



INNOVATIVE QUALIFICATIONS FOR TECHNOLOGICAL AND
ORGANIZATIONAL INNOVATION IN BUILDING SECTOR



D2.1 – Analysis of the professional training system in the building and construction sector

WP2 – Framing the innovation: GAP analysis of the existing qualifications
and identification of the needs in the building sector

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1. Introduction

As part of the WP2, the activities that will allow ICARO to better understand the status of the vocational training in the selected countries and on the other side the needs of the building sector in terms of innovation are carried on and focus on:

1. Provide a better understanding of the current status of vocational training in the construction sector, highlighting the strengths and weaknesses in incorporating technological and methodological innovation (i.e. the organization of learning on and from work) and its ability to relate to European tools geared towards mobility and quality (ECVET, EQAVET, EUROPASS and ESCO).

The aim of this analysis is to identify the possibilities to align the skills to the innovative factors (both technological and related to the European, national and regional policies of work and vocational training).

A particular attention is dedicated to deeply analyse the conditions of learning at work (WBL), which need to be strongly reorganized with respect to the current alternating experiences or parallel periods of study and employment, organized in the form of "internships" or short internships, to finalize the WBL period to the transition to work and therefore to the concrete employment of young people.

2. Increase the knowledge on the companies needs in the construction sector, by developing and distributing a questionnaire to at least 150 companies in the 3 involved Countries. There is a recognized challenge in supporting the inputs of innovation - the building industry, as an industrial activity, must face the complexity of Industry 4.0 - and in particular in relation to the "intelligent" management of the building site: Building Innovation Management (BIM). In this context, the mobility of work and the recognition of the training received and of the relative qualification in the various EU Countries become fundamental. Moreover, companies have the urgent need to adapt internal skills (through continuous training) and/or the need to acquire "external" skills. The analysis of this survey results will allow to better understand the over mentioned innovation gap and the skills need by the construction industry.

3. To make clear and more accessible the framework of EU policies and directives in terms of R & D. EU directives implemented by the Member States – i.e. EPBD - Energy Performance Building Directions, and the Directive 2014/24/EU on public procurement which introduces the obligation to use the Building Information Modelling – introduce and regulate new skills and management innovations that have to be acquired by construction companies to improve competitive quality and in response to calls for tenders and / or contracts.

The outcomes of these 3 separate analysis will allow to better understand the existing vocational training curricula and how to improve them based on the real needs of the construction sector and on the existing policy framework.

Task 2.1 consists on performing an analysis of the existing vocational training qualification in the construction sector. A detailed analysis was performed for the 3 countries involved within the partnership: Italy, Spain and Lithuania.

2. National qualification system and references to the European Qualifications Framework for Life Long Learning (EQF) – level 5

a) Italy

In Italy, the National system of education and training is organized according to the principles of subsidiarity and autonomy of educational institutions. The State has exclusive legislative competence for the "general rules on education" and for the determination of the essential levels of performance that must be guaranteed throughout the national territory. The State also defines the fundamental principles that the Regions must respect when exercising their specific competences. The Regions have shared legislative powers in the field of education and exclusive legislative powers in the field of vocational education and training. The state educational institutions have didactic, organizational and research, experimentation and development autonomy.

The **education system** is organized as follows:

1. First cycle of compulsory education, lasting a total of 8 years and is divided into two consecutive and compulsory school paths:

- primary school: (five-year duration), for pupils aged between 6 and 11 years
- secondary school: (duration three years), for pupils aged 11 to 14;

2. Second cycle of education divided into two types of paths:

The schools organise: high school, technical and vocational courses for students aged 14 to 19 years;

- secondary school: (duration five years), for students who have successfully completed the first cycle of education.
- three-year and four-year vocational education and training: (VET) courses of regional competence, and to students who have successfully completed the first cycle of education.

3. Higher education offered by universities, higher education institutions and higher technical institutes (ITS) with different types of courses:

- tertiary education paths offered by universities
- tertiary vocational training courses offered by ITS (Higher Technical Institutes)

Obligatory education

Compulsory education lasts 10 years, from 6 to 16 years of age, and includes the eight years of the first cycle of education and the first two years of the second cycle (Law 296 of 2006), which can be attended in the secondary school of second level - state - or in the paths of education and regional vocational training.

Moreover, for all young people the right/duty of education and training for at least 12 years or, in any case, until the attainment of a three-year professional qualification by the 18th year of age according to the provisions of Law no. 53/2003 applies.

Compulsory education can be carried out in state schools and equal schools (Law 62 of 2000), which constitute the public education system, but it can also be carried out in non-uniform schools (Law 27 of 2006) or through family education. In the latter two cases, however, the fulfilment of the obligation of education must be subject to a series of conditions, such as the carrying out of aptitude tests.

At the end of the period of compulsory education, usually provided for at the end of the second year of secondary school, if the student does not continue his studies, a certificate of acquired skills is issued (Ministerial Decree 139 of 2007).

After passing the final state examination of secondary education, the student can access the courses of tertiary education (university, ITS). Some University courses are limited in number and students must pass an entrance test.

Non-state education

Article 33 of the Italian Constitution establishes two fundamental principles: the obligation for the State to offer a state education system to all young people and the right for natural and legal persons to create schools and educational institutions without charge to the State.

Equal schools are entitled to issue diplomas having the same legal value as those of the corresponding state schools; they have full freedom as regards cultural orientation and educational-didactic orientation and benefit from more favourable tax treatment if they are non-profit-making.

As of today, Italy has assigned the EQF level to most of the public qualifications issued by the Ministry of Education, University and Research and the Regions.

The reference framework for Italian qualifications

This is the synoptic reference framework for national public qualifications at the levels of the European Qualifications Framework for lifelong learning as shown in Annex B to the State-Regions Conference Agreement of 20 December 2012.

EQF level	Type of qualification
1	Graduation for first cycle of education
2	Certification of the basic skills acquired as a result of the fulfilment of the educational obligation
3	Certificate of qualification as a professional operator
4	Professional diploma of technician
	High school diploma
	Diploma of technical education
	Vocational Education Diploma

EQF level	Type of qualification
	Higher technical specialization certificate
5	Higher Technician Diploma
6	Bachelor
	First level Academic Diploma
7	Magistral Degree
	Second level Academic Diploma
	First level university master's degree
	Academic Diploma of Specialization (I)
	Postgraduate or master's degree (I)
8	PhD programme
	Academic Diploma in Research Education
	Diploma of specialization
	Master's degree level II
	Academic Diploma of Specialization (II)
	Postgraduate or master's degree (II)

2.2. Qualifications description & Curricula

According to the national standards, qualifications should include:

1. Title qualification
2. Identification code
3. Professions ISTAT Central Institute of Statistics
4. Reference economic activities: Ateco
5. Professional area
6. Description
7. EQF level
8. Work Process
9. Skills

The National repertory, as established by Legislative Decree 13 of 2013, reassembles the system of qualifications issued in Italy with reference to the following sub-sets: University; Secondary School; Vocational Education and Training; National Framework of Regional Qualifications; Apprenticeship; Professions.

It constitutes the unitary reference framework for the certification of competences, through the progressive standardization of the essential elements, also descriptive, of education and training qualifications, including those of vocational education and training, and of professional qualifications through their correlation 'also through a shared system of recognition of training credits in a European key.

The national repertoire is made up of all the repertoires of education and training qualifications and professional qualifications issued in Italy by an institution or issued as a result of an apprenticeship contract.

The Decree indicates the following entities as holders: the Ministry of Education, University and Research; the regions and autonomous provinces of Trento and Bolzano; the Ministry of Labour and Social Policies; the Ministry of Economic Development and the other competent authorities for the certification of competences related to qualifications of regulated professions (article 5 of Legislative Decree no. 206 of 9 November 2007).

2.3. Validation and certifications

In Italy, certification and validation takes place through two different paths:

The "formal" path: and it is a training path of regional competence. In fact, in 2011, the National Directory of Education and Training Provision was established. At the end of these courses, a national recognized qualification is expected to be obtained.

Non-formal course: that is, all the other training activities that are provided by the bilateral training system and that want to respond to the immediate needs of companies. This recognition is made at sector level with the issue of the training booklet and, in relation to the Directory of skills (sector) and named "atlas of Labour" repertory established at national level by INAPP.

Some "non-formal" paths include modules of technological innovation that are then recognized at regional level through a specific request for examination that is made by the granting authority to the Regions.

2.4. Work based learning (WBL)

In Italy, work-based learning can include alternating schoolwork with periods of on-the-job training, on-site workshops, or through company internships during and at the end of the training period.

2.5. Mobility

The creation of an encouraging environment for intercultural exchange is one of the primary objectives of the school and individual student mobility programs are an opportunity for growth.

The learning mobility of young people is promoted and encouraged at both national and European level. Also the Ministry of Education, University and Research with its own Note (Prot. 843/13), recognizes the value of individual student mobility, "given the significant educational value of experiences abroad" and provides

guidelines on individual international student mobility, urging "educational institutions to foster such experiences.

Erasmus-Italy Program

The considerable number of participants demonstrates that the program is really helping to improve the employment prospects of young people, helping them to acquire new skills and experience and supporting the modernization of education, training and youth systems in Europe.

The project is recognized at the regional level through a request for a specific examination that is made by the granting authority to the Regions.

2.6. Apprenticeship contract

Regulatory framework about apprenticeship in Italy and the tutor's figure rules.

In recent years, the apprenticeship contract has been subject to various legislative measures with the aim to implement its use and encourage youth employment.

The last reform was carried out in the framework of labour market reform called "JOB ACT", with the Legislative Decree nr. 81 of 2015 and subsequent amendments, according to which the apprenticeship contract, qualified as permanent, is divided into three different types:

- Apprenticeship for the qualification and the professional qualification, the high education degree and the higher technical qualification certificate (from 15 to 25 years old), defined as first level apprenticeship. This type, lasting no more than three or four years in the case of a four-year professional qualification, is carried out during the school-educational path and therefore also fulfils the school obligation;
- Professional apprenticeship (from 18 to 29 years old); for those who are already in possession of a professional qualification it can start at the age of 17, defined apprenticeship of the second level. This is the most widely used formula by companies in general and, in particular, by construction companies. Practical training is carried out mainly in the company after the individual training plan organized between student, company and training centre in the construction sector (construction schools). Basic and transversal training by law must be no more than 120 hours in the three-year period. For the professional internship training within the company, thanks to the agreement of 18 April 2012 (Confindustria and Trade Unions), it must be at least 80 average hours a year, including security training. This type of apprenticeship cannot exceed 3 years and up to 5 years for specific professional figures. The external training provided by construction schools is sometimes funded by regional administrations or Fondimpresa.
- Apprenticeship of high education and research (18-29 years old) with a high school certificate or a vocationally-trained third level apprenticeship degree designed to obtain university and higher education qualifications. In this case, the company prepares the individual plan with the university system.

