

INCLUSIVE VOCATIONAL EDUCATION AND TRAINING FOR LOW ENERGY CONSTRUCTION



COUNTRY SUMMARY SPAIN
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European Federation
of Building
and Woodworkers



THIS SUMMARY was prepared by the research team,
based on the Spanish national report produced by CNC.



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COVER PHOTO: Carpentry trainee at Vantaa Vocational College/Finland



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The Construction Industry

The sector contributes 10% to the GDP (2016), down by half since 2008. Construction company data related to NACE¹ activity categories show that 'building construction' constitutes the biggest share, followed by 'specialised construction activities'.

- o Building Construction: 54.72%
- o Specialised construction activities: 42%
- o Civil engineering: 3.28%

The construction sector is extremely fragmented, with a total of 406,682 construction companies, of which 64% has no employees. Small companies employing under 10 workers make up nearly 97% of the sector. During the recession (2008-2016), the number of jobs and construction companies and the volume of construction activity declined. The number of workers dropped by nearly half and the number of permits for new dwellings dropped from 264,795 to 64,098. The number of companies increased by about 3 per cent in 'specialised construction activities' and decreased by a similar rate in 'building construction'.

Construction workforce²

In 2017, there are just over 1 million workers in the construction sector. Of these, 71% (769,600) are wage earners and the rest (29%) are self-employed. In 2008, there were over two million wage earners and another half a million self-employed, which illustrates the dramatic shrinking of the sector over the last ten years. Of the wage earners, 59% have a permanent contract, 41% temporary. The characteristics of the workforce are:

- Age: Spain has an ageing workforce and a major difficulty in attracting young people to the sector. The proportion of workers in construction aged 29 years and under has decreased dramatically, from 27% to 8% between 2008 and 2017. Age distribution in 2017 compared to 2008 was:

- o 16-24: 2% (was 12%)
- o 25-29: 6% (was 15%)
- o 30-54: 86% (was 70%)
- o 60+: 6% (was 3%)
- *Migrant workers*: About 16% of the workers are foreign nationals, down from 25% in 2008. Among foreign nationals, 44% are from EU, 8% other Europe, 28% from South America, 20% are from the rest of the world or they are 'stateless'.

Vocational Education and Training (VET) system

VET in Spain is organised by the state in close collaboration with social partners. The General Council for Vocational Training is the national government body leading on VET policy. It comprises representatives of national and regional public authorities as well as social partners, such as employers' organisations and trade unions. The National Institute of Qualifications (INCUAL) is in charge of designing all VET qualifications in the VET system in all sectors of the economy and creating a National Catalogue of Professional Qualifications along with the participation of stakeholders. As a result, the INCUAL through the National Qualification Framework (NQF) defines qualifications and related training content, which the Ministry of Employment and the Ministry of Education translates first into vocational certificates (vocational training) and second into vocational diplomas (vocational education).

In this way, vocational training also stems from the National Catalogue of Professional Qualifications. Vocational training has a higher workshop and work-based learning element, with classroom learning making up 43%, and completers are awarded certificates endorsing their professional skills, rather than diplomas. Vocational Certificates can be gained in all the professional families indicated below.

1 NACE is the Industry Standard classification used in Europe, Code F refers to construction.

2 No data are available about women in the sector, the qualification levels of the workforce, the number of workers by occupation, or energy efficiency related occupations

Initial Vocational Education and Training (IVET) is nationally organised and college-based, encompassing upper secondary to EQF level 5, with substantial work-based learning (up to 65%) elements within it. It is organised into Basic Vocational Education, Mid-Grade Vocational Education and High-Grade Vocational Education. Basic VET programmes are offered from age 15 and target students at risk of leaving education. After this 2-year training, they can continue onto mid-grade VET or take general school leaving examinations. Mid-grade programmes start at 16 years old and allow access to higher level VET. There are 26 strands ('professional families') in the VET system. The Ministry of Education and Vocational Training is in charge of the design and approval of the minimum training contents for each diploma of vocational education. VET at all three grades involves work-based learning (20%), together with practice in a workshop (32%) and theoretical learning in the classroom (48%). There are also recent initiatives to introduce a dual system.

