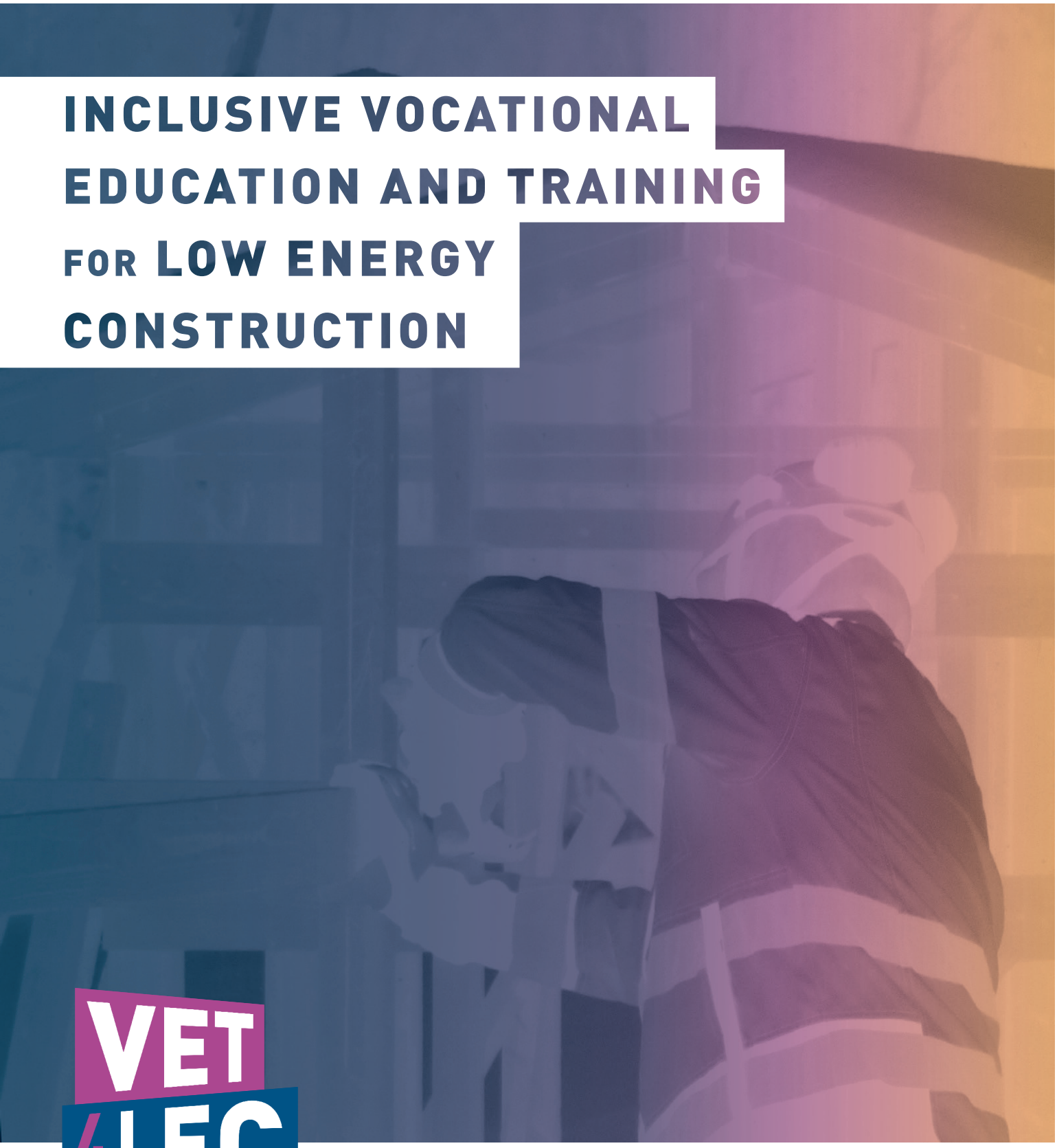
INCLUSIVE VOCATIONAL EDUCATION AND TRAINING FOR LOW ENERGY CONSTRUCTION



VET 4LEC

COUNTRY SUMMARY ITALY
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European Federation
of Building
and Woodworkers

EFBWW

FIEC

THIS SUMMARY was prepared by the research team,
based on the Italian national report produced by FILLEA CGIL.

