



TRAINING CONTENTS IN ENGLISH



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Module1. European Qualifications Framework

Introduction

The European Qualifications Framework (EQF) acts as a translation device to make national qualifications more readable across Europe, promoting workers' and learners' mobility between countries and facilitating their lifelong learning.

The EQF aims to relate different countries' national qualifications systems to a common European reference framework. Individuals and employers will be able to use the EQF to better understand and compare the qualifications levels of different countries and different education and training systems.

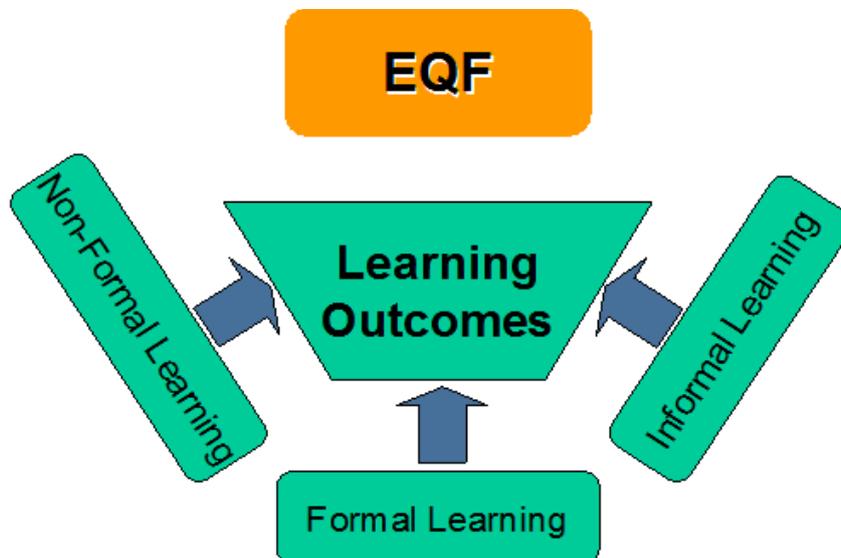
D.U.1.1. European qualification framework (EQF)

The European Commission is working actively on the construction of the European Framework of the Professional Qualifications. In the recommendation of the European Parliament and Council regarding the creation of the European Qualifications Framework, it was established the need for the Member States to use the EQF as a reference tool to compare qualification levels of different qualifications systems from a Lifelong Learning perspective.



The concept "learning outcomes" is essential for the EQF development, because this concept will mean the link among the efforts which will be carried out from all spheres to get this single and common framework of reference. The definition of the learning outcomes is identified with an essential consequence from the current efforts in a national, regional and sectorial level to reform the educational and training system, as the vocational training case illustrates, in which there is a set of European countries that

have implemented systems which are based on performance and are linked to the training results.



The concept of learning outcomes is extended in the formal learning, non-formal and informal fields, because it is located in the context of the acquisition of lifelong qualifications and competences. In this sense, the European Qualifications Framework (EQF) will identify the learning results as an acquisition process of qualifications.

“One qualification is acquired when a competent organism determines that a person has reached a specific level of knowledge, skills and general competences in his/her training. The level of these training results is confirmed by the evaluation process or by passing the training programme. The learning of a qualification and its evaluation can have place in the context of a formal programme of studies and / or by experience in the working place. One qualification grants an official recognition with value in the labour market and to continue studies. One qualification can grant a legal right to practice one job (European Commission using a definition from the OECD, 2005).”

Descriptors to define the levels of the European Qualifications Framework

Concept and level	Knowledge	Skills	Competences
Concepts	In the EQF, knowledge are described as theoretical or / and practical	In the EQF, skills are described as cognitive (use of the logical, intuitive and creative thinking) and practices (founded in the manual skill and in the use of methods, materials and tools)	In the EQF, competences are described in responsibility and autonomy terms
Level 1	General basic knowledge	Basic needed skills to develop simple tasks	Working or study under direct supervision in a structured context
Level 2	Practical base knowledge in a specific working field or study	Basic needed cognitive and practical skills to use useful information to carry out tasks and solve common problems with the help of rules and easy tools	Working or study under supervision
Level 3	Knowledge of facts, principles, process and General concepts in a specific working field or study	Range of needed cognitive and practical skills to carry out tasks and solve problems selecting and applying basic methods, tools and materials	Responsibilities assumption
Level 4	Theoretical and practical knowledge in large context in a specific working field or study	Range of needed cognitive and practical skills to find solutions to specific problems in a specific working field or study	Practice of self-management according to defined consigns in context of working or studying which use to be previewed, but susceptible of changing
Level 5	Larger specialized knowledge, theoretical and practical in a specific working field or study, being aware of the limits of this knowledge	Full range of needed cognitive and practical skills to find creative solutions to abstracted problems	Management and supervision tasks in contexts of working or studied activities in which can be produce unforeseeable changes
Level 6	Advanced knowledge in a working field or	Advanced skills which prove the control and the	Activities management or technical or

	study which requires a critic understood of theories and principles	innovation dowry which be necessary to solve difficult and non-predictable problems in a specialized working or study field	complexes professional projects, assuming responsibilities by taking of decisions in working or unforeseeable studies contexts.
Level 7	High specific knowledge, some of them to the avant-garde of one specific working group or study, which set up the bases of an original though	Critical aware of knowledge questions in a specific field and in the articulation point among different fields	Specific skills to solve problems in the researching and investigation field, with views to the development of new knowledge and process, and into the integration of knowledge in different fields
Level 8	Knowledge with the more advanced frontier of a specific working field or study and in the point of articulation among different fields	Skills and more advanced and specialized techniques, particularly in the field of needed synthesis and valuation to solve critical problems of researching and / or innovation to enlarge and redefine knowledge and existing professional practices.	Authority, innovation, autonomy, academic and professional integrity and continuous engagement, sustains and accredited respect to the development of new ideas or process into the avant-garde of working context or studies, investigation included

D.U.1.2. European tools:

At European level, the most important tools for the recognition of the professional competences are: ECVET (related to the qualifications); Europass (a dossier which is made up of five documents related to the "competence" of the person); and, one of these documents, the Language Passport (related to the knowledge of foreign languages).

1.2.1. ECVET. European credit (transfer) system for vocational education and training

The ECVET system is inscribed within the initiatives adopted at a European level, such as the introduction of the European Qualification Framework (EQF), one of whose aims is to improve transparency on qualifications. ECVET proposes one common posing for the description of qualifications, aiming to facilitate their comprehension from one system to another, as well as the description of the process of validation of those learning outcomes.

ECVET is conceived as a system which is based on the voluntary participation of the European Member States, and which pursues the transparency among the systems,

paying attention to the national regulations in the field of vocational training and lifelong learning.

It is a system for the accumulation and transmission of supporting points in vocational training and lifelong learning. With its help, the learning outcomes that a person can get in the vocational training field can be documented and certificated, beyond the "borders of the system".

The system is based on three pillars: Transfer process, Units and Credit points:

- The **transfer process** of learning outcomes can be described as a transaction among authorities or competent bodies, enabled to issue learning credits to the people:

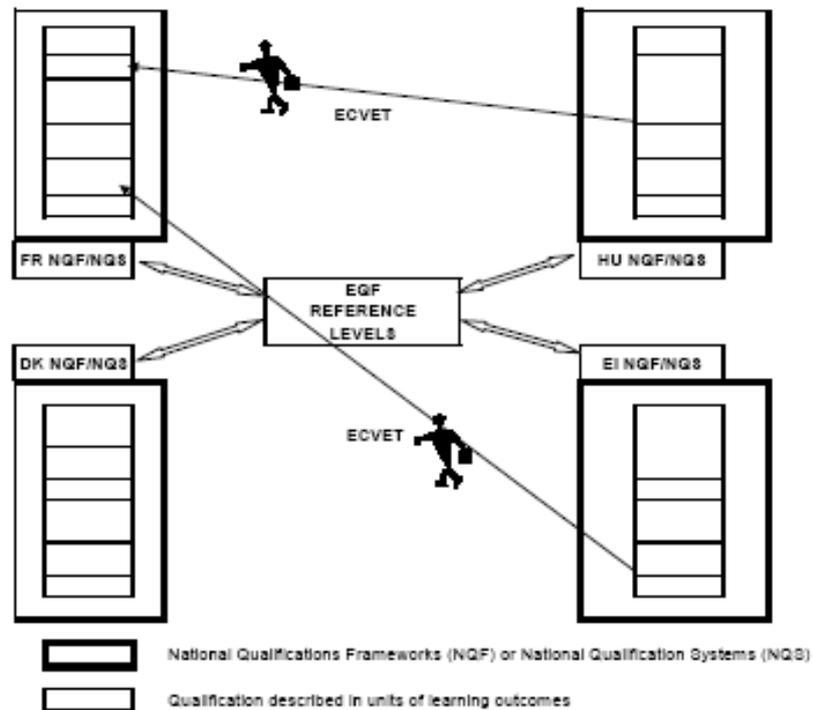
- One of these bodies value specific learning outcomes of one person, gives him/her credits, and records them in an individual register of results.
- Another body validates (accepts) credits as an evidence of the person's learning outcomes and recognizes them, that is, accepts them with views to the expedition of a certification.
- Thanks to this process, one person can, consequently, transfer and capitalize his/her outcomes with views of getting one qualification.