The restyling of the institute was carried out with the aim of re-establishing its use as a training and working tool at the same time, through in particular, accompanying, developing and strengthening actions of the "dual system". A review carried out in line with the Community guidelines and the consequent entry into force of Law N.107/2015, the so-called "Good School" Law, which, in the reform of the national education

and training system, made the school-work alternation as a structural component of the training offer since the school year 2015/2016, for all students in the final three years of upper secondary education (minimum 400 hours in technical and professional institutes - minimum 200 hours in high schools).

First and third level apprentices integrate into a "dual system" training and work where the acquisition of education and training qualifications can also be achieved through learning made at the enterprise.

In the first and third level apprenticeships, the employer is relieved of all remuneration for the hours of education made at the school institution. For the employer's training hours, the apprentice receives a salary of 10% of what it would have been according to the specific contractual disciplines defined at a national level.

First and third level apprenticeships are also ruled by the Ministerial Decree of October 12, 2015 regarding the definition of the relevant training standards and general criteria for the realization of the paths. This decree also regulates the figures of the company tutor and the training tutor.

For the above-mentioned types (1st and 3rd level), the Inter-confederal Agreement in May 18, 2016 (Confindustria –Trade Unions) has also decided, with regard to remuneration, for the sectors lacking of a specific contractual discipline.

In October 2017, a Memorandum of Understanding was signed between the Miur (Ministry of Education and Science and Research) and Anpal (National Labour Policy Agency), with which the presence of a "tutor for job alternation" in Secondary Schools is guaranteed. This figure is accompanied by internal tutors and school leaders to facilitate and support the development of actions to encourage the activation of job alternation paths.

In Italy, apprenticeship is a mixed job contract, that is to say an employment contract that provides training and actual job performance. External training is usually provided by the building schools system coordinated by Formedil and supported, when not funded by individual regional administrations, by mandatory contractual training contributions for training.

The regulatory of the apprenticeship, defined by inter-confederal agreements or national collective labour agreements, must be established about the retributive treatment, that the grading of the apprentice should be in two levels less than those expressed by application of the national collective labour agreements to workers who cover corresponding qualifications to those which hereby the apprenticeship is finalized or, in alternative, to establish the remuneration of the worker in percentage measurement and proportioned to the working seniority

The standard skills of the tutor have not been defined by national and regional regulations; they have been studied by training operators and institutional research figures so that Isfol, the current Inapp, has drawn up the tutor's manual.

Moreover, there are cases of training courses provided by the building schools system, courses financed by individual regional administrations ranging from a minimum of 8 to a maximum of 16 hours.

Also Formedil developed the *vademecum* about the company tutor within the text "Young People and Construction".

b) Lithuania

The Lithuanian Qualifications Framework (LTQF) was approved in 2010 and referenced to the European Qualifications Framework for Lifelong Learning (EQF) in 2012. Like the EQF, the LTQF has 8 qualification levels. The levels of qualifications are arranged hierarchically, with regard to the underlying competence of the

qualifications, the ways of acquiring the qualifications as well as the criteria defining the levels of qualifications:

1. complexity of activities shall be a qualification criterion used to describe the character of activities, the variety of tasks and the degree of responsibility;
2. autonomy of activities shall be a qualification criterion used to describe changes in the activity organisation and nature of subordination;
3. variability of activities shall be a qualification criterion used to describe activities in terms of changing technological and organisational environment.

Each level of qualifications includes the qualifications intended for the performance of activities of similar complexity, autonomy and variability.

Qualifications of levels I-IV shall be acquired by completing vocational education and training and/or general education programmes or by independent study or by gaining professional experience;

Qualifications of levels V shall be acquired by completing training programmes intended for persons with a professional qualification as well as fixed-duration professional experience.

Since today there are 4 Construction Qualifications of levels V. They are newly drafted: Facade insulation master; Finisher master; Roofer master; Bricklayer master.

Qualifications of levels VI-VIII university studies.

Table 1. Lithuanian VET attainment levels

Level of Vocational Education	Description of VET attainment levels	Minimum level of general education achieved*
Level 1	Competence to carry out simple, routine work operations.	--
Level 2	Competence to perform specialised work not requiring important autonomous decisions.	Primary/basic
Level 3	Competence to perform complicated work in areas requiring fairly responsible and independent decisions. Team building skills are developed.	Upper-secondary
Level 4	Competence to perform complicated work in areas requiring responsibility, independence, deep knowledge and specific skills. Organisation and administration skills for team management are acquired.	Upper-secondary
Level 5	Qualifications shall be acquired by completing training programmes intended for persons with a professional qualification as well as fixed-duration professional experience, higher education programmes not leading to a degree (except residency) and/or through professional experience and independent study.	Upper-secondary

* General education, which is necessary for the achievement of a certain VET attainment level, can be acquired before or during the vocational training.

2.2. Qualifications description & Curricula

Qualifications descriptors within standards:

- Title of qualification
- Short description of qualification
- Key units of qualification/ competences/ range of competences. A qualification consists of units to which LTQF levels are assigned. Qualifications of levels 1 to 5 of LTQF may contain up to 5 Units. However, some qualifications, especially those of lower levels, may contain only one Unit.
- Specialisation units/ competences/ range of competences
- Requirements for award of qualifications
- Requirements for assessment of competences.

Since 2013, priority has been given to designing modular VET programmes with a policy target that by December 2020 all VET programmes should be modular. It allows to organise learning in a flexible way. VET programmes are designed for learners of different ages and educational backgrounds. At the beginning of 2019, there were 247 modular programmes registered, i.e. that totals 28 % of all the VET programmes.

All VET programs are based on learning outcomes. The national qualification system (LTQF) is based on learning outcomes / level descriptors defined according to two parameters: focusing on activity characteristics (complexity, autonomy and variability) and on types of competences (functional, cognitive and general).

Before a new programme is issued, sectoral professional committees are also consulted on sectoral qualifications standards used for developing the programme curricula. VET providers and enterprises can also initiate and design modular training programmes, but in this case the quality of the VET programme has to be evaluated by the Qualifications and VET development centre.

IVET and CVET programmes would consist of mandatory (85%) and elective (15%) modules which would be grouped in introductory, professional and final categories. They would be competence-based and in line with sectoral qualifications standards. Credits would be introduced, with one school year corresponding to 60 credits.

IVET practical training comprises 44% to 60% of the total time allocated to teaching vocational subjects, of which 8 to 15 weeks is organized in a company. In CVET, practical training covers 60-80% of the program. In apprenticeship, 30 percent of training (learning) time is spent at VET school, while 70 percent at a real workplace. VET school assigns a VET teacher to an apprentice, who together with the workplace tutor from enterprise ensures achievement of all learning outcomes stipulated in the VET program. Theoretical and practical training is carried out, alternately, according to the training schedule.

Key competences in IVET and CVET. In September 2017, the Qualifications and VET Development Centre template specifying the learning outcomes for key competences, in all modular VET programmes. VET programmes are rearranged – adapting to situation, key competences affecting productivity, work efficiency and mobility in labour market gain the same importance as job competences. For example, IT competences, foreign languages.

2.3. Validation and certifications

Individuals, with at least one-year work experience and older than 18, can apply to VET institutions for recognition of their competences. The skills and knowledge of an applicant are defined on the basis of sectoral qualifications standards and relevant VET programmes. The applicant and the school then agree on a timetable of courses as necessary and a final qualification exam. Individuals who pass the exam organised by an accredited competence assessment institution (31 accredited institutions) are awarded a VET diploma.

Since 2018, the Qualifications and VET development centre is coordinating a four-year ESF-funded project for the development of the national system for assessing and recognising competences and professional qualifications. Within this project, several Sectoral practical training centres (these centres offered work-based learning in simulated environments, using state-of-the-art technologies) have been selected to become competence assessment centres for the assessment of individually acquired competencies. Employers and employers' representatives are involved in the project. The legal framework is subject to parallel changes to ensure that in the future competence assessments will be performed only through these SPTCs/competence centres, which will eventually replace the 31 accredited institutions. The aim of the project is to support the unemployed (including newly arrived migrants) to gain qualifications through validation of prior learning and recognition of professional qualifications. The project activities include the creation of reference material for validation of prior learning (such as a bank of competence assessment tasks), methodologies and methodological tools (with model tasks) for the assessment of competencies. It will enhance institutional capacity to assess competencies and/or qualifications otherwise acquired by individuals; create monitoring and information tools for the assessment and recognition of the acquired competencies.

2.4. Work based learning (WBL)

WBL can be organized by a VET institution together with employers. Practice and theory are to be provided in alternating periods at the company and the VET institution. A vocational teacher is appointed by the VET school to manage apprentice training in the workplace while company staff appointed by the employer are in charge of organizing and coordinating the apprentice's work and practical training. Assessment remains the responsibility of the teacher and the VET institution.

Regulation

The main regulations that order WBL are:

- The Law on VET provides a legal basis for apprenticeship. It clarifies the provisions for apprenticeship organization: an apprenticeship labour contract (between the employer and the VET student) and a VET contract should be concluded among an apprentice and a VET provider. The Law on VET also states that sectoral professional committees should participate in planning the in-take of apprentices.

- The new Labour Code and accompanying legislation entering into force on 1st July 2017 introduces two types of apprenticeship contracts: with and without learning agreements. For apprenticeships that are part of formal VET, the regulation stipulates employers' responsibility to ensure that apprentices acquire the learning outcomes defined in the VET program. The law specifies also the main conditions for apprenticeship delivery: work and learning time should not exceed 48 hours per week in total; apprentices' salaries should

not be less than a minimum wage; and learning time spent in the VET institutions would not be paid by the employer and should not exceed one third of the contract duration.

- For the implementation of the Law on VET, new legislation has been developed and some is still under preparation. A draft of the Procedure for the Organization of VET in the Form of Apprenticeship Training was prepared and is under coordination. It will be approved by the Government of the Republic of Lithuania Resolution in 2019 and followed by the Description of the Financing Procedure. This legislation will enable the implementation of apprenticeship training.