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ITALY[1]

Construction Industry

The Construction industry contributed 6.2% of GDP in 2015, representing an increase from 4.3% in 2013, but nevertheless a decrease from 9.5% before the recession started in 2008. The recession had a dramatic impact. Between 2008 and 2016, the sector lost half its direct employees, production decreased by 41.5%, turnover by 35%, and employment by 25%. Signs of recovery are observable since the second half of 2015, after four years of a decrease in employee numbers. There has been a reduction in bankruptcies and an upturn due to tax incentive measures for building restoration and energy upgrading initiatives. The energy efficient renovation sector is booming thanks to Eco Bonus and Renovation Bonus. However, the situation remains critical. During the recession, installation work fared better than traditional construction activities. Wood construction has also been growing steadily since 2010. The construction sector includes the restoration of historical buildings and employed 1,163,255 direct employees between 2011 and 2016. In 2012, undeclared work was estimated to be 16% (compared to the average of 14.9% for all economic sectors). In 2016, inspections revealed that undeclared employment relations had increased, with irregularities found in 64% of cases investigated.

The construction sector is very fragmented with one of the highest number of small and medium size firms in Europe. The number of companies has decreased since 2008 (629,791) and was down to 529,103 in 2015, a drop of 16%. The recession had a bigger impact on companies that employed fewer than 50 workers. According to 2012 data, the great majority had 9 or fewer employees (96%) and nearly 4% had 10-49 employees. The average number of employees in firms is 2.7, which is the lowest in Europe. The share of *self-employment* increased from 36.6% of the sector to 43%.

Construction workforce

According to 2015 statistics, the broad construction sector employed 1,444,700, down from 1,929,000 in 2008[2]. The sector accounts for 6.6% of all employment. According to 2017 FILLEA (the Italian Confederation of Labour) data, the number of workers in the narrow construction sector was 593,894. Within this, those with regular work and contracts numbered 508,162. There were also 16,875 apprentices and the remainder were white-collar office workers (67,723) and managers (1,134). The characteristics of the workforce are:

- *Gender (2016-17):* Male employment accounts for more than 90% of the total. In archaeology and restoration, women make up 20% of the workforce.
- *Migrant workers (2016-17)* tend to be employed at the lower levels of the occupational hierarchy and make up 30% of the workforce. This includes workers who are not Italian, but could be long-term resident, have irregular residence/employment status, or be posted.
- *Age (2016-17):* The average age of construction workers is 40, and an estimated 60% are over the age of 40. Migrant workers tend to be younger, 35 years old on average.

Vocational Education and Training (VET) system

VET in Italy is characterised by multi-level governance and involves national, regional and local stakeholders. Ministries of Labour and Education define the general framework and policies. Regions and autonomous provinces are in charge of providing VET and apprenticeship schemes. Regions exercise their duties also by delegating and transferring functions and tasks to the Provinces (Local Authorities). The State remains responsible for setting minimum standards for training programmes. The Regions have the following

1 Not able to provide data on NACE activity categories, LEC related occupations, number of workers by occupation, casual employment or skill shortages.
2 Data from Eurostat 2016. Refers to the broad 'building' sector and includes all related occupations such as architects, plant engineers, metal workers, the self-employed and irregular workers.

responsibilities: the regulation of training profiles for apprenticeships, the local regulations governing VET, continuing VET (CVET) and access to the trade, the disbursal of loans to trainees. Some regions introduced specific laws governing apprenticeships, but not all. Social partners have a general advisory role on VET at all levels, in particular shaping and regulating professional apprenticeships. They also provide CVET, and promote company-level training programmes. In the construction sector, VET takes place through the building school system, which is financed with contributions deriving from the sector and managed on a paritarian basis by the sectoral social partners. FORMEDIL is the national joint body that coordinates the local building schools and has branches in different regions.

There is a national VET system for the construction industry with national standards, which the regions can in turn expand on according to the needs of the territory and must also comply with. The structure of qualifications and VET provision vary by region and there is no mechanism for mutual recognition. Currently the national qualifications framework and the attribution of EQF levels are applied at national level (with national and regional technical tables related to sector contributions). VET organisations are accredited by the Regions and the main criteria are administrative and logistical, not related to the standards of professional competence of training practitioners. There is no evaluation of training content or the resulting level of learning.