- The presentation of qualifications in terms of **Units** of learning outcomes allows for the definition of knowledge, skills and competences which characterize those qualifications and improves their legibility, for the individuals, for the responsible authorities of the qualifications, and for the employers. The expected learning outcomes for the achievement of one qualification can be presented in one unit catalogue, one qualification referential or any other informative document about the qualification. This practice is currently working in several educational and vocational training systems in Europe.

- **Credit points**. The ECVET credit points are linked both to qualifications and units, and are an additional informative source under a numeric form, with the following functions:

- To give a simple representation of the relative value of one learning outcome unit in relation to a full qualification. The points illustrate the proportions which represent the unit in relation to the qualification.
- To facilitate the transfer of the learning outcomes, giving a common point of reference to the qualifications systems.

EQF and ECVET for transparency and portability of learning outcomes



In the above example, the individual obtained his/her qualification in FR by accumulating learning outcomes transferred from HU, EI. Source: European Commission (2008): Recommendation of the European Parliament and of the Council on the establishment of the European Credit system for Vocational Education and Training (ECVET) <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0180:FIN:EN:PDF>

1.2.2. Europass

Europass is a dossier composed of five documents, complementary among themselves, so that every person builds or requests those ones needed, according to his/her professional or training aims.

Its objectives:

- To help citizens communicate their skills and qualifications effectively when looking for a job or training.
- To help employers understand the skills and qualifications of the workforce.
- To help education and training authorities define and communicate the content of the curricula.

Two types of documents:

- Two documents freely accessible, completed by European citizens: the Curriculum Vitae and the Language Passport. Those documents can be directly elaborated by

the interested parties in the website of the European Centre for the Development of Vocational Training (CEDEFOP).

- Three documents issued by education and training authorities: the Europass Mobility (which accredits the working or study stay in another country); the Certificate Supplement; and the Diploma Supplement. These ones must be issued by the different administrations.

The combination of these documents generates a tool which can help to accumulate in an intelligible manner both academic and labour life, as well as the aptitudes in different fields, for any citizen interested in mobility among the European countries, for professional or academic goals.

The Europass documents are:

- *Europass Curriculum Vitae*. It is the main element of the dossier, a model of curriculum which is similar to any other type of CV (personal, academic and labour information, skills acquired throughout life, etc.), but, since it is common to all the States, it simplifies very much the recruitment process to the enterprises and institutions which offer employment and training, and which receive candidates from different nationalities. It can be directly elaborated by the interested parties in the website of the European Centre for the Development of Vocational Training (CEDEFOP).
- *Europass Language Passport*. It's a self-assessment tool for language skills and qualifications. The passport is an easy way to summarise the linguistic knowledge in one or several languages using the European six levels of the Common European Framework of Reference for Languages, in a way that language skills can be easily recognized in every country. This passport, which at the same time is part of the European Language Portfolio, reflects the skills in the different linguistic competences (speaking, reading, writing and listening) as well as the information about diploma, courses and other aspects linked to other languages and cultures.
- *Europass Mobility Document*. This document certifies stays during a specific period of time, both for academic or professional reasons, in any European country, collecting competences and achieved skills during the stay, as well as certificates, degrees or qualifications in case they exist. Unlike the Curriculum and the Language Passport, this document cannot be elaborated personally, but it requires the cooperation of the involved parties, both the hosting centre and the centre of origin.
- *Europass Certificate Supplement*. Exclusive to the degrees in Vocational Training (VT) of medium grade or owners of a Professional Certificate, this document is the best way to facilitate enterprises the understanding of the vocational training degrees or professional certifications from another countries when recruiting new staff, due to the huge differences existing in this kind of academic level among the European States. On it, the employments for which the candidate is prepared are described, as well as the acquired competences, the degree level or the number of training hours. In the case of Vocational Training degrees, the

supplement must be requested by the institution issuing the certificate to the different Regional Education Offices, whereas the supplement to the Professional Certificate is a competence of the National Service for Public Employment.

- *Europass Diploma Supplement*. Addressed to VT High Level and University degrees, this document serves as complement to the official degree, giving information about the professional qualification which corresponds to the qualification, study fields, official length, access requirements, and details of all the subjects studied during the dedicated hours, as well as the obtained mark. Also, the information about the national system of high education and the qualifications system is included. In the case of university degrees, the Europass supplement is issued by the universities which are coordinated by the University Coordination Council, and in the case of VT High Level, the request and the expedition of the document belongs to the institutions which issue the degrees following the rules of each region.

1.2.3. European Language Portfolio (ELP)

The European Language Portfolio (ELP) was developed by the Language Policy Division of the Council of Europe. Its objectives:

- To support the development of learner autonomy, plurilingualism, and intercultural awareness and competence.
- To allow users to record their language learning achievements and their experience of learning and using languages.

It is a document in which those who are learning or have learned one or more languages (whether at school or outside school) can record and reflect on their language learning and intercultural experiences.

Its main aims are:

- To help learners give coherence and shape to their experience of learning and using languages other than their first language.
- To motivate learners by acknowledging their effort to extend and diversify their languages skills at all levels.
- To provide a record of the linguistic and cultural skills they have acquired (to be consulted, for example, when they are moving to a higher learning level or seeking employment at home or abroad).

In an ELP all competence is valued, whether it was gained inside or outside formal education. In addition:

- The ELP is the property of the learner.
- It is a tool to promote plurilingualism and pluriculturalism.

- It values the full range of learner's language and intercultural competence and experience regardless of whether acquired within or outside formal education.
- It is a tool to promote learner autonomy.
- It has both a pedagogic function to guide and support the learner in the process of language learning and a reporting function to record proficiency in languages.
- It is linked to the Common European Framework of Reference for Languages with explicit reference to the common levels of competence.
- It encourages learner self-assessment and the recording of assessment by teachers, education authorities and examination bodies.
- It incorporates a minimum of common features which make it recognizable and comprehensible across Europe.
- May be one of a series of ELP models that the individual learner will possess in the course of lifelong learning. ELP models can cater for the needs of learners according to age, learning purpose and context and background.

ELP conforms to a common set of Principles and Guidelines that have been approved by the Committee of Ministers to Member States concerning Modern Languages (see Recommendation N° R (96) 6).

The ELP's essential features have three parts:

- It contains a Language Passport which its owner regularly updates. A grid is provided where his/her language competences can be described according to common criteria accepted throughout Europe and which can serve as a complement to customary certificates. The Europass Language Passport, and electronic version of the standard Language Passport for adults, was jointly developed by the Council of Europe and the European Union. It can be completed online or downloaded.
- The ELP also contains a detailed Language biography describing the owner's experiences in each language, and is designed to guide the learner in planning and assessing progress.
- There is a Dossier where examples of personal work can be kept to illustrate one's language competences.

Information: <http://www.coe.int/t/dg4/education/elp/>

Summary

The design of the tools and devices that collect workers' professional competences at a European level is based on the need to have all these facts joined in single documents. Both Europass and EQF facilitate the recognition of these competences, with the

objective of allowing transnational mobility of workers and the improvement of their lifelong learning.

EQF applies to all types of education, training and qualifications, from formal education to professional and vocational training. This approach shifts the focus from the traditional system and emphasizes "learning outcomes", encouraging lifelong learning by promoting the validation of non-formal and informal learning.

ECVET implies a system that allows for a "supporting point" in VET and lifelong learning. It is a very important help for the recognition of learning outcomes that any person may achieve in the sphere of vocational training; this recognition goes beyond the limits of the system in which those learning outcomes have been achieved.

Module2. Situation of the professional qualifications

Introduction

The situation of qualifications (with regards to their recognition and accreditation) in the European countries is very different. And that situation is directly related to the different possibilities that training can offer to help those qualifications to "be made visible". There are three possibilities to acquire knowledge, skills and competences, the elements which define the qualifications: formal training, non-formal training and informal training. These possibilities "are used" in many different ways in each of the EU countries, with different weight and relevance in each of them.

Another important variable, which has huge influence when establishing the outlook of the professional qualifications in the UE, is the relationship between qualifications and the labour market: how is it possible to combine the recognition of the workers' qualifications with the conditions of the labour market.

Below, the different possibilities that may be found in five EU countries are presented.

D.U. 2.1. France

2.1.1 Qualifications in France

The French training system appears to be late in the field of renewable energy implementation. There are few training dedicated explicitly to renewable energy and energy efficiency, at initial training level, This requires that each professional sector takes over the necessary training. The National Education policy is more to create additional complementary certifications in addition to existing trainings. At the moment, National Education received no request for a professional degree dedicated to 'renewable energies '. Existing trainings are mostly theoretical. Therefore, it seems valuable to develop joint training combining academic training and long-term traineeship in companies.

The validation of prior learning is a right that allows to recognize the experience and or personal access to a degree (VAP, Validation des Acquis Professionnels) or (all or part) obtaining a national diploma (VAE-Validation of Working Experience). Any person who can demonstrate an activity:

- employee, employee or volunteer, in direct relation to the content of the diploma,
- and a minimum, continuous or discontinuous of 3 years duration can engage in the VAE process.