Finally, *CVET* is provided by public and private organisations. All companies can have access to the CVET system, including micro companies, though not all appear to take advantage as in 2017 there were about 4 million participants out of a working population of 18 million. The State Foundation for Training in Employment (FUNDAE) funds and manages further education courses, acting on behalf of the Ministry of Employment, Migrations and Social Welfare. Funds for training come mainly from a quota paid by companies (0.6%) and employees (0.1%) on their salary payroll. These courses aim to support workers to train or re-train for jobs in growing sectors and respond to the needs of companies. Most of CVET is organised and provided by private companies, and FUNDAE provides a volume of information on this (See: <https://www.fundae.es/Observatorio/Pages/default.aspx>). There is a year on year increase in CVET activity and there is a considerable degree of in-company accreditation of CVET. The system also includes tailor-made, demanding and *ad hoc* programmes by companies.

Spanish Build Up Skills – LEC training needs

According to the Build Up Skills Status Quo Analysis (SQA), the number of LEC trained workers needed is thought to be in the region of 21,000-53,000, although this estimate is undermined by lack of comprehensive data about different occupations. The report proposed that this estimate be paralleled by an increase in the number of trained teachers. The Roadmap recommended the development of VET on different aspects of EE and RES, incentives to further training, prioritisation of teachers' training, and the development of systems for the accreditation of LEC related skills.

There is also a need to engage employers and to raise awareness of energy efficient construction. More specifically in relation to VET for LEC and as part of the Status Quo Analysis, LEC relevant occupations and new courses were identified for inclusion in the National Permanent Training Plan for Employment. Significant challenges to meeting these targets were highlighted:

- qualification levels of construction workers are very low;
- little demand for and provision of continuing/ further VET for those already in the sector;
- lack of coordinated thinking on VET and legislative gaps in the articulation of relevant policies and regulations;
- government spending is very low due to recession; and
- the construction sector is dominated by small companies, which find it difficult to access and fund training.

VET for LEC developments

Most VET for LEC provision is at the higher levels of EQF (Levels 4-6), at technician and higher technician levels, and in RES installations. Three professional families are relevant to LEC and energy efficiency: 'Construction and Civil Work', 'Energy & Water' and 'Installation and Maintenance'. Two relevant courses within the 'Energy and Water' strand of Higher Grade VET are: 'Higher Technician on Energy Efficiency and Solar Thermal Energy' and 'Higher Technician on Renewable Energies'. There are several more practically-oriented courses at EQF Level 2&3 in energy efficiency and RES installations, for example in the installation of photovoltaics and solar thermal panels. These are also short courses leading to Vocational Certificates. Data on the number of workers undertaking EE or RES training in permanent training organisations or through permanently available courses are not available. There is also a large range of private and *ad hoc* training available related to EE and RES that responds to company demand. This is not regulated, although employers may issue their own certificates. Following the recommendations of the Build Up Skills investigation, EE and RES competencies have been developed and are to be included in the occupational qualifications related to 'Civil and Building Works', 'Energy and Water' and 'Installations and Maintenance'. CONSTRUYE 2020, the Build Up skills Pillar II project, developed a self-learning training tool for both trainers and workers, covering energy efficiency, renewable energies, placement of insulation, external carpentry and efficient installations. This project developed 9 new CVET courses to offer to building workers. Spain has participated in other EU-funded projects, BUS Trainers and BROAD, and is working to build training capacity and improve social partnership in implementing the green transition strategy in construction.

Initiatives related to VET for LEC

CONSTRUYE2020 (2013-2016) is a Build Up Skills Pillar II project that sought to implement some of the actions of the Spanish Roadmap. It developed a training tool useful for both trainers and for self-learning, covering energy efficiency, renewable energies, placement of insulation, external carpentry and efficient installations. This App was one of the most successful aspects of the project. The App was also assessed by trainees and trainers. An observatory consisting of two tools (an online survey, and a Statistics visor) has been established to forecast training needs and monitor labour market changes. A website specialised in providing information about training related to EE and RES was set up to guide users in the selection of VET courses. 25 pilot courses were carried out during project execution with some 400 trainees trained in different matters. A set of competencies has been elaborated on geothermal energy systems. The project highlighted the value of ICT as a tool and platform of learning, the importance of financing training, and the need to raise awareness of EE to stimulate training demand.³

BROAD (2015-2017) is an EU funded project in which Spain participated. The project was led by FILLEA CGIL (Federation of Wood, Building and Allied Industry Workers) of Italy, which sought to develop social dialogue in the construction sector with a view to supporting the green transformation of the construction industry in Italy and Europe. The project involved a review of the development of green building in the partner countries of Italy, Poland, Spain, Belgium and Germany, with a focus on similarities and divergences in regulatory aspects, policies and economic and construction sector employment contexts and industrial relations experiences. It also developed suggestions and recommendations for strengthening the role of social dialogue in the transition to a low-carbon economy.