WBL management

WBL managed under the umbrella of the Ministry of Education Science and Sport (MoEs), The Ministry of Economy and Innovations and Employment Services.

The MoEs is the main body responsible for developing and implementing national VET policy.

The Ministry of Economy and Innovations is the main body responsible for Apprenticeship for company employees. ESF-funded projects are being carried out since November 2016 to support apprenticeship-type training projects and other training schemes for company employees to improve their qualifications and career development. Applicants can be private or public entities. Ministry of the Economy and Innovations is responsible for this measure. The total sum planned for the measure is 11 million euros for the period 2016-20. It is planned that 2573 employees will be trained. The second call for applications under the measure was published in September 2017 18 projects for 4,1 million Euros were financed in 2018 by the measure, and employees of 1639 enterprises trained. The second call for the measure “Apprenticeship and qualification improvement at the workplace” (~6,9 million Eur) was published on 2018-12-28, and applications could be submitted by 2019-04-01.

Employment Service encouraging apprenticeship through company compensation. The action plan for the implementation of the government program approved in March 2017 includes measures to encourage apprenticeship, to be set in place by the end of 2018. Funded expenses: vocational training services, training scholarship payment for theoretical vocational training, the cost of compulsory health check and vaccination against communicable diseases, 40% wage *compensation* for the employer who hired the person under the apprenticeship contract. Costs are funded as long as the training program lasts. The measures include the creation of a regular transparent mechanism for compensating company expenditure on apprenticeship. In 2018, recruitment under an apprenticeship contract became more active. There were 361 participants recruited under an apprenticeship contracts. There was 57 percent of formal training and 43 percent of informal training.

Participation in apprenticeship is low (2 %) and efforts are being made to motivate VET institutions and companies to cooperate in enhancing WBL and apprenticeship. Strengthening of work-based learning with a particular focus on apprenticeship is stressed in VET policy documents.

2.5. Mobility

The first strategic goal specified in the key long-term strategic document in the field of Lithuanian education “The National Education Strategy for 2013-22” provides for enhancement of the motivation by enabling students and teachers to constantly improve their qualifications in an educational system with different traditions and in a different cultural environment, thus assuring the acquisition of professional and

intercultural competences, the importance of which is gradually becoming undisputable in the educational process.

Some of VET and HE training/study programmes are developed based on international qualifications/EU level guidelines, descriptions, directives. In such a case, international qualification can be considered as a part of a national qualification or an addition to national qualification. After graduation of such a programme, international certificate can be awarded or training according to formal national qualification can be recognised and lead to international certification. An “International Sectoral Qualification” is a certificate, diploma, degree or title awarded by a competent body in more than one country and recognised in more than one country for achieved learning outcomes of relevance to a sector of economic activity.

It must be emphasised that planning, coordination, implementation and evaluation of mobility activities within the Erasmus+ programme has a great influence on the overall national mobility policy because currently that is the only source of funding for the mobility activities and it covers 90% of VET institutions.

Erasmus+ National Agency commissioned a study on International Initiatives, most of which are carried out through the Erasmus + program.

2.6. Apprenticeship contract

The young person needs to be admitted to a VET program (school form), with a training contract. If learners want to change the form of learning from school to apprenticeship, the VET school can change the training contract. A learner with an employer signs the apprenticeship contract and becomes an apprentice. An apprentice at any time may decide to return to school form by terminating the apprenticeship contract. Productivity of such person joining the labour market can be significantly higher than 80 percent of required productivity of a specific job.

c) Spain

In Spain there are several national bodies related to the Vocational Education and Training (VET) system.

- **National Institute of qualifications (INCUAL)¹**

Created by Royal Decree 375/1999, it is the technical instrument, endowed with capacity and independence, which supports the Spanish General Council of Vocational Education and Training in order to attain the objectives of the **National system for qualifications and vocational education and training (SNCFP)**. The governing body of the INCUAL is the General Council of Vocational Education and Training though the INCUAL is placed under the control of the Secretary General of Education (Ministry of Education, Culture and Sport), as set in Royal Decree 1553/2004 of 20 June 2004.

The SNCFP consists of instruments and actions which are necessary to promote and develop the integration of vocational education and training through the National Catalogue of Professional Qualifications (CNCP). Besides, it aims at promoting and developing the assessment and accreditation of professional competences

¹ Source: <http://incual.mecd.es/>

in order to encourage the professional and social development of the people and to meet the needs of the productive system. Its basic aims are the following:

- To empower workers for the labour market.
- To promote a quality vocational education and training.
- To provide information and guidance about vocational education and training, and qualifications for employment.
- To encourage entrepreneurship through the introduction of actions in the vocational education and training to develop business initiatives and self-employment.
- To assess and accredit officially a professional qualification no matter how they were acquired.
- To encourage public and private investments on more qualified workers and to optimise the resources allocated to vocational education and training.

The Organic Act 5/2002 of 19 June 2002 on Qualifications and Vocational Education and Training confers on the INCUAL the responsibility for defining, creating and updating the National Catalogue of Professional Qualifications (CNCP) and the corresponding Modular Catalogue of Vocational Education and Training. **The CNCP** is an instrument of the SNCFP, which lists the professional qualifications according to the appropriate competences for each professional exercise.

The CNCP is made up by 26 professional families that have been created according to affinity criteria among the different professional competencies.

There are different levels: The Royal Decree 1128/2003 regulates the National Institute of qualifications and establishes different qualification levels. The professional training for employment countersign levels 1, 2 y 3.

Although, National Institute of qualifications fixing 5 qualification levels².

Table I – Descriptors defining levels in the European Qualifications Framework (EQF)

NQF	EQF	Knowledge	Skills	Competence
Level 1	Level 2	Basic theoretical knowledge	Basic practical and cognitive capacities	Competence in a reduced group of relatively simple working activities related to normalized processes
Level 2	Levels 3-4	Knowledge on the technical and scientific fundamentals of the activity concerned. Capacity for comprehension	Technical and scientific fundamentals for the application of the process	Competence in a group of well-determined professional activities with the capacity to use particular instruments and techniques concerning, mainly, an execution activity, which can be autonomous, within the limits of the above-mentioned techniques.

² Source: <https://incual.mecd.es/las-cualificaciones>

NQF	EQF	Knowledge	Skills	Competence
Level 3	Level 5	Understanding of the technical and scientific fundamentals of the activities concerned. Assessment of the economic repercussions.	Assessment of the factors in the process. High level of cognitive and practical skills.	Competence in a group of professional activities which require the command of different techniques and can be executed in an autonomous way. It involves responsibility on the coordination and supervision of technical and specialized work.
Level 4	Level 6	Technical, scientific, economic or organizational understanding of plan actions and definition or developing of projects, processes, products or services.	Advances skills for managing complex activities	Competence in a wide group of complex professional activities performed in a great variety of contexts.
Level 5	Level 7	Conception of products processes or services. Highly specialized knowledge.	Great personal autonomy and high responsibility on the assignment of resources, and execution of skills.	Competence in a wide group of professional activities of great complexity performed in different contexts, often unpredictable, which imply to plan actions or to conceive products, processes or services.

Table II. National Qualifications Framework - Spain

Levels	NQF	Example for professional profile building industry
1	Basic Vocational Education	Labourer
2	Mid-grade training cycle	Bricklayer
3	High-grade training cycle	Site supervisor
4	University Degree	Architect
5	Postgraduate	

The learning offers referred to CNCP are the following:

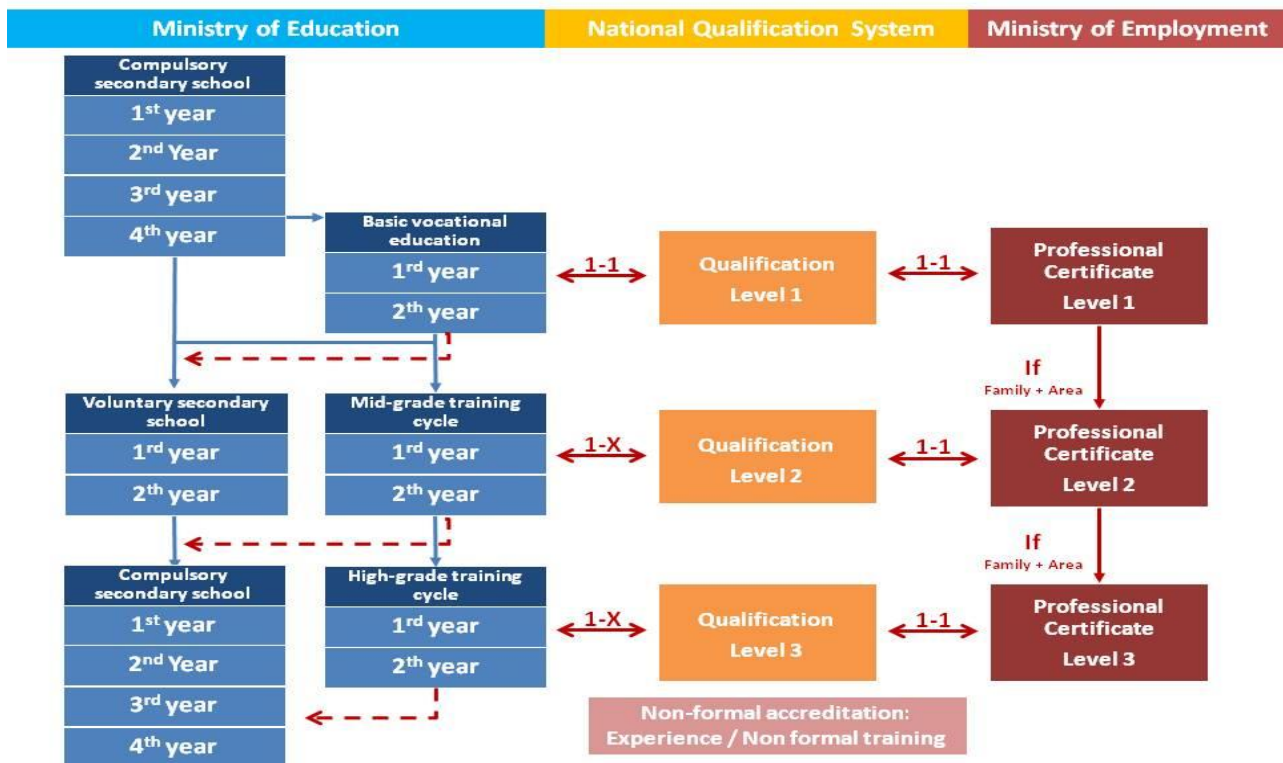
- ✓ Vocational Education and Training Diplomas.
- ✓ Certificates of Professional Standards.
- ✓ Diploma in Sports Education.
- ✓ Diploma in Professional Education in Art and Design.