This procedure allows to get all or part of the diploma referred to in the light of the professional experience (VAE, Decree 24/04/2002 2002-590) a request for VAE has 5 steps

1. Information and diploma selection
2. Evaluate feasibility with certificating organisation and elaborate a demonstration application and create a booklet 1.
3. Create a booklet.
4. Submit application to jury.
5. Receive the diploma if accepted.

Validation of Working Experience (VAE) is an individual right. It allows to obtain all or part of a certification on the basis of professional experience after validation by a jury based on knowledge and skills acquired. Certification may be a diploma, a professional qualification or a certificate of qualification. It is not necessary to follow a training course. In each region exists an official contact point in charge of Validation of Experience (VAE) Contact points are called (DAVA : Dispositif Académique de Validation des Acquis). They are competent in any sector, including renewable energy

2.1.2 Qualifications in the sector of renewable energies in France

There is no vocational training (VET) fully intended to renewable energy. Identified trainings provide general scientific bases (energy, electrical, mechanical, etc.), which are common techniques to renewable energy and fossil energy. In most cases, professionals are not renewable energy specialists. They often have a rather general degree and certain knowledge and skills in one or more sectors of renewable energies they have acquired in training course, for projects, studies or professional experience.

Nevertheless more than 200 Long Life Learning Trainings for renewable energy exists, in France from EQF level 3 to 7 (master ou engineering diploma). Website from CLER (Network for Energetic Change) displays a list for trainings in renewable energy sector, sorted by region or by renewable energy type, or Studies, Engineering, Exploitation, Production, Distribution, Channel...

In addition, QualiCert was launched to foresee implementation of Article 14 of the Directive on the promotion of the use of energy from renewable sources (2009/28/EC), ruling Members States to develop and mutually recognize certification systems or equivalent qualification for installers of renewable energy systems of small size (e.g. boilers and biomass stoves, Solar photovoltaic systems and solar thermal systems, geothermal systems and heat pumps). QualiCert means 'Common approach for certification or equivalent qualification of installers of systems' to small renewable energy. Qualicert is implementing Article 14 by supporting as well informations for General public, Information for professionals, and by delivering national qualification labels to companies and to trainings done by companies or training organisations.

Qualit'EnR is a not-for-profit association created in 2006 by professional organizations and industry associations. Quality label for thermal solar installations was first implemented by ADEME, the French energy national agency and transferred to Qualit'EnR in 2006.

Qualit'EnR manages the quality of installers of SER's (professional union) small size: If a worker receives a certification from training which has been labeled his qualification is recognised by most of companies> Those labels are at the same time qualification and quality labels.

- Qualisol for installations solar thermal facilities
- QualiPV photovoltaic
- Qualibois for wood energy systems
- QualiPAC for heat pumps (since January 2010, previously managed by the French Association for the heat pumps (AFPAC) from 2006 to 2009) Qualibat is a private law association, delivering qualifications and certifications in the construction sector.

Qualibat is accredited by COFRAC, the french Agency for certification for solar thermal, biomass, geothermal heat pumps and soon, for photovoltaic. QUALIBAT manages a certification programme to assess the technical qualifications of installers.

Qualifelec is a private association issuing qualifications for electricity companies. In 2008, a new qualification was developed for photovoltaic installations, which can be obtained at the same time the electrotechnical qualification, Qualifelec can be understand as well as a quality label for companies and qualification for employees.

Qualiforage is a quality label for Drillers of geothermal systems put in place by the ADEME-BRGM-EDF Group and managed by BRGM, a public agency. Applying to this label is a voluntary approach, and the installer must sign a quality Charter and comply with technical standards and good practices.

The quality approach for agreement Format'eree allows to support development and professionalization of the renewable energy and energy efficiency sectors. The overall aim for improving the overall quality of all EnR (Renewable Energy) trainings and MdE (Energy Management) provided on the French territory, close formations on workplaces and to ensure a follow-up of students and people trained to ensure that training courses are adapted to the labour market. The agreement includes the fulfilment of the criteria for the approval of training in sustainable energy (energy management, energy efficiency and renewable energy).

Format'eree is at the same time a professional association, a quality label, a professional chart and an agreement, this standard is to create a distinction and a seal of quality for organizations that provide training or training in the field of the energy conservation, energy efficiency and renewable energies. By the way the workers who are trained successfully in this process received as well the qualification and the recognition of their competences and can enter more easily in companies.

D.U. 2.2. Germany

2.2.1 The qualification system in Germany

Qualifications acquired in formal learning contexts

Dual System

In Germany, except for university degrees, access to many occupational fields is achieved through dual VET, whereas in other countries higher education is required.

Following the joint decisions of state, private sector and social partners the formal VET in the Dual System helps to improve social and soft skills like team play, decision-making or self-motivation and the competence to manage machines, equipment and work processes. Furthermore, according to the curricula, the pupils learn trouble shooting and abstract logical thinking. This form of apprenticeship guarantees the gain of professional qualifications required for a certain job profile.

Germany has a strong traditional way of recognizing formal learning and up until today professional qualifications can only be validated by official authorities. Furthermore the examination system in the Dual System is regulated consistently by the Vocational Training Act.

Further training

Moreover further training is linked to professional qualification. It is legally regulated and determined by the Vocational Training Act [*Berufsbildungsgesetz*]/Handicrafts Code [*Handwerksordnung*]. Further education at *Fachschulen* leads to **state- recognised** leaving qualifications or professional certificates. Some of the further vocational education and training measures prepare specifically for qualifications that are legally regulated or provided by the responsible bodies (chambers). Many vocational qualifications in Germany are acquired through further vocational education and training – e.g. the qualification *Meister in Industrie und Handwerk* (master craftsman in industry and handicrafts) but also the qualification technician.

Qualifications acquired in non-formal and informal learning contexts

An overall system for the validation of non-formally and informally acquired competences, which is based on a single legal basis, does not exist in Germany.

However, when it comes to those forms of further education referred to in this section, the following types of leaving qualifications can be distinguished:

Formal recognition procedures in vocational training

Recognition of informal competences by means of an external student examination. It allows persons who did not complete formal vocational training in a company and vocational school, to take a regular final examination on the merits of their occupational experience and job. The external student examination leads to full qualification (there is no difference between this qualification and a regular acquired qualification) in a recognised apprenticeship trade.

Effective recognition of work experience by means of collective agreements.

The system includes a major load of practical work experience and therefore highly emphasizes experience-based learning, especially in dual vocational education and training, and in regulated further training.

The conclusion of collective agreements offers the possibility to recognise work experience and competences. Social partners have established regulations within collective agreements in some branches and occupational groups. Experience is then equated with a vocational qualification which translates into the adjustment of salary groups. In the "collective agreement remuneration framework (ERA-TV)" of the metal and electrical industry in Baden-Württemberg, the key competences efficiency, quality, flexibility, responsible behaviour, co-operation and leadership are recorded.

Recognition through certificates which are not formally recognized

-leaving qualifications specific to further education which may be acquired in certain fields (e.g. languages, IT). There are comprehensive certification systems for further education in Germany at the level of adult education centres [*Volkshochschulen*] (telc language certificates), the sectors and the chambers.

-Organisation-specific leaving qualifications, certifying competences which are mainly recognised and of importance within the respective organisation. These include certificates issued in church and union-related areas and on a sector level, in which case they state specific professional competences.

2.2.2 Next step forward: The German National Qualification Framework (DQR)

The German Qualification Framework (DQR) supports the shift towards the principle of learning outcomes, i.e. it is important what someone knows, understands and what someone can do, but not where he or she learned it as is the case in the current German system. One aim of the German Qualification Framework is to facilitate the understanding and identification of competences acquired outside formal education and training courses, within the educational system and on the labour market.

The DQR focuses firmly on the concept of 'competences', thereby implementing the learning-outcome approach of the EQF:

- Knowledge and skills are therefore represented as aspects of professional competence.
- The descriptors incorporate new subcategories which were not explicitly mentioned in the EQF, such as "judgement".
- Personal competence in particular has been differentiated into social competence (team/leadership skills, involvement, communication) and autonomy (autonomous responsibility/responsibility, reflectiveness and learning competence).

The DQR therefore consists of a "four-pillar structure". The structure of requirements which is characteristic for the DQR-levels is summarised in each case with the aid of a "level indicator".

In 2013 the National Qualification Framework was finally referenced to the EQF. The qualifications of the formal area were fixed to the NQF level. In future times the respective EQF-/NQF reference shall be included in new qualification certificates and in Europass documents. Since the necessary legal framework conditions still haven't been established, it will be implemented gradually. A consensual allocation of general education qualifications is now to be developed during a five-year introductory phase.

But the allocation of the qualifications within the German education system to the reference levels of the DQR should not replace the existing system of admission entitlements.