The Sector Skills Alliances project *BUS Trainers* (2016-) aims to increase competitiveness in the construction industry, through promotion of energy efficiency skills (EE) and renewable energy systems (RES) within the expertise of Vocational Training (VT). The project will try to develop and deliver a training system for vocational trainers and to create a platform for exchanging good practices and opportunities for VET trainers. In accordance with EQF (European Qualifications Framework) methodology, ECVET (European credit system for VET), and EQAVET (European VET quality assurance system), it seeks to

SPAIN – 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	
BUILDING CLASS	
BALANCE	
PHYSICAL BOUNDARY	
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/m ² /y)	✓

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

³ <https://ec.europa.eu/energy/intelligent/projects/en/projects/build-skills-construye2020>

RESIDENTIAL BUILDINGS (kWh/m ² /y)		NON-RESIDENTIAL BUILDINGS (kWh/m ² /y)		
NEW	EXISTING	NEW	EXISTING	NOTES
Class A	n/a	Class A	n/a	Buildings need to comply with class A.

develop a new European sectoral qualification standard and, eventually, develop certification of competences through a “Green Tag accreditation”. The target groups are teachers of house builders, civil engineering, construction work and trades⁴.

National NZEB definition

According to the European Commission’s Joint Research Centre for Policy Report (EC 2016a), Spain’s NZEB definition is currently under development⁵.

In its applied definition, Spain defines NZEB for both residential and non-residential buildings but does not include specific subcategories (ibid: 16: Table 4).

In terms of building typology, classification, balance type, and physical boundary, information about Spain is not available (ibid: 17-18: Figure 3).

There is no information available on the types of energy use under consideration in Spain (ibid: 18-19: Table 5).

With regard to the specification of generation boundaries in Spain’s definition, there is no information available (ibid: 20-21: Table 6).

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

Intermediate targets

There is no information available on Spain’s intermediate targets for all new buildings and all new buildings occupied and owned by public authorities.

Case studies

The Spanish National Report presents two case studies: a dwelling and a University Applied Research Center. The following observations complement, and should be read in conjunction with, the information contained in the Report.

CASE STUDY 1:
EL PLANTÍO 2014, CARRIÓN DE LOS CONDES, CASTILLA Y LEÓN.
A registered Passivhaus: http://passivhausprojekte.de/index.php?lang=en#d_2910.
Timber frame construction with MVHR (including 1 kW pre-heater, solar thermal and ASHP for domestic hot water). With its solar thermal and a heat pump, the dwelling may meet Spain’s (as yet unspecified) NZEB criteria for the inclusion of renewables.



CASE STUDY 1: El Plantio
Source: <http://www.plataforma-pep.org/estandar/ejemplos-ph/13>

⁴ http://www.buildup.eu/sites/default/files/bus_document_eu_meeting/relevant_projects-bus.trainers_javiergonzalez.pdf

⁵ Note: Since the publication of JRC Science for Policy Report in 2016, new developments exist in this regard, the NZEB definition adopted by Real Decreto 564/2017 that modifies Real Decreto 235/2013.

CASE STUDY 2: LUCIA BUILDING 2014 IN VALLADOLID.

A multiple award winning 'A-rated' low energy building considered to be the most energy efficient in Europe and second in the world (<https://www.energynews.es/en/the-building-lucia-in-valladolid-is-europes-most-sustainable-and-second-worldwide/>) and with LEED platinum (Leadership in Energy and Environmental

Design) and Green Building Council certification. For details on the project: <http://lucia-building.blogspot.co.uk/>. Monitoring is ongoing, although the results are not yet available. The building LEED scores are 98 points out of a total possible of 110, suggesting an exemplary platinum score (>80 points) although final LEED certification is still ongoing: <https://www.usgbc.org/node/2591214?view=overview>



Photo: Diego Tamayo

CASE STUDY 2: Lucia building (Valladolid)
Source: <http://edificio-lucia.blogspot.com/#>