It is noteworthy that another important part of the SNCFP is the recognition, assessment and accreditation of qualifications, which it is a set of procedures to recognize, assess and accredit the professional competences acquired through work experience or any other type of non-formal learning.

- **Ministry of Education, culture and sport (MECD)³.**

The Ministry of Education, Culture and Sport is responsible for setting out and implementing Government policy on initial professional training and university education.

Next figure shows the different levels of educations as regulated by the Law 8/2013, of 9th of December, for improving the quality of education:



- **Public employment service (SEPE, Ministry of employment and social security)⁴**

This public body manages the **certificates of Professional Standards** regulated by Royal Decree 34/2008 (Royal Decree of Education), includes actions of training aimed to providing the access and improving the competences and professional qualifications. The VET offer aimed to get a Certificate of professional

³ Source: <http://www.educacionyfp.gob.es/portada.html>

⁴ Source: <http://www.sepe.es/>

standards is organized in modules to promote a partial cumulative accreditation of the learning enjoyed, providing also the training path's development and the lifelong learning.

Each Certificate of professional standards matches with one of the CNCP professional qualifications. The learning modules included in the Certificate are the learning modules of the Modular Catalogue of professional training (VET).

- **State Foundation for Training in Employment (FUNDAE)⁵**

The FUNDAE, which is under the umbrella of the Public Employment Service, is the body that make up the organisational and institutional participation structure of the subsystem of vocational training for employment. It has a tripartite nature and its board of trustees is formed by the Public Administration and the most representative employers' and trade union organisations. One of its most important responsibilities, regulated by Royal Decree 395/2007 of 23rd March, is to promote and disseminate vocational training for employment among companies and workers.

- **National Reference Centre in Building and Civil Works⁶**

This Centre is placed in Madrid. Besides being the national reference for the professional family of Building and Civil works, it is a training Centre that offers courses in heavy equipment operators. In addition to this, it offers lot of courses on Building and Civil Works matters.

- **Labour Foundation for Construction**

The Foundation works since 1992 to provide businesses and workers the necessary resources to promote a more professional qualified and educated construction sector.

It was born in late 1992 as a non-profit entity created by the most representative organizations of the construction sector in Spain:

- Confederación Nacional de la Construcción (CNC).
- CCOO de Construcción y Servicios
- Federación de Industria, Construcción y Agro de UGT (UGT-FICA)

Its objectives are:

- Development of Vocational Training.
- Promotion of research, development and promotion of actions for the improvement of occupational health and safety at work.
- Promoting better jobs and issuing and monitoring of Professional Construction Card (TPC)

⁵ Source: <https://www.fundae.es/>

⁶Source: <https://www.comunidad.madrid/servicios/empleo>

The Foundation owns 47 training centres in Spain, offering more than 400 different training courses in collaboration with more than 1,500 teachers. Moreover, they develop over 140 training handbooks on different subjects relating to construction activities.

- **Labour Foundation for Construction in Principality of Asturias**

FLC of Principality of Asturias, an independent organization created in 1988 by means of a Foundation Agreement subscribed by the Employers' Organizations and the Trade Unions in Asturias, is also an equality-based, non-profit organization and its scope of activity includes the companies and employees of the construction sector. Funding comes by Compulsory business contributions set in the Agreement subscribed by the social partners.

It constitutes a new model of labour relationships as the first equality-based organization for the construction sector in Spain (acknowledged by the European Union, among other institutions, as a **"Model of Good Practices"** in 1999). Its main foundational purposes are:

- Economic benefits for the construction workers in Asturias (such as housing and family support)
- Vocational training for construction workers and enterprises
- Job placement agency for construction workers and enterprises

FLC of Principality of Asturias has trained over 65.000 people and it has carried out more than 5.300 training courses (aimed at unemployed people, as well as employers and employees of the construction sector) related to a wide variety of construction professions. Furthermore, and through its direct and continuous contact with the construction companies, it is constantly setting-up and developing new training paths in order to qualify and prepare the trainees for the future skill requirements. The training activities usually take place in two Training Centres located in the Autonomous Community of the Principality of Asturias (Spain), in Ribera de Arriba (65,000 m²) and Gijon (37,000 m²).

2.2. Qualifications description & Curricula

The current educational system enables students to choose the most appropriate training option, which plays a fundamental role in order to find an employment. However, the successful labour insertion of users does not only depend on their level of training but also on their level of professional skills. Vocational Training aims to ensure the access in the labour market which is important regarding the current situation: high unemployment figures and other inefficiencies, such as the high over qualification of some occupations.

The situation today is an uncertain panorama: changing world regulations, constant demographic movements, rapid technological changes, continuous demand for new skills and abilities to adapt to companies and the emergence of new sources of employment. It implies demanding a high degree of competitiveness that should be taken into account by Vocational Training Centres, offering attractive and innovative training programmes.

Vocational training in the construction sector

VET for civil works and building are both on-site and online modalities. Online trainings are fit-for-purpose by people attracted by technology and digitalization aspects of the sector. E-Learning has been identified as one of the most successful options to offer qualified trainings and accessible to the interested parties.

This type of courses are addressed to those people who cannot attend educational centres during class hours, so that learning modality allows each student to decide, on their own and once the courses have been analysed, which modules they wish to enrol in depending on their personal conditions and availability. However, there are construction works that only can be learnt through the “learning-by-doing” programmes.

In the areas of civil engineering and building, users will be able to apply for digital skills such as the development of models, plans and presentations in 2D and 3D that will undoubtedly facilitate the visualization and understanding of civil engineering projects and land use planning. In this context, training in methodologies such as BIM (Building Information Modelling) are presented as necessary when starting or updating studies in the construction sector.

In addition to the use of digital tools, students focus their studies on the new needs demanded by the sector. Certifications in "green" or sustainable construction have been increasing in recent years. The role that the construction sector plays within sustainability at a global level becomes part of the agendas of governments, as well as for public and private entities, transforming the activities and ways of conceiving construction by the different actors involved.

For this reason, construction today shifts towards a sustainable and inclusive sector, far from the conceptions previously established. As a consequence, construction professionals will have to know the new construction techniques, the new "eco" materials, their treatment, the occupational risks and the new forms of organization within the construction process.

Energy poverty, water saving or the **insertion of women** in the construction labour market respond to the objectives of the 2030 Agenda for sustainable development at a worldwide level, in which the construction of resilient cities is one of the key areas of both local and global development.

2.3. Validation & certification

Bologna process aimed at ensuring comparability in the standards and quality of higher-education qualifications, which introduced along the European Universities a new system of credits: European Credit Transfer and Accumulation System (ECTS).

The same has been initiated for VET training, with European credit system for vocational and training (ECVET)⁷, in addition to other initiatives such as the European qualification framework (EQF) and Europass. However, it could be said that there is a long way to go in terms of recognition and comparability concerning EU VET training.

Europass was created in the eighties to remove the obstacles to the mobility of workers generated by a lack of transparency in the professional qualifications. It consists of three documents issued by education and training authorities:

- Europass Mobility records knowledge and skills acquired in another Member State (e.g. Work placement in a company; an academic term as part of an exchange programme),
- The Certificate Supplement, which describes the knowledge and skills acquired by holders of vocational education and training certificates.
- The Diploma Supplement, that describes the knowledge and skills acquired by holders of higher education degrees (university or high-grade Vocational Training)

⁷ Recommendation of the European Parliament and of the Council of 18 June 2009 on the establishment of a European Credit system for Vocational Education and Training (ECVET).

Thus, a student may have an attached document to his/her formal diploma that allows the employers to certified what KSC (knowledge, skills and competences) have been acquired during the formal training.

Erasmus + programme

In Spain, according to SEPIE (Spanish Service for the internationalization of the education)⁸, 9 million of people has taken part of Erasmus programme along its 30 years of existence. Some figures from the mentioned report about the analysis of this programme are as follow:

- 73.100 mobilities for VET trainees.
- The participants has found early their first job and earn 25% more
- 80% of trainers use new methodologies in school and VET
- Spain has received 1.300.000 VET trainees

Memorandum of Understanding (MoU)

The MoU is a formula that Fundación Laboral de la Construcción is using over the years and implementing through its coordinated European projects. It is an agreement opened to all the interested organisations that agreed on the recognition of the learning outcomes described in the training programme developed in the project, when it has followed ECVET recommendations⁹. It provides a general framework of cooperation and networking between the partners, where a climate of mutual trust is established; and assist the partners on the design of specific arrangements for credit transfer to learners.

It is not a legal document, but enables mutual understanding and trust among different countries, assuring the process of recognition and validation of skills by common accreditations as well as a coherent implementation at national level.

The structure of the MoU is the following:

- Description of the MoU objective and scope
- Signatures of the institutions

⁸ <http://sepie.es/doc/newsletter/2018/13/libro.pdf>

⁹ Recommendation of the European Parliament and of the Council of 18 June 2009 on the establishment of a European Credit system for Vocational Education and Training (ECVET).

SPAIN	
Procedures for the accreditation and recognition of learning outcomes: Learning outcomes would be eventually recognized by the participation of the applicant in a recognition of occupational competencies process, which have been acquired by experience or non-formal training. To do so, LO must have correspondence with competencies officially included in the National Catalogue of Qualifications.	
Name and status of the body awarding the LO: Fundación Laboral de la Construcción	Name and status of the national/regional authority providing accreditation/recognition of the LO: Ministry of Labour and/or competent Regional Body.
Type of certification : <input checked="" type="checkbox"/> Official certificate <input type="checkbox"/> Non official certificate Describe the type of certificate: Occupational certificate Level of the certificate (national or international) European level: EQF 4	
Legal Basis: Royal Decree 1224/2009, 17th of July, on the recognition of occupational competencies acquired by working experience.	

Example of a MoU

- Body of the Qualification covered:
 - o Title
 - o General aim of the training programme / Key competence to be acquired
 - o Sequencing and distribution of professional modules (Module, hours and ECVET credits)
 - o Occupations involved / target groups
 - o EQF level
 - o Module x: Learning units, hours, ECVET points
 - Unit x: general description, learning outcomes. Outline of unit contents, Assessment

2.4. Work based learning (WBL)

Work based learning and further education in Spain are wide terms, understanding that it is all the training out of the formal training (in Spain, Dual VET is only included within formal training). However, it represents only around 2% of the total of the VET delivery in the country.