D.U.2.3. Italy

In order to the qualifications design, the Italian system of education and vocational training has been traditionally programme-based, where a programme is to be intended as a prescriptive list of disciplinary contents to be taught to students in a specified period of time. However, in time, the focus has been shifted from programmes to curricula, allowing the adoption of the approach based on learning outcomes comprising knowledge, skills and abilities to be achieved in each subject. This is considered to be the result of the most innovative and relevant effect arising from a systemic point of view that involves school curricula, still based on learning inputs rather than on learning outcomes.

About the VET system, during the last decade all segments of them have been affected by an important reform process still not entirely concluded. The high number of Regulations that complemented the legislative provisions shows, again, a common intention to place students rather than programmes at the centre of the training activity and, at the same time, to get training organisations to design their pathways. In the case of the secondary education system reform, for instance, the documents attached to the Regulations of Law 53/2003 issued for each type of training offer included in the cycle, lay out the expected outcomes in terms of knowledge, abilities and skills results.

With regard to the vocational training in general, and to the initial training in particular, which is already traditionally oriented to skills planning and learning outcomes, institutional actors have shared the methodological approach that led to the establishment of a National Directory of figures, locally declinable. Similarly, the Ministries of Education and Labour and regional authorities worked together at the creation/revision of National Directories of figures for academic qualifications and for higher technical education pathways (ITS and IFTS). For example, the State-Regions Conference of 27 July 2011 identifies the descriptors in terms of skills and knowledge, which is a useful approach to identify a number of professional fields with the related qualifications of reference. This document is a summary of the descriptive and methodological training standards in relation to professional fields considered.

In particular, as regards education and vocational training, which falls under the Regions' responsibility, the qualifications that can be acquired by attending the courses (Certificate of Professional Competence and 'Diploma professionale di tecnico' – Professional Technician Diploma) are strictly limited to those included in the '*Repertorio nazionale stabile di qualificazioni*', a national index of the qualifications which was established by the State/Regions Conference, the most important forum for political negotiation between the central and the local administrations, with the drawing up of a State/Region Agreement. Any modification or addition to the index has to be authorised by the same body. Also for higher technical education and training (*Istruzione e formazione tecnica superiore; post-secondary level, ISCED 4*), partly managed by the Regions ('*Certificati di specializzazione tecnica superiore*' – Certificate of Higher Technical Specialization) and partly by the Ministry of Education (*Diploma di tecnico superiore* –

Higher Technician Diploma), qualifications are in limited number and any addition can be made only through an across-the-board consultation process.

The introduction of new qualifications in the national qualification system is directly managed by the authorities that are responsible for awarding them: the Ministry of Education and the Regions. Those awarded by the Ministry of Education are regulated by the principle of 'legal value of the qualification'. This principle implies that any qualification - either newly established or pre-existent- should be formally recognised as official qualification by the public body responsible for the specific VET segment involved.

In Italy, despite a general consensus about the right to formal and social recognition of learning, regardless of the context and experiences from which it is derived, the principles that would enable the development of instruments and processes for skills validation and certification have only been partially implemented due to both the lack of a National Qualification Framework and to the specific features of each single regional system.

Nevertheless, institutions have become increasingly aware of the need to address the issue through cohesive and binding regulations, also considering its close connection with the European strategy for people's mobility and employability and a number of other EU initiatives (including EQF, ECVET, EUROPASS, and EQAVET) that have made remarkable progress in the last two years.

Thus, the system of skills recognition in Italy is still considered as in 'work in progress' stage, similar to the institutional processes concerning the labour market and the performance of education and training system, which are on going. To this end, the Italian system has been working in recent years to overcome the fragmentation and lack of integration that characterized the vocational-training- education scenario of the past. However, despite the absence of a National Qualification Framework and a standardized national system of recognition and validation of skills, adherence to Community policies has resulted in Italy in some significant legislation acts, such as Legislative Decree 167/11, '*Testo Unico sull'Apprendistato*' (Consolidated Text on Apprenticeships), which establishes that the skills developed by apprentices shall be certified in accordance with the criteria set by the Regions on the basis of the Index of Professions ('*Repertorio sulle professioni*'), a national list including all the professional profiles and qualifications that can be gained through apprenticeship schemes currently under construction, and subsequently recorded in the Training Record Book (*Libretto formativo del cittadino*).

In addition, in July 2012, Law 92/2012 by the Ministry of Labour '*Disposizioni in materia di riforma del mercato del lavoro in una prospettiva di crescita*' (Provisions for Reforming the Labour Market and Fostering Growth) entered into force. This recent reform embraces lifelong learning through the following proposals:

- The creation of large regional networks formed by educational institutions and employment services, as well as universities, firms, chambers of commerce and migration monitoring services, addressing training and guidance matters connected to lifelong learning;
- The recognition and validation of non-formal and informal learning;
- A national system of certification of skills;
- A national archive of qualifications;

- The recognition of credits for non-formal/informal learning connected to the qualifications included in the National archive.

With the Legislative Decree January 16 n. 13 it is expected, in particular, the establishment of a national register of qualifications for education and training and qualifications, prodromal to the definition of a National Framework of Qualifications. In addition, it provides for the establishment of general rules for the validation of skills, however acquired, functional certification and recognition of credits.

The set of measures recently approved as a result of an intensive cooperation between central, regional, and local authorities as well as the trade unions, represents an overall reference system that promotes professional and geographical mobility to allow the integration and personalization of our education services, training and employment. All of this is done in an effort to increase the efficiency and effectiveness of current public and EU funding for the development of human capital. This system coordinated with the recognition of skills, however acquired, promotes, among other things, the matching between supply and demand in the labour market, increases learning transparency and the usability of certifications at national and European level.

2.3.1 Qualifications in the field of renewable energy in Italy

In Italy, educational and professional qualifications consist of school diplomas or professional qualifications that are regulated by professional guilds or associations. The renewable energy sector, as an innovative sector, could suffer from the difficulty of obtaining recognition for its skills from both systems, from legal stand point, and a slow and complex updating mechanism. In addition, constraints to exercise certain professions arise frequently due to some professional associations (such as the order of Engineers, for example) which not facilitate access to innovative professional activities.

Qualifications, however, are identified both at the national and regional level. What can be done at the national level is then "contextualized" by the regions according to their own needs.

In addition, the recognition of skills can be of public institutional value or private and market value. In the first case, the competent authorities for the recognition of skills are the educational and training institutions (Schools, Universities and Regions) or the institutions that recognize professional qualifications (Ministries, Professional Orders/Guilds). Outside the institutions, an officially approved certificate can be released by the respective associations or confederations of firms of a particular sector. This second approach has proved to be successful in all innovative sectors.

In the energy sector there are still very few examples, usually relating to projects in Europe, for the development of specific skills. In fact, a technical operator or electrician should also acquire the skills of a photovoltaic installer, similarly a heating and plumbing technician should acquire all the skills relating to solar, biomass, geothermal, and of geothermal energy. We are working on this integration within the Build up skills-Italy project (www.buildupskills-italy.enea.it).

D.U.2.4. Poland

The EQF is the first international reference framework that covers the entire range of qualifications and is based on learning outcomes. The EQF aims, primarily, to facilitate the mobility of workers and promote the concept of lifelong learning. When works on developing the EQF were started, the question arose of how to implement the system at the national level. As a result, the idea to develop National Qualifications Frameworks (NQF) occurred and was undertaken by many European countries. It is assumed that every citizen should have the possibility of getting a competent assessment of the value of specific qualifications against other qualifications present in the country or in other countries.

Works on the Polish National Qualifications Framework have been ongoing since 17 February 2010 when the Prime Minister appointed the Inter-ministerial Team for Lifelong Learning, including the National Qualifications Framework. The team was established pursuant to the foundations of the Bologna Declaration, the Bergen Conference in 2005 and the Recommendation of the European Parliament and of the Council of 23 April 2008.

The tasks of the team include in particular:

- Drawing up a project on the development of lifelong learning, including the outcomes provided for in the National Qualifications Framework.
- Implementation of the Polish Qualifications Framework, including the evaluation and recommendations of the European Union.
- Monitoring the development and implementation of the National Qualifications Framework.
- Establishment of the National Coordination Point.
- Initiating cooperation between the government and stakeholder partners and institutions interested in lifelong learning.
- Poland's active participation in the works carried out by the European Union in the field of lifelong learning.

Pursuant to the above-mentioned Regulation of the Prime Minister, a Steering Committee for the National Qualifications Framework for lifelong learning life was also established, whose main task is to monitor the development and implementation of the National Qualifications Framework.

Currently, the classification of qualifications on the Polish labour market is based solely on the level of education. In other words, qualifications are awarded to individuals who have obtained measurable outcomes of the formal education process. In Poland, however, in contrast to many other European countries, there is no qualifications system comparable to the EQF. There are no clearly defined and comparable levels of learning outcomes. Qualifications are not organised systematically; there is no official glossary of terms, there are no procedures for confirming learning outcomes, and no quality certification procedures. The only aspect which can be described is the qualifications obtained during formal education in institutions subordinate to public authorities (general education, vocational education and higher education institutions). Yet, even in this field the system's description with the use of consistent vocabulary, e.g. relating to vocational training is a great challenge.

