes four types of energy use: heating DHW; ventilation, cooling and A/C; auxiliary energy; and lighting; with plug loads, appliances and IT possible to add (ibid: 18-19: Table 5).
With regard to the specification of generation boundaries in the definition, Hungary's definition considers on-site, off-site, and external generation, but not crediting (ibid: 20-21: Table 6).

Intermediate targets

Hungary has set the intermediate targets below for all new buildings, and all new buildings occupied and owned by public authorities.

Case study

The Hungarian case study is a Wienerberger e4 brick house with external render, known as E4. The following observations complement, and should be read in conjunction with, the information contained in the National Report.

It is not been possible to identify the exact specification for E4 in order to compare to Passivhaus, although there is general information on it such as a description of the E4 house at the UK BRE Innovation Park: https://wienerberger.co.uk/inspiration/e4-bre-innovation-park. An e4 terrace houses in Belgium provides a primary energy for heating of 38 kWh/m²/y: https://clay-wienerberger.com/expertise/e4-terrace-houses-in-belgium

Wienerburger E4 is described as having a Fabric Energy Efficiency of 46 kWh/m²/y: https://issuu.com/wienerberger/docs/131007132824-6c333d30c4ab41198f675845a32a7de0/22. Current Hungarian NZEB refers to 50-72 kWh/m²/y Primary Energy. It is therefore possible that the Wienerberger falls within this requirement.

HUNGARY – Intermediate targets

ALL NEW BUILDINGS			ALL NEW BUILDINGS OCCUPIED AND OWNED BY PUBLIC AUTHORITIES		
QUALITATIVE 2015 TARGET	QUANTITATIVE 2015 TARGET	NOTES	QUALITATIVE 2015 TARGET	QUANTITATIVE 2015 TARGET	NOTES
Requirements strengthened in 2016; the targets are under discussion. Also direct requirements on solar systems included.	n/a	n/a	As other new buildings	n/a	n/a

The case study refers to Renewables under:

> *There is no direct power generation unit (e.g. solar cell) on the building, but its technical preparation has been completed. The amount of renewable energy used in terms of total energy demand is approximately 50% (passive solar gain, heat from the heat pump, heat from the environment).*

Note that the case study uses heat pump and MVHR ('heat from the environment' both of which are classed as 'nearly zero carbon technologies') and relies on passive solar gains for winter heat (100% renewable – zero carbon), but there is no energy generation from PV. The monitoring data referred to at http://www.e4haz.hu/?id1=monitoring is not very helpful since it provides only energy used and not a comparison with the design energy use. Also January 2018 shows 21,390 Ft whereas November and December 2017 show 1,050 Ft and 1,271 Ft, indicating monitoring problems.

E4 is based on traditional build techniques, the manufacturer's claim low cost as well as energy efficiency.

A report (in Hungarian) on NZEB is available at the Wienberger website: http://e4haz.hu/files/1427991340.pdf. The title is: *Designing energy-conscious family house, architectural and mechanical optimisation: Wienerberger e4 house project*. This report states that the house is built:

> *according to the Government Decree on Certification of Energy Performance of Buildings cost-optimized or energy-efficient building, in which at least 25% of the annual energy demand expressed in primary energy is renewable from the source of energy that is generated in the building, comes from the real estate, or is perhaps produced nearby (our translation).*

The document states that: 'the official announcement of nearly zero requirements is expected by 31 December 2017' (A közel nulla követelmény hivatalos kihirdetése 2017 december 31-ig várható).

This Hungarian case study therefore provides a potential example of NZEB specification with on-site renewables, effectively the Hungarian definition of new build NZEB, and warrants further analysis of their IVET and CVET supported by in-use energy performance monitoring to assess the actual building performance.

CASE STUDY: Wienerberger e4
Source: https://wienerberger.hu/epitesteglabol/fel%C3%A9p%C3%BClt-magyarorsz%C3%A1g-els%C5%91-energiahat%C3%A9kony-e4-h%C3%A1za