The Spanish initial VET system is not considered as dual, according to the terminology commonly used, but as *school-based* since the theoretical and practical training in the company is not alternate. The introduction of the Dual System for VET is relatively recent in Spain, and is regulated by the RD 1529/2012 launched on 8th of November 2012. This regulation develops the 'Contract for training and apprenticeship' and sets the background of the Dual VET are established. Dual VET coexists with the traditional VET model, having a low level of implementation at the moment, although participation has been increasing in the recent years.

From the 90's, there is in Spain a WBL approach in the traditional VET programmes of the Education System, by which an on-the-job learning period is compulsory for any formal VET learning programme. It is carried out once the training in the educational centre has been completed, through the so-called "Training at the workplace" module. However, it represents only 20% of the total practical training that students receive during two academic years.

Complexity is a common feature of VET systems, especially in dual systems, due to the variety of actors involved in decision-making process, management and implementation (public administrations -central and regional-, training centres, companies, social partners –trade unions and company associations-, etc.). Thus, the success and effectiveness of dual VET systems depends, to a large extent, on the development of governance structures that favours the coordination and integration of the different actors involved.

WBL may be received in the framework of the Regular Vocational Training (managed by the Ministry of Education) or in the framework of the Vocational Training for Employment (managed by the Ministry of Employment). Cooperation between both bodies would achieve the objective of integrating initial VET (under the Ministry of Education) and VET for employment (under the Ministry of Employment). However, in practice, the participation of the two Ministries has created a model that differentiates two profiles with a different status: the student of the initial VET, and the "apprentice" that could be hired under the 'contract of training and apprenticeship', regulated by labour law.

The Spanish Educative system is not centralised, and the management and administrative competences fall within scope of the departments of education at regional level, together with the Employment Councils and the Regional Public Employment Services, which must authorize the training activity related to the contract of training and apprenticeship. Thus, the distribution of competences between the two Ministries have to coexist with the one existing at regional level, making coordination and integration of the system difficult.

Thus, there are two different models for WBL in the field of VET:

<p>Model 1</p> <p>EDUCATION SYSTEM (VET Diplomas) (2000h, 2-3 years)</p>	<p>Dual VET (2 types: possible remunerated scholarship, or Contracts for Training and Apprenticeship, remunerated) Age: 16-25/30</p> <p>Dual VET (Contracts for Training and Apprenticeship, remunerated)</p> <p>(max. 75% of the maximum no. of hours according to the collective agreement/legal maximum during 1st year; max 85% during 2nd and 3rd years)</p> <p>At least 33% of the total time in the company</p>
<p>Model 2</p> <p>EMPLOYMENT SYSTEM (Certificates of Professional Standards)</p>	<p>Compulsory non-remunerated practices (traditional VET -not Dual-)</p> <p>Compulsory non-remunerated practices (exempt if the student is under a Contract for Training and Apprenticeship)</p>

Currently there is a lack of national cooperation tools between the training centres and the companies; it is being organised at regional levels, using different strategies. This involves the coexistence of different dual VET models and WBL system, depending on specifics of the territory. In general, the training centres have a high degree of autonomy to adapt the new dual training to the local productive environment and the needs of the companies involved in the WBL programmes, especially large companies (for SMEs there are more difficulties to participate in these programmes).

The role of the in-company tutor is legally recognised in Spain through R.D. 1529/2012, however, the persons who carry out this role are not always recognised as such in some companies. Furthermore, there is no official recognition of this role at national level. Different organisations have been interested in developing the profile of the in-company tutor, and different material may be found online. One of the most active entities regarding the promotion of the Dual training in Spain is [Fundación Bertelsmann](#), devoted to the promotion of the social change through innovative proposals. It has developed different projects and initiatives regarding the introduction and broad usage of the dual system in Spain. That foundation has been a promoter of the Alliance for the Dual Professional Training, which is a national network of more than 500 companies, training centres and institutions committed to the improvement of the youth employment through the development of a quality Dual VET system.

In addition, the FLC has contributed to in-company tutor recognition by the Co.Tutor project¹⁰. Co.Tutor deals with the improvement of participation of construction SMEs in the training programmes that include practices in companies (Dual system training, Professional Certificates, etc.).

¹⁰ <http://www.cotutorproject.eu/en/home/>

In Spain, Law 30/2015, 9 September, regulates within the general framework of the National System of Qualifications and Vocational Training, the planning and financing of the system of Vocational Training for Employment, among other functions.

Under this regulation, there are several training initiatives, such as training programmed by companies; training for occupied workers, training for unemployed people, etc.

2.5. Mobility

Reducing youth unemployment is one of the most important challenges for the 2014-2020 programme period and must be addressed both by national and EU institutions and by EU citizenship itself. A successful resolution of this problem will depend on the support and coordination of all the organisations and sectors involved, and on the involvement of private initiative in the design, adoption and implementation of the appropriate measures.

EU Council Recommendation (22 April 2013 on the Establishment of Youth Guarantee) points out that young people are vulnerable because of the transitional periods they are going through in their lives, lack of professional experience, inadequate education or training at some stages, limited social protection coverage (which they often suffer), restricted access to financial resources, and precarious working conditions. The report mentions that Member States should put in place measures including actions to offer young people who drop out of school prematurely, and those who are low-skilled, pathways back into education and training or educational programmes that provide them with learning environments that respond to their specific needs and enable them to achieve the qualification they missed.

As a response to Council Recommendation on the implementation of Youth Guarantee, on 19 December 2013 the Government of Spain presented The National Youth Guarantee Plan. This Plan, which is aligned with EU Strategy for Entrepreneurship and Youth Employment, contains a common catalogue of actions to be developed by the intermediate bodies of the Operational Programme for Youth Employment, with the aim of reducing unemployment among youth people.

As part of the development of the Plan, Royal Decree-Law 8/2014, of 4th July, was published, approving urgent measures for growth, competitiveness and efficiency regulated by National Youth Guarantee System (Chapter I of Title IV). The main purpose of this System is that the group of young people who are neither employed nor integrated into the education or training systems, and who are over 16 years of age and under 30 years of age, can be offered employment, continuing education, apprentice training or work experience after completing formal education or becoming unemployed.

The objectives of the System require the implementation of actions or measures that contribute to the improvement of professional skills and competences, including training to obtain certificates of professionalism. Access to training programmes for young people at risk of social exclusion will be taken into account transversally, incorporating the gender perspective in the design, implementation, monitoring and evaluation of actions.

In order to benefit from the actions of the System, young people must be registered in a file that collects their data and allows them to receive information on employment and training (job offers, possibilities of participating in training initiatives...). Candidates must meet the following conditions in order to register:

- Being a Spanish citizen or a citizen of the EU, or of third State member of the European Economic Agreement or Switzerland or are in Spain in the process of moving or residing freely; or foreigners who hold an authorisation to reside in Spanish territory that authorizes them to work.
- Being registered in any locality of the Spanish national territory.
- Being more than 16 and less than 30 years old at the time of applying for registration.

- Being unemployed within 30 calendar days prior to the filing date of the application.
- Not having received educational or training actions that involve more than 40 hours per month within the 90 days prior to the date of the application.
- Not having received training actions involving more than 40 hours per month within the 30 days prior to the date of the request.
- Filling a written declaration for having an interest in participating in the System, acquiring a commitment to active participation in the actions developed within Youth Guarantee Framework.

In accordance with Law 18/2014, Department of Education, Culture and Sports of Junta de Comunidades de Castilla-La Mancha (Spanish region) has designed an offer of training activities that are developed by public-private entities, and that allow the achievement of the objectives pursued in the Law. Within this framework is implemented the Order number 02/09/2016, which approves the regulatory basis for granting aids to entities participating in the implementation of actions co-financed by European Social Fund and Administration of Junta de Comunidades de Castilla-La Mancha, under the autonomous section of Operational Youth Employment Program in the region.

For Fundación Laboral de la Construcción (FLC), the need for workers in the construction sector to acquire specific basic skills is a priority in order to be able to provide guaranteed access to the labour market. In the case of young people, it is essential to offer initiatives that are attractive to them, especially in the case of those with a lower level of qualification. This proposal integrates theoretical and practical training, which will be carried out abroad, which is a plus for young people, who can participate in a quality training process that integrates an international experience as part of that programme. Young people are offered the possibility of obtaining a level 1 certificate of professionalism, with the added bonus of a stay abroad for the completion of the hours of practice included in the certificate. In addition, the achievement of this level 1 certificate will allow them access to certificates of higher level.

Throughout the whole process of selecting the students, the gender perspective criteria will be present to achieve real equality in the participation of both women and men.

2.6. Apprenticeship contract

This type of contract is another initiative regulated by the law 30/2015, only for programmes that combine training practice in companies managed by the Public Service of Employment; that can be of two types:

- Contract for training and apprenticeship (RD 1529/2012), where the companies would have a bonus in a % of the working day.
- Public employment- training programmes, with a limited concurrence to promoters and following specific normative.

Apprenticeships are usually linked to public procurement where a public organisation launches a call for training, and the training centre that applies must be supported by some companies' commitment of hiring a percentage of students attending to these courses.

- ***Practical workshops***

In the Spanish construction Sector, practical workshops are organized in order to put in practice what was learnt during the courses.

For example, in Fundación Laboral de la Construcción, workshops are organized as follows:

- More than a half of the training programmes delivered deal with health and safety at the workplace. This training is mandatory for all workers employed under the Construction Collective Agreement. Although this training is usually theoretical, some of the training centres have a special area dedicated to trainees for practicing.
- Around 25% of the training are focused on construction skills. These courses are usually work based learning, and trainees practice what was learnt in the workshop.

3. Current national policies on VET qualifications

a) Italy

In Italy, qualifications are regulated by the National Directory of Qualifications and Competencies and the Atlas of Labour, produced by INAPP on behalf of the Ministry and the Regions pursuant to Legislative Decree 13/2013;

In recent years, the Directory of Competences has been enriched by further developments and updates and can be considered a reference point for discussing competences in institutional tables at national and regional level.

The National Repertory was established in Italy with Legislative Decree no. 13 of 16 January 2013. According to the Decree, the Repertory [... constitutes the single reference framework for the certification of skills. The national repertoire consists of all the repertoires of education and training qualifications, and of the professional qualifications awarded in Italy by Ministry of Education, University and Research; the regions and the autonomous provinces of Trento and Bolzano; the Ministry of Labour and Social Policies; the Ministry of Economic Development and the other competent authorities in matters of certification of competences referring to qualifications of the regulated professions (Article 5 of Legislative Decree No. 206 of November 9, 2007) and an apprenticeship contract. The National Repertoire recomposes the system of qualifications issued in Italy with reference to the following subsets: University; Secondary school; Education and vocational training; National framework of regional qualifications; Apprenticeship; Professions.