Poland lacks a system of recognising and validating competences obtained outside the formal education system, e.g. a system of certifying professional experience for the needs of the labour market or further learning. To a large extent, competences held by Polish citizens are an outcome of their individual learning activities. The range of those competences is constantly growing. For instance, there are more and more competences in the field of electronic media; in most cases, those competences obtained as a result of self-learning and are usually not validated formally and thus may not be treated as formally recognized qualifications.

2.4.1. Methods of validating learning outcomes in Poland

In Poland there are single regulations relating to the validation of outcomes of learning in informal and non-formal systems. However, those regulations are isolated and do not cover the whole activity in this area. The main element of the qualification system in Poland is the acknowledgment of acquired competences, and the system of verifying the qualifications is regulated by law in the context of formal education both in the school education system and in university-level education system.

The formal system: in late 1990s, as part of the education system reform, a system of external examinations was introduced. Such examinations are not related to the issuance of school completion certificates, but matriculation-level examinations or ones certifying vocational qualifications are within the competence of external evaluating bodies. It is also possible to obtain a certificate of passing primary and secondary school examinations or the matriculation examination in the out-of-school system.

The quality of qualifications obtained in the formal system is ensured by the fact that the examinations are carried out by external verifying bodies: Centralna Komisja Egzaminacyjna, CKE (the Central Examination Board) and Okręgowa Komisja Egzaminacyjna, OKE (the Regional Examination Board).

University education in Poland is more strictly regulated as concerns the learning system. It is assumed that the organization and course of learning should take into account the transfer and recognition of results achieved by the student in the home university and in another university (also from another country), in accordance with the principles of the achievement transfer system. There are specific conditions and procedures for transferring the achievements while ensuring the comparability and relevance of education standards and the duration of studies undertaken at various universities, either national or from other countries. Account is taken of point systems and points awarded for student's achievements, the conditions of points transfer and accumulation, and the process of recognition of the achievements, bearing in mind the need to ensure the continuity of the education .

Universities recognize certain competences acquired outside the university education system (e.g. language competences).

The non-formal and informal systems: validation of learning outcomes can be done in the form of apprentice and craftsman qualification assignment by a specific crafts association; also, it can be done through grassroots initiatives that occurred in response to the labour market demand. These include projects focused on certifying competencies

acquired through informal and non-formal education, such as certificates issued by the Association of Polish Electricians, the Institute of Welding in Gliwice, the food industry and international IT corporations.

There are many NGOs and associations (e.g. the Polish Red Cross, the Polish Scouting Association, the organisations such as "Otwarte Drzwi" [Open Door] or "Tratwa" [The Raft]), which offer to their members the possibility of non-formal and informal learning. Their courses are validated by various certificates but are not recognized at the national level.

The Polish law in the field of education does not define any system of acknowledging learning outcomes acquired through non-formal and informal education. Non-formal learning traditionally relates to adult education in schools and to the participation in different formalised training courses. Consequently, the national-level legislation does not relate to the validation of learning outcomes acquired in any system other than formal education.

2.4.2 Prospects and plans for the future

In Poland, there is a need to adjust the existing qualifications system to the EQF, not only because of the obligations arising from the membership in the European Union, but also because of the demand of today's labour market. The education system should be more transparent, consistent, flexible and citizen-friendly. One of the necessary elements of such a system should be the procedures of recognizing competences obtained as a result of non-formal or informal learning, which procedures should be consistent and determined at the national level. This approach would mean the consideration of such learning as equivalent to formal education and would enable the bridging of the systems. For this reason, thorough research and organisational work is necessary to identify the applicable rules and procedures and to develop solutions to build a comprehensive system of competence validation for all forms of education.

Currently in Poland a system of learning outcomes' transfer and accumulation (the ECTS based on credits) works only in university-level education. It enables the transfer of achievements between national and foreign universities, and their accumulation within the home university. According to the ECTS Guidelines of 2009 and the Regulation of the Minister of Science and Higher Education of October 3, 2006, one ECTS credit corresponds to 25-30 hours of work of an average learner in the formal day-education system. The key principle is that the student receives credits only after his/her learning outcomes have been achieved and confirmed. Also in the case of the National Qualifications Framework it is necessary to describe the learning units in terms of outcomes, and to develop an examination system verifying learning outcomes in all the categories: knowledge, skills and competences.

In May 2004, the European Council adopted a set of common principles for the identification and validation of non-formal education. The principles are the basis for the Polish specialists in the creation of a new Polish qualification system. The principles include four basic conditions which are considered particularly relevant:

- Individual orientation. Identification and recognition and validation of non-formal and informal learning should in principle be voluntary for each person. Everyone

should have ensured equal access and equal and fair treatment. Privacy and rights of individuals should be respected.

- Obligations of stakeholders. Stakeholders, depending on their powers, should determine the responsibilities and competences associated with the identification and validation of non-formal and informal learning. They should take account of the appropriate quality assurance mechanisms. In addition, stakeholders should provide potential participants of the process with counselling, advice and information about these systems.

- Confidence and trust. Processes, procedures and criteria for the identification and validation of non-formal and informal learning must be fair, transparent and supported by quality assurance mechanisms.

- Reliability and legality. Systems and approaches for the identification and validation and recognition of non-formal and informal learning should be in accordance with applicable regulations and ensure a balanced participation of relevant stakeholders (competent bodies). The evaluation process should be impartial. It is required to put in place mechanisms aiming to avoid any conflicts of interest, and to ensure an appropriate level of persons' professional competences.

D.U.2.5. Spain

The recognition of the qualifications of workers from the energy sector, including that of renewable energy, is a necessary step to maintain and increase the efficiency of companies in the sector, and to improve the social and labour situation of the workers involved.

The knowledge, skills and competences which make up the qualifications may be obtained via several routes: formal, non-formal and informal. Official training, non-official training (including vocational training for employment) and work experience (among others) are the main equivalences of these routes.

2.5.1. Qualifications in Spain (Law 5/2002)

The law 5/2002 (June 19th) on the Qualifications and Vocational Education and Training, aims to create a National System of Qualifications and Vocational Education and Training (SNCFP) that favors training, in order to increase the level and quality of life of people and help economic and social cohesion and employment promotion.

The aims of the SNCFP are to prepare workers for the development of professional activities; to promote a quality, updated and appropriate training offer; to provide proper information and guidance in vocational training and qualifications for employment; to incorporate into the training offer those training actions which qualify people for the development of business activities and self-activities; to evaluate and to prove the professional qualification officially, whatever the way of acquisition; and to facilitate public and private investment in the qualification of workers and resources devoted to vocational training.

SNCFP is set up by:

- The National Catalogue of Professional Qualifications, which will arrange those qualifications identified in the production system based on the appropriate competences for professional practice that are suitable for recognition and accreditation. It will include the contents of professional training linked to each qualification.
- A procedure for recognition, evaluation, accreditation and registration of professional qualifications.
- The information and guidance on vocational training and employment. The competent authorities will develop a platform for information and guidance to obtain information on the procedure for evaluation and accreditation, and also on the calls and offers of training.
- The evaluation and improving of the quality of the National Qualifications System.

The Law states that one purpose of the System is to evaluate and accredit qualifications formally, whatever may have been the way of its acquisition. The National Catalogue of Professional Qualifications is created, applicable throughout the national territory, to facilitate the integrated nature and the adequacy between labor market and vocational training, long-life learning, the mobility of workers and the unity of the labor market.

The National Catalogue of Professional Qualifications (in Spain, CNCP) will be made up of the qualifications identified in the productive system, and of the training associated with them. This training will be organised in training modules constituting the Modular Catalogue of Vocational Education and Training (CMFP).

The CNCP consists of professional qualifications arranged in level of qualification (5 levels) and professional family (26 families). The 5 levels of professional qualification are based on the professional competency required for each productive activity taking into account different criteria like knowledge, initiative, autonomy, responsibility and complexity, among others, necessary for the accomplishment of every activity.

Each qualification of the CNCP is provided with identification data, the associated general competence and the professional environment.

- Each qualification has a general competence which defines briefly the worker's essential tasks and functions.
- The professional environment describes the professional field in which the qualification takes place, specifying the corresponding productive sectors and the relevant occupations or posts which can be accessed with that qualification.

Every qualification consists of competence units. Every competence unit is linked to a learning module which describes the necessary learning to acquire that competence unit.

The competence units are divided into:

- Professional Performances. They describe the expected behavior of the people in the form of consequences or results from his/her activities, so that he/she can be considered competent in that unit.

- Performance Criteria. Each professional achievement is measurable through a set of criteria that express the acceptable level of professional performance to meet the objectives of the productive organizations. They constitute a guide for the evaluation of the professional competence.

- Professional Context. It defines the production means, products and results from the work, the used and generated information, and the similar elements which are considered necessary to frame the professional performance.

The evaluation and accreditation of professional competences will be based on the National Catalogue of Professional Qualifications, and will be developed following criteria of reliability, objectivity and technical rigor of the evaluation.

2.5.2. Qualifications in the renewable sector in Spain

There is no specific program in relation to renewable energy within the official education system consisting of a full training schedule. What exist are different subjects taught at different levels (both in vocational training and university courses).