The performance of VET is varied in terms of effectiveness. Training providers are more closely regulated with the requirement to provide training in clearly defined path and at levels aligned to EQF. Upper secondary level VET includes: five-year programmes in technical schools and vocational schools that combine general and vocational education and lead to EQF Level 4 and 5 qualifications with access to higher education; four-year modular vocational training programmes organized by the regions, or education and training courses that include work learning and lead to qualifications at EQF levels 3 and 4; and four-year apprenticeship programmes.

Continuing vocational education and training (CVET) falls within the competence of regional authorities and private institutions and also includes higher education and technical training courses, non-academic training in strategic professional areas leading to EQF level 5 qualifications. Other courses of the regional authorities are targeted at those who are unemployed, migrants and disabled. VET for adults is offered by public and private providers and includes VET qualifications at upper secondary level to encourage re-entry into education. The social partners manage CVET that meets sectoral and regional needs and is supported by bilateral inter-professional funds (social partners)

Italian Build Up Skills – LEC training needs

The Build UP Skills Status Quo Analysis estimated that nearly 100,000 workers would need to be trained in LEC-related competencies for EU2020 targets to be met. The report stated that the significant barriers to completing this challenging task are: no national system for qualification and accreditation at the time (though this is an ongoing process in relation to the national qualifications framework, aligning it with regional qualification systems and the EQF); lack of investment in training by private companies; and fragmented public VET system (national and regional). Recommendations include: development of new educational content and training materials; training of trainers by utilising e-learning technology and strengthening their career paths; setting up a system of certification of competences gained in informal or on the job training; establishing a national register of qualified trainers. The recommended measures aim to train operators in the sector by providing them with cross-cutting and 'transversal' skills bordering the various areas of professionalization.

VET for LEC developments

In line with decentralisation of powers and functions, the Regions are responsible for VET for LEC development. All regions are reported to provide courses related to energy efficiency and renewable energy, developed and accredited according to regional qualification frameworks, though it is difficult to obtain detailed information about these. FORMEDIL, the social paritarian organisation responsible for training in the construction sector, trains the majority of construction workers and runs some LEC courses (e.g. in RES installations). Further information about these courses is not available. An introductory course for operatives was developed by FORMEDIL through I-Town, the Build Up Skills Pillar II project, targeting building operators, thermos-hydraulic operators, electricity operators, electronics operators, wood operators, teachers and other construction professionals. The training programme is modular and the training materials are publicly available. As a result of the positive experience in the I-Town project, FORMEDIL intends to propose to the social partners to make this training activity mandatory. The BRICKS project constructed five occupational profiles associated with LEC, for use by VET educators. However, problems with both CVET needs and provision have been identified. Irregular (undeclared) work makes CVET problematic in many situations. There is a lack of policy at national level and, in particular, the needs of small companies are not attended to. CVET needs to remedy: poor teamwork and co-ordination, lack of a 'big picture'

perspective, and lack of specific skills connected with LEC. Generally, however, the picture is fragmentary and uncoordinated.

Initiatives related to VET for LEC

I-Town[3] *(2014-2017)* aimed to establish or upgrade training for skilled and other on-site workers in energy efficiency and renewable energy in buildings. The project involved a survey of building workers and established a lack of energy efficiency-related competences and also a lack of awareness of LEC. During the course of the project, through several training schemes, over 240 workers were trained and over 4,000 were reached through Youtube video lessons. Training developed for trainers also utilised e-learning platforms and 82 trainers participated in seminars and workshops. The objective is to achieve nationally recognised certification of the competences acquired and to ensure the long-term sustainability of the training developed. A large survey of construction workers conducted found lack of awareness of the importance of LEC competences. The cost of VET, for both workers and companies, was identified as a barrier to increasing participation[4].

BRICKS (2014-2017) (Building Refurbishment with Increased Competence, Knowledge and Skills) sought to help national VET systems to increase the knowledge, skills and competences of workers in the field of building refurbishment. The project engaged all regions, which began to update profiles to take into account EE related competences. A system has been developed to certify non-formal and informal learning, in alignment with the EQF. Guidelines for Assisted Training on the Job have been devised for three professional profiles: building automation, building envelope and geothermal pump installers. National standards and qualification profiles are being developed for occupations relevant to RES and a BRICKS label introduced to certify companies whose employees are qualified through the scheme. CVET barriers are: lack of job market recognition of the training undertaken and the associated costs[5].