Inside the National Repertory of Qualifications there are also profiles that are obtained at the conclusion of a formal educational path (Education) by releasing national qualifications; after three years or as professional technical diplomas lasting four years.

INAPP (Public Policy Innovation) has developed the Atlante labour in which is described the work process contents in terms of areas of activity (tasks, tasks,) and of potentially deliverable products-services in the performance of work activities.

The classification of the economic-professional sectors (SEP) was obtained using the classification codes adopted by ISTAT (National Statistical Institute), concerning economic activities (ATECO 2007) and professions (Classification of Professions 2011). The SEP classification consists of 23 sectors plus a sector called the Common Area. The Common Area collects all those work activities not specifically characterized by a specific sector.

b) Lithuania

Main objectives of national policies are:

- Strengthening of work-based learning with a particular focus on apprenticeship is stressed in VET policy documents.
- The state vocational training institutions network is aimed at bringing together resources and using them efficiently as well as improving the quality of vocational training to better meet local labour market and students' needs. The network development plan is based on the following principle – if the number of students at a VET institution falls to the set critical level (for example, 200 students in a rural area), this institution should be restructured by converting it into a department or subsidiary of another VET institution or general education school.
- The first strategic goal specified in the key long-term strategic document in the field of Lithuanian education “The National Education Strategy for 2013-22” provides for enhancement of the motivation by enabling students and teachers to constantly improve their qualifications in an educational system with different traditions and in a different cultural environment, thus assuring the acquisition of professional and intercultural competences, the importance of which is gradually becoming undisputable in the educational process.
- Sectoral qualifications standards were given a legal basis by legislation in 2016 (more information is provided in section 4).
- Modularisation of VET curricula. From 2019 – all VET according to modular programmes. “Old generation” subject-based programmes will become modular, a module of programme, non-formal VET programme or cancelled (more information is provided in section 1.3).

c) Spain

The legal basis for the work with National Qualification Framework has been established through:

- ✓ Organic Law 5/2002 of 19th June on “Qualifications and Vocational Training”
- ✓ Organic Law 2/2006 of 3rd May on “Education”
- ✓ Organic Law 8/2013 of 9th December on “Improvement of the educational quality”

For more detailed information about the national policies on VET qualifications see section 1.1

4. Analysis on factors of innovation per country.

The main purpose of this section is to analyse and identified gaps and needs in Italy, Lithuania and Spain regarding the innovation factors considered for this project; i.e. Work Based Learning, digitalization, energy efficiency, renewable energy systems, circular economy, new materials, gender aspects and new emerging risks in OSH. In order to achieve this objective, we have developed an in-deep analysis of the different professional families within the construction sector distinguishing the different levels of qualification (mainly levels 2 & 3 for Spain and 3&4 for Italy and Lithuania) and how the mentioned factors are assessed by each qualification.

The grid elaborated by each country with more detailed information is attached to this document as Annex I. As a brief explanation of the Annex, you may find the different qualifications for each professional family and it was numbered from 0 (not important) to 3 (very important) the level of importance given to each factor of innovation in the different qualifications. Moreover, the mean, mode and standard deviation of each factor of innovation was deducted per professional family.

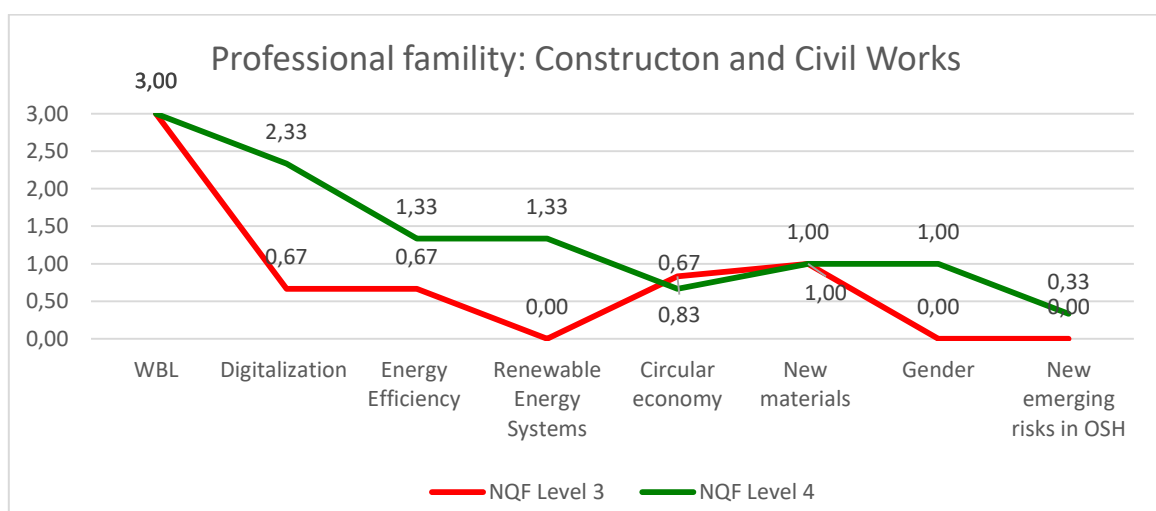
Below you may find the graphs for each country under consideration according to each professional family within the construction sector with a brief analysis of each of them.

Relevant definitions:

- **Mean:** is computed as the sum of all the observed outcomes from the sample divided by the total number of events.
- **Mode:** is the number with the highest frequency.
- **Standard deviation:** is a measure of the amount of variation or dispersion of a set of values.

a) Italy

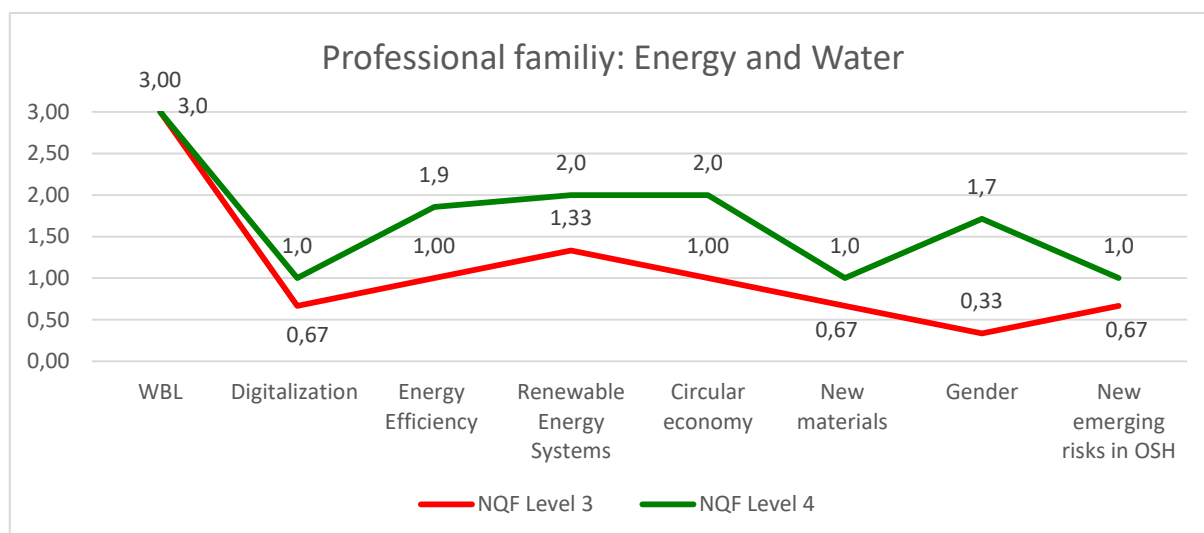
Graph 1. Factors of innovation in the Construction and Civil Works in Italy.



Source: own elaboration

For the Construction and Civil Works in Italy, WBL is well developed within the qualifications for both levels which means that training programmes give importance to the practical aspect of the formative process. However, in the level 3 renewable energies, gender aspects and new OSH risks are not considered which means a deficit within these qualifications. The remaining factors should be also improved for that level of qualification.

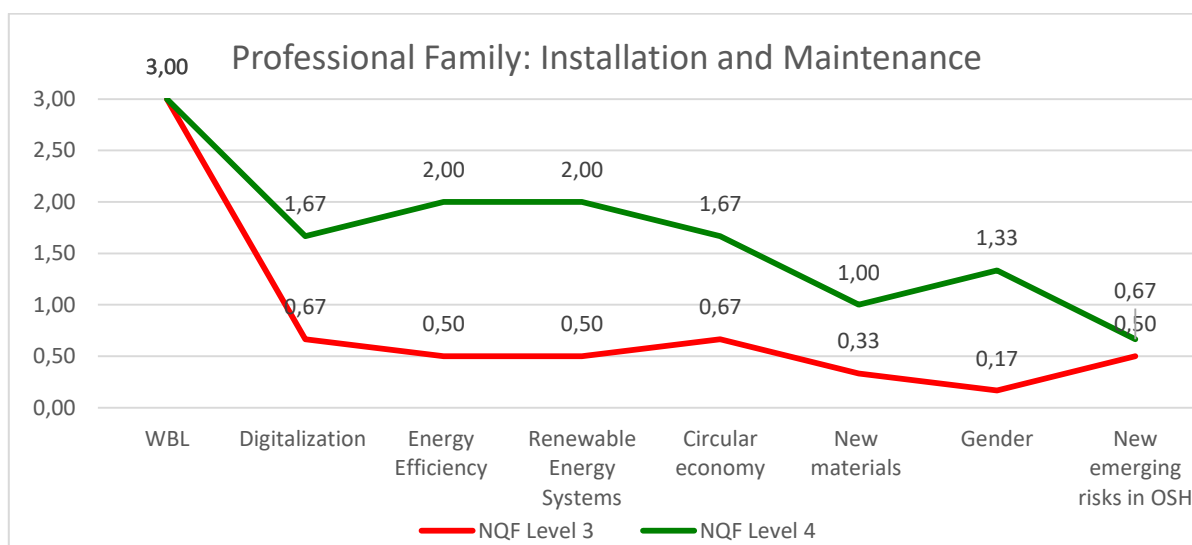
Graph 2. Factors of innovation in the Energy and Water Works in Italy.