The training needs in the sector are covered by the existing supply. Large enterprises use their own training plans in accordance with the needs of their personnel. They plan training schedules and the training provided is in relation to both the subjects in connection with each work position (with the knowledge required for optimum performance), and occupational health and safety, an extremely important issue in the sector.

Vocational and Educational Training provided under the educational system is organised in:

- The specific professional modules of the initial vocational qualification programs.
- The middle-level training cycles.
- The higher-level training cycles.
- Specialization courses (regulations pending publication).

These courses should comprise a professional profile, are structured in professional modules of varying durations and are organised in a manner which enables participants to learn about other activities and responsibilities. Middle-level courses award a technician´s diploma and upper-level courses a senior technician´s diploma.

The official vocational training system includes upper-level diplomas in the professional family of Energy and water, a family to which the renewable energy sector belongs. There are no middle-cycle courses for this professional family.

Vocational and Educational Training	
Professional Family of Energy and Water	
Position	
Upper cycle	Senior Power Plant Technician
	Senior Energy Efficiency and Thermal Solar Energy Technician
	Senior Renewable Energies Technician

Among the courses related to the renewable energy sector are those teaching the professional family of installation and maintenance. The table below illustrates the official middle-level and upper-level positions of this professional family.

Vocational and Educational Training	
Professional Family of Installation and Maintenance	
Position	
Middle cycle	Heat Producing Installation Technician
	Cold Storage and HVAC Installation Technician
	Electro-mechanical Maintenance Technician
Upper cycle	Senior Project Development and Thermal and Fluids Installation Technician
	Senior Thermal and Fluids Installation Maintenance Technician
	Senior Industrial Mechatronics Technician

With regards to university courses related to the renewable energy sector, there are a lot of diplomas offered by Spanish universities today: Graduate in Environmental Sciences; Graduate in Environmental Engineering; Graduate in Renewable Energy Engineering; Graduate in Energy Resource Engineering; Graduate in Energy Resources and Mining; Electronics Engineer...

Summary

EU countries present a differentiated context regarding the recognition of the competences acquired through formal, non-formal and informal learning ways. The efforts that are being carried out in order to define a common qualifications framework runs at different speed in the EU: while in some countries this framework is already defined -although sometimes partially developed, such as Spain, Germany-, in others it is only starting.

These first steps are fostering debate, which includes different and varied points of view: how to establish a system which collects the different needs from the labour market (Poland); how to organise the role of the different stakeholders to define the system and its performance in the national territory (Italy); how to combine the training currently implemented with the different organisations and entities that are already awarding some kind of qualification (France); how to make correspondences between the different national qualifications frameworks and the EQF, with its different levels, training proposals, etc.

All this complex work is being made at European level, bearing in mind the need to rely on process that necessarily must show clarity, uniqueness, and reliability to achieve useful and effective results.

Module3. Professional competences in the renewable energy sector

Introduction

The recognition of qualifications in the renewable energy sector is neither unanimous nor standardised in the EU countries. There are also differences in the acquisition and recognition of workers' professional competences of the sector: countries which own a National Qualifications Framework where these competences are inscribed (Spain); countries lacking a framework and where qualifications depend on the formal education and work settings (Poland); and countries in process of elaboration of a national framework, with reference in the EQF (Germany, Italy).

The differences regarding the acquisition of the professional competences as well as regarding the recognition and accreditation of these competences in the different countries are presented next.

D.U.3.1. France

Qualification has different meanings for every people. Legally it is the way that a recruiter or an employer evaluates at which level he recognizes the employee.

On day to day basis some employers recognize only diplomas, some other recognize formally or informally working Experience. On some specific jobs where an official recognition is mandatory, it is based on diplomas (ex. Medicine).

State diplomas are official professional recognitions and at all professional levels some diplomas exists for jobs which are listed in an official list <http://www.rncp.cncp.gouv.fr/> Répertoire National des Certifications Professionnelles.

Also Validation of Work Experience is a recognised process where Knowledge, Skills and Competences can be recognized by a certified authority who is able to deliver a diploma after a validation process.

3.1.1 Ways to get a qualification

In France any worker can get a qualification for jobs who are listed in the National repertoire (RNCP) and this can be obtained through different ways.

- Formal Learning. This can be obtained through an educational centre from University to training centres that have an authorisation from governmental bodies to deliver a diploma.

- Non formal learning. Inside many companies and organisations training sessions or coaching are provided to support acquisition of KSC. Those trainings can be provided by the employees of the company, or by external trainers or training centres. Validation of those trainings can be officially recognised by government or not.

- Informal learning. For the majority of jobs, working experience, personal life experience, specific interests may demonstrate that necessary knowledge, skills

and competences have been acquired, this is not a formal obligation, but is up to each employer to recognize or not such abilities.

3.1.2 Recognition of qualification acquired through informal and non formal learning

Since law published on 17 January 2002 every worker has right to have his experience recognized

Employees – Independent workers –
Jobseekers – Volunteers....

Loi n°2002-73 du 17 janvier 2002 Loi de
Modernisation Sociale

The Validation of Working Experience (VAE) is a defined process where the candidate has to submit an examination file describing and proving his professional experience and acquired competences. Then a jury decide to validate the diploma in totality or partially. If partially recommendations are issued to get the total validation in a further examination.

This process is done by an accredited organisation which sets up process, provide guidance, and perform the examination.

This process and the examination have to prove the compliance to evaluate the Knowledge, Skills and Competences registered in the professional profile described in the RNCP. The organization that provides the support, performs the assessment and delivers the diploma has to be agreed by government. It can be a University, a vocational center or a specific organisation.

Validation requirements

A candidate has to present the request to an organisation that is habilitated to deliver the diploma. A candidate can apply only once during one civil year for the same diploma. For different diplomas, it is allowed to apply 3 different diplomas during the same civil year. The application request has to present documents that prove this experience, the duration of activities, as employed, and volunteers.

The candidate has to precise the Knowledge, Skills and Competences which were acquired in relation to the diploma required. Adaptation between the official RNCP profiles and the acquired KSC has to be demonstrated.

Supporting the candidate

The candidate can be supported to prepare the required application.

This can consist in:

- Help to formulate the working experience to validate.

- Preparation of the application file.
- Preparation to the examination with the Jury.

This support can be charged as a service, so candidates have to be informed by the organisation who deliver the diploma on the possibilities of support.

This supporting cost can be funded (totally or partially) by different organisations such as Pole Emploi (unemployment national service) or by training funds (OPCA)

When the employee is a civil servant this cost can be funded by his administration.

Jury

- Composition of the jury has to integrate at least 25 % of professionals
- Decision of the jury is based on the file presented for the application.
- The jury can have an interview with the candidate
- The jury can also ask for a session where the candidate works really, it can be a real working situation of a simulated situation

D.U.3.2. Germany

3.2.1 Qualifications in the Renewable Energy sector

Apart from university degrees in more than 250 courses for RES, companies have until now largely depended on workers who have not been qualified specifically in the sector, but who have instead been qualified in traditional fields of occupation and completed traditional education and training. This is because there is no vocational training and education oriented towards renewable energies, but several further training concepts for specific professions.

The following training occupations are required in the RES:

- Plant mechanic for sanitary, heating and air conditioning systems.
- Electronic technicians for energy and facilities engineering.
- Mechatronics.
- Electronic technicians for industrial engineering.
- Process Mechanic for plastics engineering

3.2.2 Qualifications acquired through...

A)... apprenticeships

In Germany, there is a system of recognized training occupations or VET standards. The German term "*Ausbildungsberuf*" (training occupation) describes a key element of the training and education system which comprises vocational education and training standards, occupational characteristics, a training plan of two or three years and a qualification frame. Since this type of occupation only exists in the field of education and training and since it is within the competences of federal government to decide on such "*Ausbildungsberufe*" they are called state-recognised training occupations.

The apprenticeship is the first step that needs to be taken, in order to acquire the relevant professional qualifications for the renewable energy sector.

B) ...continuing VET (CVET)

Modular VET and qualification options are used frequently. A difference is only made between formal, certified VET and VET within the work process.

CVET in Germany is shaped by a broad and diverse range of providers, a large market and a comparatively low degree of regulation by the state and the certification of the VET courses. Providers might be local adult education centres, chambers, professional associations, etc. Private providers represent the largest group of CVET providers: Business and industry institutions.

Formal vocational qualification only has a small share. According to section 54 of the Vocational Education and Training Act (*BBiG*) and section 42a of the Crafts Code (*HwO*), the bodies responsible for training can define regulations ("chamber regulations") for advanced vocational training examinations. Examples for competent bodies are the Chamber for Industry and Commerce (*IHK*) or the Chamber for Craft and Trade (*HWK*):

The following VET options are certified:

- Modular VET on protective equipment or occupational safety.
- Skilled worker for solar technology.
- Energy consultant/Energy consultant for facilities.
- Information technology and telecommunications system electronics technician.
- Mechatronics fitter.
- Industrial mechanic.
- Environmental protection technician, main focus: REW.
- Service technician for rotor blades/service technician for wind energy plant.

B)... in- company training

In-company training takes place in the company or outside, but it is usually the company that pays for training and it usually takes place during regular working hours. The training needs are covered by the existing supply: Large enterprises use their own training plans in accordance with the needs of their personnel.