BROAD (2015-2017), an EU funded project led by FILLEA CGIL (Federation of Wood, Building and Allied Industry Workers) of Italy, sought to develop social dialogue in the construction sector to support the green transformation of the European construction industry. The project involved a review of the development of green building in the partner countries of Italy, Poland, Spain, Belgium and Germany, focussed

3 http://www.bus-itown.eu/home

4 https://ec.europa.eu/energy/intelligent/projects/en/projects/build-skills-i-town

5 https://ec.europa.eu/energy/intelligent/projects/en/projects/build-skills-bricks

ITALY – NZEB definition

OFFICIAL STATUS	In official document
RESIDENTIAL/NON-RESIDENTIAL	✔
SINGLE FAMILY HOUSES	✔
APARTMENT BLOCKS	✔
OFFICES	✔
EDUCATIONAL BUILDINGS	✔
HOSPITALS	✔
HOTELS/RESTAURANTS	✔
SPORT FACILITIES	✔
WHOLESALE AND RETAIL	✔
BUILDING TYPOLOGY	New/retrofit
BUILDING CLASS	Private/public
BALANCE	E import/E export
PHYSICAL BOUNDARY	Building unit
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

ITALY – Energy performance expressed as primary energy (kWh/m²/y)

RESIDENTIAL BUILDINGS (kWh/m²/y)		NON-RESIDENTIAL BUILDINGS (kWh/m²/y)		
NEW	EXISTING	NEW	EXISTING	NOTES
Class A1	Class A1	Class A1	Class A1	Energy requirements to be calculated; minimum requirements provided as U values divided per climatic zones. Lighting is included in nonresidential buildings.

ITALY – 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
The maximum U-values required to be lowered by 15% compared to their current value from 1 January 2016. A similar improvement will apply to the minimum performance of heating and conditioning systems. The obligation to include RES in new buildings and major renovations is equal to 20% of total consumption for heating, cooling and hot water. This latter share to be increased to 35% from the beginning of 2014 and to 50% from the beginning of 2017.	New obligations are to come into force from October 1st, 2015 for new and existing buildings. It is believed that on the basis of the current share of 1.6% of new buildings, 20% can be ranked as NZEB.	Verification of the requirements for nearly zero-energy buildings is planned to be applied starting from 2018.	As other new buildings	As other new buildings	n/a

on similarities and divergences in regulatory aspects, policies, and economic and construction sector employment contexts and industrial relations experiences. It developed suggestions and recommendations for strengthening the role of social dialogue in the transition to a low-carbon economy[6].

National NZEB definition

According to the European Commission's Joint Research Centre for Policy Report (EC 2016a), Italy's NZEB definition has been included in an official document. In its definition, Italy defines NZEB for both residential and non-residential buildings and includes eight specific 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, Italy refers to new buildings and renovations, private and public buildings, energy import versus energy export, and building unit respectively (ibid: 17-18: Figure 3). Italy's definition includes five types of energy use: heating DHW; ventilation, cooling and A/C; auxiliary energy; lighting; and central services (ibid: 18-19: Table 5). With regard to the specification of generation boundaries, Italy's definition considers on-site, off-site, and external generation. Crediting has not been considered (ibid: 20-21: Table 6).

The numeric indicators of energy performance above, expressed as primary energy (kWh/m²/y) have been specified in Italy's definition (EC, 2016a: 23-26, Table 7).

Intermediate targets

Italy has set the intermediate targets above for all new buildings and all new buildings occupied and owned by public authorities.

6 http://www.broadproject.eu/

There is no single NZEB definition for Italy due to its widely ranging climatic zones where appropriate LEC design and renewable technologies varies for low energy thermal comfort. Geographically, insulation requirements vary from minimal (where mild-to-warm) through to maximum for cold winters in the north. For the hot south, low energy envelope design is based traditionally on heavyweight construction with exposed thermal mass. Similarly, the energy efficiency of renewable technologies such as heat pumps will vary depending whether predominantly operating for heating or cooling.

CASE STUDY 3: Porta Palazzo
http://www.luoghicomuni.org/portapalazzo/sites/default/files/file-allegati-articoli/LCPP_SCHEDA PROGETTO.pdf

Case studies

The case studies, RCA RosAsetone, Teatro 1 and Porta Palazzo are taken from the COSTRUIRE IL FUTURO Report; pages 52, 59 and 63 respectively: https://greenhubblog.files.wordpress.com/2016/02/16206_rapporto-oise-20151.pdf. The following observations complement, and should be read in conjunction with, the information contained in the National Report.