Source: own elaboration

Visible gaps can be found in the NQF level 3 for digitalization, new materials, gender aspects and new OSH risks. Although WBL is well assessed throughout the qualifications. For level 4, digitalization, new materials and new OSH risks considerations should be improved.

Graph 3- Factors of innovation in the Instalaltion and Maintenance in Italy.

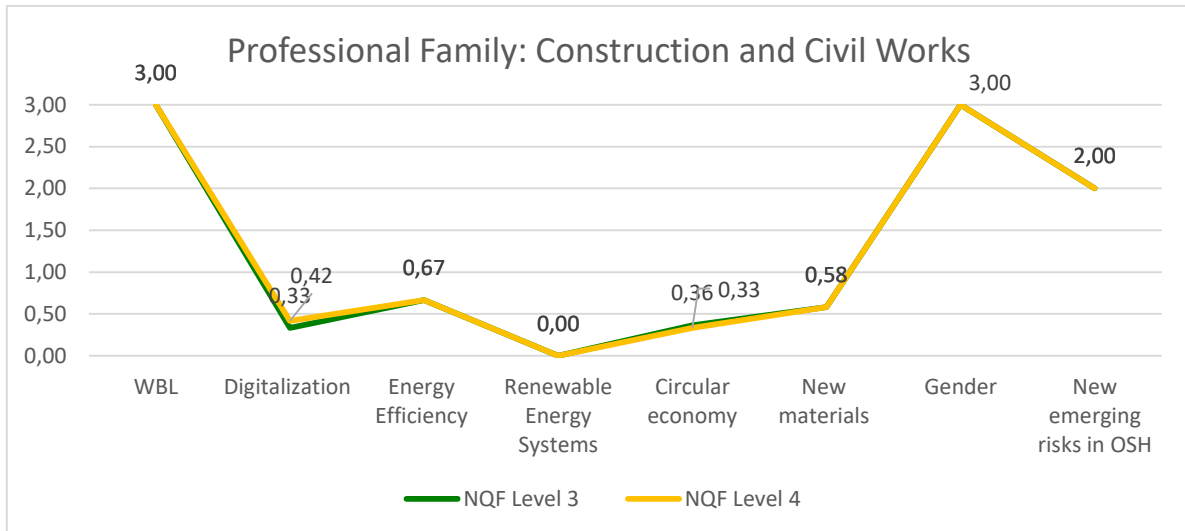


Source: own elaboration

In general terms, all factors of innovation should be better considered for NQF level 3 except WBL. In NQF level 4 new materials and new OSH risks aspects should be increased within the qualifications.

b) Lithuania

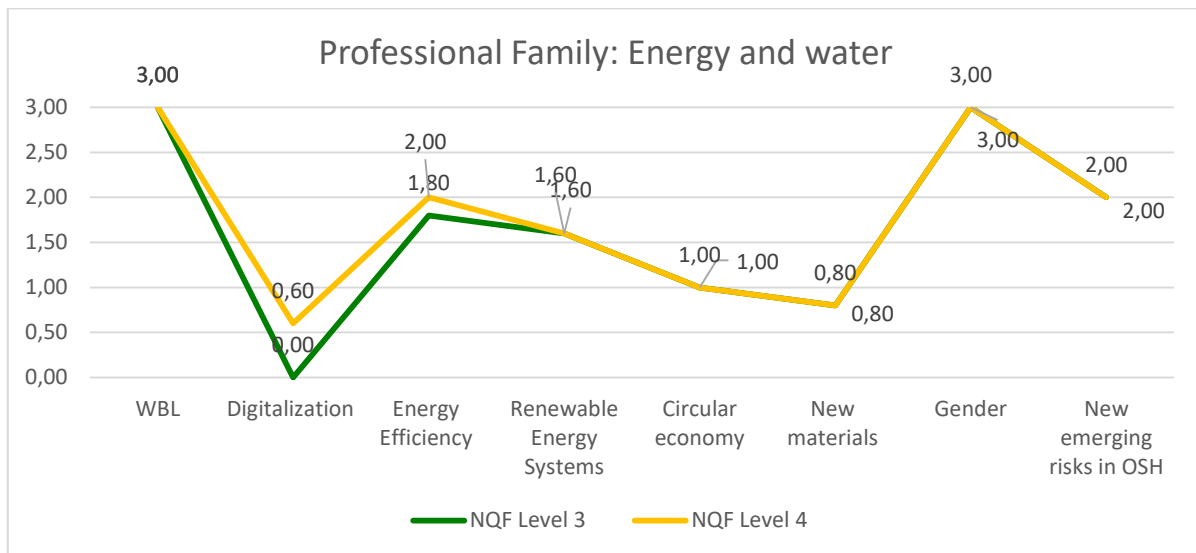
Graph 4. Factors of innovation in the Construction and Civil Works in Lithuania



Source: own elaboration

In NQF level 3 & 4 the factors of innovation are mentioned practically in the same extent. Improvements should be made in digitalization and green issues (energy efficiency, renewable energy, circular economy and new materials).

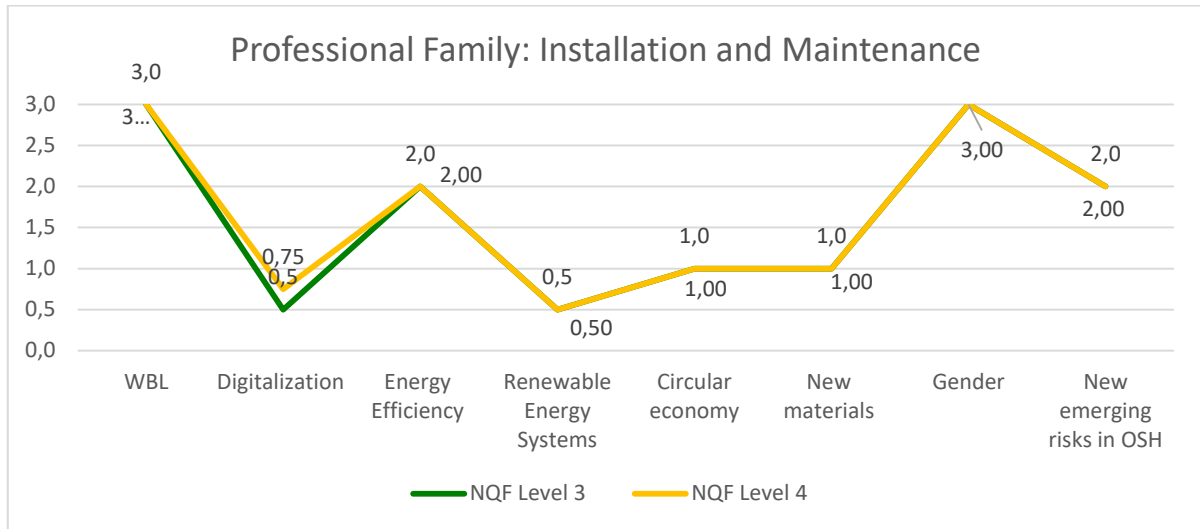
Graph 5 Factors of innovation in the Energy and Water Works in Lithuania



Source: own elaboration

Differences between NQF level 3 & 4 are not very palpable for this professional family either. The fact that digitalization is not considered in qualifications of NQF level 3 and slightly mentioned for level 4 should be noticed. Increase in new materials and circular economy should be promoted.

Graph 6 Factors of innovation in the Instalaltion and Maintence in Lithuania

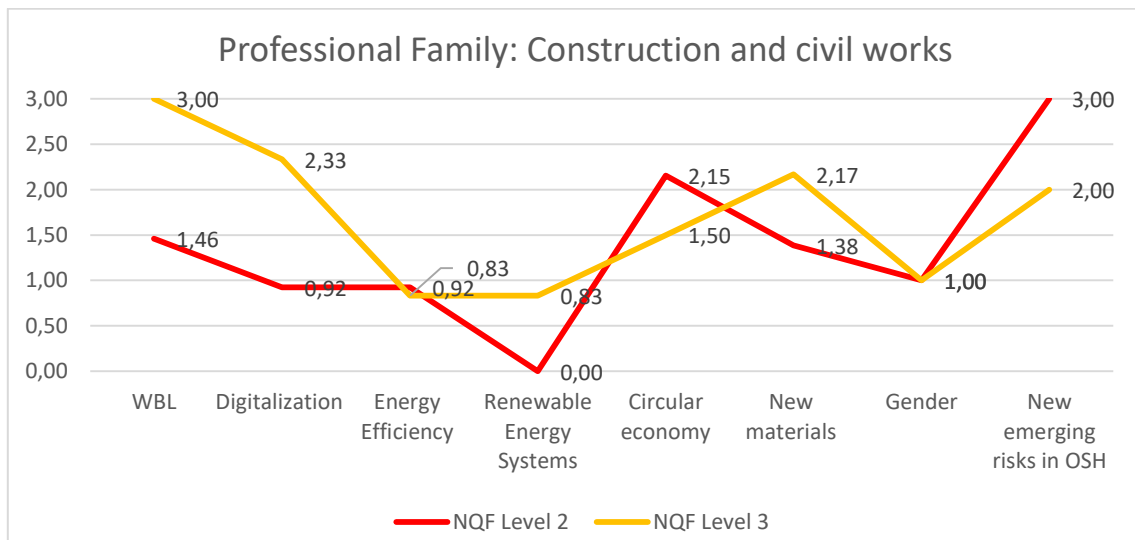


Source: own elaboration

In the installation and maintenance field the situation is the same than for the other professional families. Qualifications for Levels 3 & 4 consider innovation factors in the same extent. Noticeable gaps are identified for digitalization and renewable energies.

c) Spain

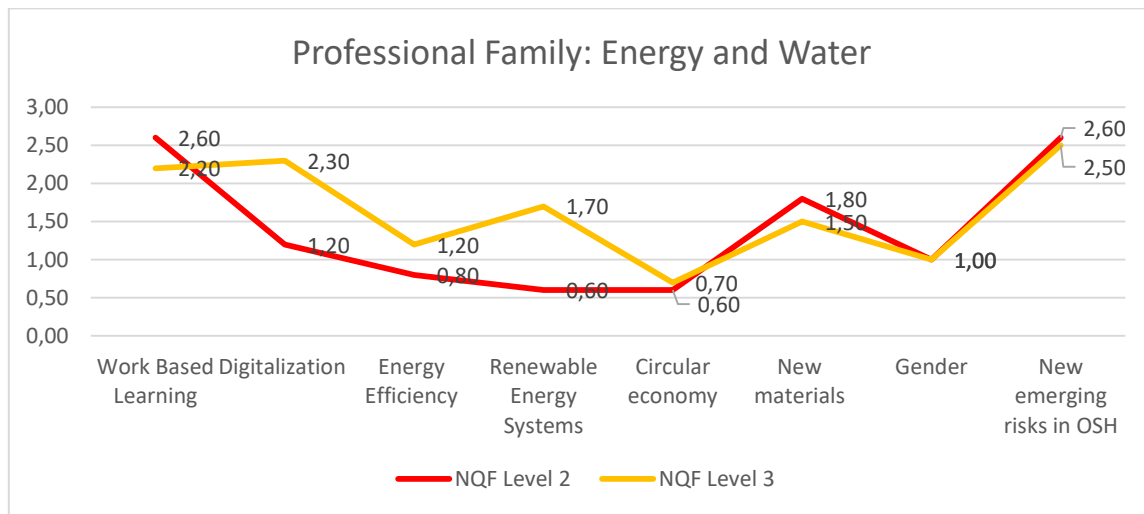
Graph 7 Factors of innovation in the Construction and Civil Works in Spain



Source: own elaboration

For NQF 2 changes should be made in the qualifications regarding digitalization, energy efficiency, renewable energy and gender aspects. WBL is better developed in the qualifications of NQF level 3 although energy efficiency, renewable energy and gender aspects should be improved for this level.