There is a large number of collective agreements that include the offering of training options (often in conjunction with other issues requiring regulation such as industrial safety and environmental protection). The Collective Agreement on Training (*Tarifvertrag zur Qualifizierung - TVQ*) in the metal and electricity industry of 2001 set the course.

C)... work experience

Since there simply are no specific training occupations, work experience is an advantage in the sector: Professionals rely on primary qualifications gained outside of the branch, when they start working in the RES and then rapidly qualify themselves further within the work process.

3.2.3 Recognition procedures

Except of the formal recognised VET like university, some further VET courses and apprenticeships (see module 2), there are procedures which are only partially legally regulated. Those recognise informal learning or work experience which is the most important factor in the renewable energy sector.

As far as the German system rely on formal recognition, the companies and trade unions could have the possibilities to recognize non formal and informal learning: Work experience could be recognized through the ProfilPASS or other in- company recognition processes which should contain a portfolio of the employee with self-assessment and

external assessment procedures. Furthermore, you can add several certificates or work experience documentations in it. It is important that in-company recognition processes should be voluntarily.

Possible recognition process could contain a 3 steps process:

1. To inform the employees about possibilities for in-company validation
2. Documentation of competences (as a portfolio)
3. In-company validation (as a portfolio):self-assessment and external assessment models like "KODE".

KODE is the abbreviation of '*Kompetenz-Diagnostik und - Entwicklung*' (Competence-Diagnostics and - Development). A self-assessment questionnaire divided into the four basic competences and 64 sub-competences enables you to create an individual competence profile.

Thus the variety of competencies is covered and represented. It measures within 25 minutes the four basic human competences:

- personal competence (P)
- decision making and responsibility (A)
- professional and methodological competence(F)
- socio-communicative competence (S)

D.U.3.3. Italy

Italy is aligning itself with the recommendations of the European Union to equip the national system with the legal instruments that would help the growth of human capital represented by skills gained in various contexts, not just from work experience.

In the case of apprenticeships some concrete measures to enhance the value of learning were adopted with Legislative Decree 167/11, Consolidated Text on Apprenticeships. The law establishes that the skills developed by apprentices shall be certified in accordance with the criteria set by the Regions on the basis of the Index of Professions, a national list including all the professional profiles and qualifications that can be gained through apprenticeship schemes currently under construction, and subsequently recorded in the Training Record Book (*Libretto formativo del cittadino*).

The decree was followed by a phase of close cooperation between the Regions and competent Ministries which resulted in the State/Regions Agreement "Establishing a National Certification System for Skills Recognition within the framework of Apprenticeship Schemes", signed on 19th April 2012.

Therefore, Legislative Decree 167/2011 on Apprenticeships is also important in the progression of the Italian system toward a national framework of standards for certification, in the European sense. In particular, it relaunched the Citizen's Training Booklet stating that the skills acquired by apprentices will be certified in the manner defined by the Regions on the basis of the Record of the professions (which is setting up) and recorded on the personal Training Booklet. The agreement reached between the Government and the Regions on 19 April 2012 adopted the "*Sistema nazionale di certificazione delle competenze comunque acquisite per l'apprendistato*", which contains a number of reference points (such as the definition of learning outcomes; formal, non-

formal and informal learning; assessment/validation rules, certification of competencies, etc.) in a perspective of general development of the system.

The Law 92/2012 identifies in skills certification and non-formal and informal learning validation two fundamental elements for applying the principle of lifelong learning with a view to boosting people's employability.

By addressing the matter comprehensively and fully in line with the European guidelines, the Law lays down a number of important principles for learning recognition:

- skills can be developed in different contexts, be they formal, non-formal or informal;
- certifications are public acts aimed at ensuring transparency and learning recognition, in line with EU guidelines;
- certifiable skills are intended as a structured set of knowledge and abilities, developed in different contexts and for which training credits can be awarded;
- a system for identifying and validating non-formal and informal learning should be set up with a view to increasing the value of people's cultural and professional background and to assessing whether these can be certified or recognised through training credits;
- working experiences should be recognised as an essential part of people's educational, training and professional path;
- checks should be made on the basis of nationally valid reference frameworks and regulations as well as on the basis of the EU referencing levels and systems, to ensure comparability of certified skills across the national territory and fair and equal treatment for all.

As stated in Articles 68 and 69 of Chapter VII, the issues related to the validation of non-formal and informal learning and the national system of certification of skills are two fundamental elements able to ensure and implement lifelong learning and maintain the employability conditions of citizens. The text addresses these issues in a comprehensive way and fully in line with the European Union, triggering the definition of national rules and regulatory requirements (standard) used to define the characteristics and people involved in certification processes, in order to ensure transparency and usability of acquired skills and access to services for validation and certification.

In accordance with Law 92/2012, 20th of December 2012, Italy adopted (through the Unified State-Regions Conference) the Agreement on lifelong learning (aimed at building local networks, that will include schools, universities, local training centres, chambers of commerce, industries, firms and their respective trade unions) and ratified the Agreement on permanent job counselling.

The Legislative Decree of January 16, 2013 n. 13 "Definition of the general rules and the basic levels of performance for the identification and validation of non-formal and informal learning and the minimum service standards of the national skills certification" contains:

- a definitional and shared framework on this matter;
- standard minimum benchmarks for the regulation and service delivery validation and certification of competences;

- the establishment of the national repertoire of evidence of education and training and qualifications (accessible and available electronically);
- the standards of the credentials and certificates that can be used at European level;
- a monitoring and evaluation system to implement the provisions of the decree.

By the Legislative Decree January 16 n. 13, therefore, it is expected the establishment of a national register of qualifications for education and training and qualifications, prodromal to the definition of a National Framework of Qualifications.

In parallel with the measures adopted at national level, all the Regions developed suitable approaches and instruments for their specific contexts. Where the systems and strategies are more firmly established and operational, regulations were also introduced to establish professional standards and qualifications, as well as mechanisms for skills recognition and credits awarding. It is likely that in the next few years also the criteria and instruments devised at national level, as well the more general European guiding principles, will be integrated into the Regional systems.

In terms of certification of skills, the creation of a national system based on uniform standards across the country is making slow headway, while more rich and detailed are the models and practices defined by the regions. At the local level, Italian regions are about to adopt a system of qualifications in order to tidy up and streamline the release of licenses and certificates.

At a glance, we can say that, as well as in the European context, all the Italian Regions have started reflections, actions and initiatives, more or less formalized, to enhance and affirm the principle of certifiability of learning at all levels.

Where systems and strategies are more established and operational, a system including regulatory standards and professional qualifications and systems for the recognition of credits are also available. However, good practices have been carried out by individual regional at an experimental level. For example, the Region of Valle d'Aosta is experimenting the adoption of the Citizen's Training Booklet, a significant case in which "institutionalized validation" process of individual skills takes shape through the documentation of the same according to specific methodological standards and processes. However, in the coming months will be established national standards to identify who can issue qualifications.

In the coming years, it is likely and desirable that all the regions will progressively converge on criteria and tools able to adapt the specific capacity of the territories and assets of regional standards with the adoption of policies and instruments at national level (e.g. the Citizen Training Booklet) and consequently with strategies and guidelines at European level. This is happening mainly through the so-called "maternage", the assistance provided by some regions that already have their own Regional Framework of qualifications to the regions that are adopting it.

The Training Record Book

Among the instruments developed at national level it is worth recalling the Training Record Book introduced by Legislative Decree n. 276/03 (*Attuazione delle deleghe in materia di occupazione e mercato del lavoro, di cui alla legge 14 febbraio 2003, n. 30' -*

Implementing Proxies for Labour Market and Employment as provided for under Law n. 30 of 14th February 2003) and established by Decree n. 256/05 ("Approval of the Training Record Book Model"). Neither a certification nor a qualification but an instrument designed to document learning experiences and skills regardless of their source (school, training or everyday life), it has been adopted (whether experimentally or fully integrated into the systems) by several Regions since 2006, albeit in different forms and aimed at different population groups (e.g. unemployed, apprentices, migrant workers, young people who have completed their military service and volunteers). The practices developed to date through the implementation of the Training Record Book are an important benchmark and should be capitalised on to undertake further action and speed up the development of a national framework.

Conclusion

Despite the significant progress made towards a progressive construction of a national framework, in Italy there is still a lot to be done. As required by the EQF Recommendation, institutional actors are working on a sharing process, which could be also methodological and which led to the preparation of the report on the referencing of national qualification frameworks to the EQF. In the first version, qualifications obtained in formal systems are defined as a result of the vocational education and vocational education training valid on the national territory.

In the first step, then, Italy has referenced all certificates issued by the education system and qualifications subject to State-Regions Agreement (IeFP qualifications, certification and specializations IFTS and ITS), and also on the academic side, following the process Bologna, was completed the referencing to the EQF.

Contextually, a joint effort is on going for the implementation and subsequent integration of the Italian report, which aims at including in the referencing report the characteristics of local systems taking as a fundamental criterion learning outcomes, regardless of the areas of acquisition.