The case studies represent LEC for the colder regions of the Italian north. There is insufficient technical information to check whether they meet the specifics of regional NZEB requirements expressed in primary energy units or cost-effective criteria, although case study 2, Teatro 1, meets Casaclima A+ classification for Udine based on 2003 EPBD compliance and is therefore highly energy efficient.

CASE STUDY 1 is an ARCA timber frame house (ARchitettura Comfort Ambiente) designed for earthquake resilience with a low energy specification. No description of the regional energy/NZEB standard has been identified, although there is reference to triple glazed windows, 16 cm of insulation, a heat pump, solar thermal, 6 kW of photovoltaics (a very big installation) and described by the architect as: 'an almost passive building, able to produce the energy it consumes' (http://www.luoghicomuni.org/portapalazzo/sites/default/files/file-allegati-articoli/LCPP_SCHEDA PROGETTO.pdf). Under these circumstances, it is certain it would meet NZEB primary energy requirements although perhaps not cost-effective criteria. ARCA New Construction Technical Regulations require certified detailed drawings and on-site quality assurance procedures and therefore reflect the Passivhaus approach. Bureau Veritas has verified the development process of the project.

CASE STUDY 2 is mass concrete block for retail and residential apartments with an energy classification of Casaclima A+ also known as a '3 litre house' equal to about 30 kWh/m²/y for heating and ventilation only (based on consumption of 3 litres of heating oil per m² per year with a calorific value of about 10 kWh/litre). This annual consumption is greater than the Passivhaus end-use maximum of 15 kWh/m²/y. Casaclima is classified as gold, A+ or B and ranges from 10 to 50 kWh/m²/y (1 to 5 litres). Casaclima certification requires detailed drawings and on-site quality assurance procedures, reflecting the Passivhaus approach. Casaclima may be compared to other low energy standards applied in the Alpine region: http://enerbuild.eu/publications/ENERBUILD-overview-certification-systems.pdf

For a detailed description of an Italian 2 litre house see: http://www.pvcconstruct.org/upload/documents/ 17-06-2011_Vinyl2010_Housing_PassiveHouse_Brochure.pdf. Alternatively, for the German 'Luwoge BASF' 3 litre

design see: http://www.energyefficiency.basf.com/ecp1/EnergyEfficiency/de/function/conversions:/publish/upload/pdf/3lh_e.pdf

CASE STUDY 3 Luoghicomuni Porta Palazzo, is a social housing residential block retrofitted with photovoltaics, solar thermal, insulation from natural materials 'ecolabel' recycled composites for bathrooms and utility rooms. No details are given for its energy performance. However, the architect, Matteo Fagnoni, provides a detailed description of the retrofit in Italian: http://www.luoghicomuni.org/portapalazzo/sites/default/files/file-allegati-articoli/LCPP_SCHEDAPROGETTO.pdf. The description refers to low-emissivity glazing, a condensing boiler and under-floor heating, solar thermal and photovoltaics, indicating that the building reflects the retrofit standards for EPBD compliance.

VET for LEC visit to Italy: Summary Report

The visit to Italy took place on 17-18 October 2017 and involved interviews at:

- FILLEA/CGIL, the Italian Confederation of Labour
- FORMEDIL *(Ente per la Formazione e l'addestramento profesionale nell'edilizia)*, the national training body.
- CEFME CTP *(Organismo paritetico per la formazione e la sicurezza in edilizia di Roma e provincial)* training centre

VET for LEC development

The provision of VET for LEC replicates the regional structuring of VET in Italy, whereby different regional authorities autonomously develop and deliver courses that are accredited according to Regional Qualification Frameworks. Currently, a National Qualifications Framework aligned with the EQF is being developed. Interviewees suggested that LEC training at both IVET and CVET levels is available in all regions though there is no centralised source of information about the type and content of courses. It was also suggested that manufacturers of energy efficient products, such as insulatio,n run short, practical courses.