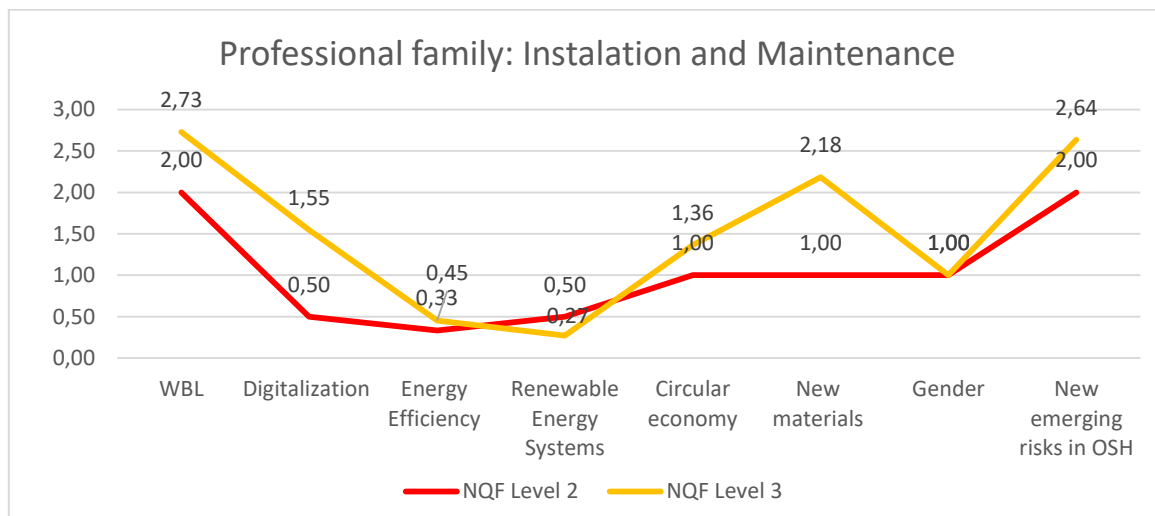
Graph 8 Factors of innovation in the Energy and Water Works in Spain



Source: own elaboration

For NQF level 2 gaps are identified regarding green and gender aspects whereas for level 3 gender aspects are not well assessed either.

Graph 9 Factors of innovation in the Instalaltion and Maintenance in Spain



Source: own elaboration

In general terms, improvements should be made for green issues, gender aspects and digitalization for both levels of qualifications.

5. Improving national qualification systems. Role of the partners

a) Italy

Formedil, on the basis of the mandate of the social partners, enshrined and reaffirmed in the contract has put in place national tools that have made it possible to make all the local construction schools a national training system for the sector.

The repertoire of building skills was one of the references for the structure of the National Directory of qualifications and skills of the Atlas of Work, created by INAPP.

The repertoire of competences, which has been enriched by further developments and updates, can be considered a reference point for discussing competences in institutional tables at national and regional level.

The Building Training Database, the skills repertoire and the personal building training booklet are systemic actions and, as pillars of the sector's bilateralism, they will be increasingly so in the near future to accompany the process of integration into the workforce. This is a set of important tools to ensure that registered training, assessed and certified, comes into play in the qualification systems of companies

b) Lithuania

To improve the Lithuanian qualification development system, Sectoral qualifications standards were given a legal basis by legislation in 2016.

The qualifications standard is developed for a particular economic sector by describing the most important qualifications in the specific sector at different LTQF levels. For each qualification the qualifications standard describes competences that are grouped into qualification units.

After sectoral qualifications standards are approved, they are used to design VET content and assess whether a person's learning outcomes meet the requirements for a qualification. Identifying requirements for all levels of qualifications at the same time should improve permeability between different educational levels and make qualifications development and improvement more flexible.

The MoEs has delegated development of sectoral qualifications standards to the Qualifications and VET development centre through its 18 Sectoral professional committees set up to ensure effective social dialogue. SPCs are responsible for designing qualifications standards in specific sectors of the economy. SPCs consist by expert groups, major employer organisations.

Main stages: field research and qualification research (functional analysis), development of list of qualifications and development of standard.

It is foreseen that the framework will consist of 24 standards defining the major qualifications at different levels in respective sectors. Since today 14 standards are approved. Construction sectoral standard was approved on July, 2019.

Table 2. Sectoral qualifications standards defining the major qualifications at different levels in respective sectors.



c) Spain

Fundación laboral de la Construcción has participated in the elaboration of the National Catalogue of Professional Qualifications (CNCP) for the professional family of Construction and Civil works in close cooperation with the INCUAL. This Catalogue was approved by the Ministry of education of Spain. Likewise, the training offer related to the qualifications derived from the national centres of reference was elaborated by the FLC.

Generally, the process is started as an initiative of the national social partners. The different steps to be taken in order to improve or create a new qualification in the national qualification system in Spain are as follow:

Step 1a) Through its observatory.

Step 1b) A meeting requested with INCUAL (anyone can do it but better to be an organization).

During this meeting reason to justify the modification or creation of a new qualification should be explained. After that, INCUAL should evaluate them and declare if they agree or not.

Step 2. Completion of Annex I

As a next step, if the INCUAL agrees, an Annex I must be completed in which the need for qualification must be justified with official data (INE, sector reports, etc.).

This Annex is validated by a group of professionals (methodological coordinators, experts from the professional family, INCUAL observatory, etc.). The methodological coordinator is the competent person to admit the viability of the qualification.

To this end, the coordinator investigates whether the proposal could complement a qualification that has already been elaborated or a new one should be elaborated, taking into account its priority and the resources available.

Step 3. Creation of the working group

If it is susceptible of a new qualification, a working group is created that defines the structure of the qualification (unit of competence, performance criteria and associated training).

Step 4. Validation of the process by experts and final approval by social partners.

6. Conclusions

- In Italy, the National repertory constitutes the unitary reference framework for the certification of competences, through the progressive standardization of the essential elements, including descriptive elements of education and training qualifications, as well as those of vocational education and training and of professional qualifications through their correlation also through a shared system of recognition of training credits in a European key. The repertoire of competences, which has been enriched by further developments and updates, can be considered a reference point for discussing competences in institutional tables at national and regional level.

Inside the National Repertory of Qualifications there are also profiles that are obtained at the conclusion of a formal educational path (Education) by releasing national qualifications; after three years or as professional technical diplomas lasting four years.

Formedil, based on the mandate of the social partners, enshrined and reaffirmed in the contract has put in place national tools that have made it possible to make all the local construction schools a national training system for the sector

- In Lithuania the Construction Standard has been developed in accordance with the updated Qualifications Framework (2019) and programs leading to professional qualifications are developed and implemented according to the Standard. All VET programs are based on learning outcomes. The national qualification system (LTQF) is based on learning outcomes / level descriptors defined according to two parameters: focusing on activity characteristics (complexity, autonomy and variability) and on types of competences (functional, cognitive and general).

Qualifications of levels V shall be acquired by completing training programmes intended for persons with a professional qualification as well as fixed-duration professional experience. Any level V construction qualification is treated as a set of competencies (ability to plan and manage work, materials, and human resources) required by the foreman.

Social partners (18 Sectoral professional committees) participated in shaping the content of new qualifications, qualification standards and VET programmes, and assessing the labour market relevance of VET programmes. It is planned that prospective foreman will be selected / recruited by Level V qualification programs in the construction sector.

- In Spain, the official Framework for national qualifications is the National Catalogue of Professional Qualifications. It is structured by professional families (a total of 26) and follows levels of qualification that consider EU criteria. Qualifications are made by the National Institute of Qualifications (INCUAL)

and are defined by: knowledge, skills, competences and they are the core base of VET and professional certificates design.

The Initial, or “Regulated” Vocational Education offers a variety of medium-level training cycles that lead to the degree of Technician, and higher-level training cycles that lead to the accreditation of Superior Technician.

In Spain there are two kinds of vocational activities which also translate into two models of WBL:

- Vocational Education, which is regulated by the Ministry of Education, consists of 2 years training (between 1300 and 2000 hours) and includes mandatory WBL (at least 12% of the training)
- Vocational Training for employment which is regulated by the Ministry of Labour, structured by modules which may add up to a total of 1000 hours and Includes mandatory WBL.

Fundación laboral de la Construcción has participated in the elaboration of the National Catalogue of Professional Qualifications (CNCP) for the professional family of Construction and Civil works in close cooperation with the INCUAL. This Catalogue was approved by the Ministry of Education of Spain. Likewise, the training offer related to the qualifications derived from the national centres of reference was elaborated by the FLC.

In order to identify gaps and needs that should be assessed by the new qualification to be created by the ICARO Project, the conclusions that should be drawn from the graphs are:

- Digitalization should be better implemented in the new qualification. Although digitalization is playing a crucial role in the construction industry in all the countries, new tools and technologies are disregarded in the current National Qualification Frameworks.
- Green issues should be better considered and included in the qualifications in order to adapt them to the current European regulation and policies.
- Despite of the fact that gender aspects are well regarded in Lithuania within the qualifications, in Spain and Italy there is still a lack of observance which means that a promotion of such factor within the construction sector is needed.

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