FORMEDIL, the national training body jointly run by the social partners and funded by *Cassa Edile,* the social fund, has branches in every city and a total of 104 training centres. It provides initial VET, apprenticeships, CVET courses/refresher training, whilst also responding to regional demand and providing the mandatory health and safety training. FORMEDIL led the Build Up Skills Pillar II project I-Town, involving two elements: Train the Trainers, which sought to provide training for teachers; and an introduction to energy efficiency for traditional construction occupations, including bricklayers, carpenters and ironworkers. Both courses were received in the sector with enthusiasm and delivered successfully. FORMEDIL and the trade unions, CGIL, CSIL and UIL, have now called for 16-hour-long energy efficiency training to be included in National Collective Agreements. If successful, this would constitute the first step in developing uniform, short training in LEC for the existing workforce, which could be made available across Italy. The training is organised separately for building services occupations. Training in renewable energy sources is developed by ENEA (The National Agency for New Technologies, Energy and Sustainable Economic Development) and for electricians by ENAIP (Network of Services for Training and Work) and ASSISTAL (Nazionale Costruttori di Impianti).

CEFME-CTP

CEFME-CTP is a FORMEDIL training centre with a long history of engagement with LEC and providing an example of locally organised and delivered training. It was formed in 2012 by the merger of two separate training centres, CEFME and CTP, following a drastic drop in employer contributions during the recession that began in 2008. The number of students also dropped with course closures and increasing specialisation. CEFME trains all construction occupations including plumbers and electricians. It also runs several courses in restoration and training for refugees and the unemployed, as well as providing health and safety training.

LEC training is provided for all occupations, with energy efficiency topics included in the curriculum. For example, bricklaying covers insulation, whilst training for electricians covers solar panel installation and building automation. The Centre itself has had solar panels installed since 2004, which serve as teaching tools and also save on electricity bills. An area of the garden is dedicated to experimenting with biomass. Currently, the Centre is also collaborating with the University of Sapienza in its bid for the Solar Decathlon Europe, involving the construction of an energy efficient house on the grounds of the training centre, which would be tested over a period of several months before being dismantled and then reassembled in Dubai for the final exhibition. In line with FILLEA-CGIL'S LEC strategy, the Centre has also been proactive in using more natural materials, such as hemp-based insulation and hemp-lime mixture as a cement replacement, and in developing techniques or reviving traditional methods to find solutions suited to historical

buildings, such as silicon-based insulation that can provide an alternative to standard cladding, being sprayed onto walls without obstructing the historical and aesthetic features of the building.

NZEB implementation

NZEB is implemented by regional authorities, although Italy is now in the process of developing nationally uniform building regulations. As social partnership in Italy is limited, trade unions' influence on this process is indirect, through their participation in national and European networks and alliances as well as their position in regional and national governance structures. FILLEA/CGIL is involved in VET for LEC development through its role in FORMEDIL and is, along with other construction unions in Italy (FILCA-CISL and FENEAL-UIL), part of *Legambiante*, a broad network also including professional associations and environmental organisations. FILLEA takes an active part in environmental protection and climate change action, arguing for controls on speculative construction, radical reductions in the use of cement, and its eventual replacement by low emission and environmentally friendly materials such as hemp. The union was involved in a recent European project, BROAD, which aimed to develop social dialogue in green construction and put forward recommendations based on a detailed and informed analysis of the implications of the transition to sustainable construction for the sector.

Labour market

The construction labour market is characterised by high levels of unregistered employment and micro firms. The sector is still recovering from the 2008 crash and was described by interviewees as "at a standstill". There are increasing numbers of migrant workers, some of whom are highly educated but lack Italian language skills and may have residency or work permit applications in process, so may be unable to take part in further training.

Conclusions

The regional structure of governance in Italy defines the character of VET for LEC developments. VET is regionally organised, as is training in LEC, both initial and continuing. It is therefore difficult, if not impossible, to obtain detailed information about VET for LEC provision in Italy. The training centre visited suggests that pockets of specialised LEC training exist and FORMEDIL anyway provides a more connected structure of VET institutions that can facilitate the delivery of co-ordinated/homogenous LEC training. The development of a nationally co-ordinated IVET system and LEC curriculum requires close collaboration between regional authorities. The development of a national qualifications framework is a step in this direction. The energy efficient renovation of historical buildings is a major issue for retrofitting in Italy as any measures implemented need to ensure that the aesthetic features of the building are conserved.

Hemp and lime-based blockwork at CEFME-CTP training centre

Hemp and lime based green building component, experimented with in CEFME-CTP training centre

Photos: Linda Clarke/Melahat Sahin-Dikmen