In the second phase, which must be implemented by 2014, will be referenced regional qualifiers and regulated professions. From January 1, 2014, however, all the titles and qualifications referenced must contain the reference to the appropriate EQF level.

Similar to other EU countries, therefore, Italy also seems to be in a "work in progress" stage that, following the development of referencing activities, provided a roadmap that led to the launch of the Italian referencing report to the EQF to the European Commission (DG Education and Culture) in 2012.

D.U.3.4. Poland

Jobs connected with renewable energy sources are part of the broader issue of environmental protection and promotion of sustainable development. These sectors create "green jobs" sometimes referred to as "green-collar" jobs functioning within the green economy. Based on the draft law on renewable energy sources (in the assessment of the effects of the regulation) estimation has been carried out of the impact of the new legal and economic solutions on the labour market. The provisions of the draft law may have a positive impact on the labour market, particularly in the sector of equipment production for the needs of RES, in the building sector connected with the construction or

reconstruction of power generation units, in the banking sector providing services related to investment project financing, in the sector of services related to certification of RES installers and installation of renewable energy micro-installations, as well as in the sector of biomass production and trade for the needs of the energy sector.

3.4.1 Current situation in Poland

Currently in Poland there are no national plans for the development of the renewable energy sector's employees. The only commonly accessible preparation path for the jobs connected with the sector is provided within the teaching carried out by some universities. In the case of secondary-level technical schools, their students are trained in occupations such as electrical equipment fitter or electrician, without specialisation in RES.

In the absence of implementation of the EU requirements regarding training and qualifications of the RES sector employees in Poland, the current professional qualifications are certified by:

1. Professional electrician licenses,
2. Post-graduate study courses and training courses in the field of RES.

Graduates of both secondary-level technical schools and universities are required to undergo on-the-job training in enterprises or institutions which operate in a field related to the educational profile of a given secondary-level school/ university. Therefore, theoretically, graduates of such schools/ universities are prepared to perform specific jobs only after they have undergone some practical training.

In view of the open labour market across the European Union, and the calculations by the European Commission, according to which at present there are about 550 thousand people working for the renewable energy sector within the EU, and in 2020 the number is expected to reach more than 1.5 million, it should be noted that the key issue seems to be the development of training courses related to renewable energy sources. The demand for professionals in this field will occur not only on the Polish labour market, but also the labour markets of other Member States of the Community. Bearing in mind that at present the Polish labour market has very few specialists in the field of renewable energy sources, it is of key importance to develop training programmes and educational institutions which will ensure the occurrence of specialists in this field on the labour market.

3.4.2. Implemented solutions

In the absence of any national programmes of training of the RES sector employees, the full responsibility for RES personnel development is placed with companies which have to carry out relevant activities in this field. In this regard, it is a common practice that companies develop professional development plans for individual employees. The plans are carefully designed to take into account the employee's duties and skills. The professional development plan is drawn up on the basis of the employees' periodic evaluations regarding the implementation of his/her tasks and duties as well as additional initiatives implemented by the employee. Such evaluations are often supplemented by assessments of other employees/ units of the company, to analyse the employee's skills and approaches as viewed by other cooperating persons/units. On this

basis, the company units responsible for human resources obtain information on the employee's professional achievements as well as his/ her professional and development potential. Based on this knowledge, it is possible to design the best training path for the employee so as to fill in the gaps in the knowledge or skills. It should be noted that some types of training for employees may be focused on passing subject-specific knowledge (i.e. specialist technical knowledge used by the employee directly in the implementation of assigned tasks), while others may be designed with the aim to develop the so-called soft skills (such as social and interpersonal skills).

An important point of reference in the context of the labour market in Poland is the "Human Capital Operational Programme" (HC OP) for 2007-2013, co-financed by the European Social Fund. The objectives of the programme were, however, determined in 2006 and do not contain any clear references to the "green economy" strategy. Before the review of the Human Capital Operational Programme, which took place in 2011, inter alia in relation to the "Europe 2020" strategy's objectives relating to the "green economy", there was a substantial gap between the training programmes offered by both private and public institutions, and the market demand, particularly in relation to the needs of the "green economy".

Most training institutions have no knowledge about the "green economy" and about qualification gaps which need to be filled in this area. On the other hand, certain cases of ineffective implementation and management of ESF funds might have done more harm than good as regards the development of the market of high-quality training in the fields of vocational skills and lifelong learning. In particular, there has been a dynamic yet chaotic growth in the number of training institutions and offered courses which were not always adjusted to the real needs of employees. Such a situation may have been a result of access to substantial funds available within a relatively short period of time, without appropriate monitoring and evaluation. There are also great difficulties in identifying and forecasting future jobs and requirements relating to the skills required to perform them.

Although Polish companies know best what kinds of competences they need at present, they are not able to predict the competences which will be required in the near future, in particular in view of rapidly changing circumstances and technologies - including technologies related to the "green economy". In this situation of uncertainty, the principle applied in relation to training courses offered in Poland is to react to the current demand: if there is no need for training in the field of implementing "green solutions", the organisers do not provide such training until the demand for it occurs on the side of private companies or public administration. However, this approach does not work in the case of the need for more long-term, expensive or specialised training. This is rather a domain of educational institutions such as universities and technical universities which in Poland maintain a high level of education despite the lack of the ability to forecast future changes or demand for competences companies will seek as a result of these changes. In this case, the establishment of partnerships between universities and business representatives seems to be the key to understanding and predicting the necessary competences. At the same time, technical universities and other universities involved in the field of innovation should receive adequate funding in order to create reliable mechanisms of cooperation with national and international companies representing high-tech industry.

3.4.3. Conclusions for future

As a complementary element of training activities organised by the companies, the career planning programmes should be mentioned. Employee career development programmes are focused on presenting to the employee a range of his/her professional development possibilities depending on the achievement of certain specific competences. In the case of those programmes an important factor is cooperation between the employee and the company's human resources unit which identifies and communicates the employee's expectations of the employer and presents the possibilities of development within the company. With this system, the employee can make independent decisions regarding planning of his/her career and the company is able to carry out a responsible human resources policy.

With regard to career planning programmes, it should be noted that they are strongly motivating for employees who are aware that their work and professional development are going to be appreciated in the future in the form of job promotion.

D.U.3.5. Spain

Workers from the renewable energy sector have different training and educational programs at their disposal as a means of achieving maximum qualifications in a formal and informal manner. The recognition of the qualification achieved implies the need for an officially established procedure and one which may be used to ensure this recognition is effective, regardless of the manner in which this qualification has been "achieved".

3.5.1. Ways to get a Qualification

In Spain, a worker from any economic sector (also from the renewable energy sector) can acquire a qualification through three main ways:

- Formal learning. It is acquired in education and training centres. It allows for obtaining officially recognized diplomas and qualifications. It corresponds to the Official Educational System, and also includes Official Professional Training and University.
- Non-formal learning. It takes place alongside the mainstream systems of education and training. The professional experience provides this kind of learning and it can also be acquired through the activities of organizations and civil society groups, youth organizations, trade unions and political parties. Vocational Training for Employment provides this kind of learning.
- Informal learning. It is a natural accompaniment to everyday life, "learning by doing". It refers to the knowledge acquired by particular interest, not always intentionally. Sometimes this learning is not recognized in an aware manner by individuals as positive to increase their knowledge and attitudes.

The formal route, consisting of formal training and education, does not require any procedure, as the obtainment of any official diploma involves the implicit recognition of

the qualification in question. It is the non-formal and informal routes which require express recognition.

3.5.2. The recognition of qualifications acquired through informal and non-formal learning

A procedure exists in Spain for the recognition of professional skills acquired through work experience. This recognition is defined under Royal Decree 1224/2009, dated 17 July, which sets forth the guidelines to be developed in specific regulations at a later date and which transfers these guidelines to the effective recognition of the different qualifications.

Royal Decree 1224/2009, dated 17 July, ruling on the recognition of professional skills acquired through work experience determines the sole procedure, both in the scope of education and employment, for the assessment and accreditation of professional skills acquired through work experience or non-formal training activities.

The purpose is to establish the procedure and the requirements for the assessment and accreditation of professional skills acquired by individuals through work experience or non-formal training activities, in addition to the effects of this assessment and the accreditation of skills. This procedure is valid throughout Spain.

The procedure for the assessment and accreditation of professional skills shall mean the set of actions geared to assess and recognize skills acquired through work experience or non-formal training activities.

The purposes of the procedure are:

- To assess the professional skills of individuals acquired through work experience or non-formal training activities using common procedures and methodologies which guarantee the validity, reliability, objectivity and technical rigor of the assessment.
- To officially accredit the professional skills, promoting their value with the aim of facilitating insertion, integration and free circulation in the employment market, and personal and professional progress.
- To help people gain access to lifelong learning and to obtain further professional qualifications, providing opportunities for obtaining partial cumulative accreditation, with the aim of concluding training leading to the award of a vocational training diploma or a certificate of professional standards.

The procedure shall be subject to the principles of respect for individual rights, reliability, validity, objectivity, participation, quality and coordination. The assessment and accreditation shall be based on the skills listed in the National Catalogue of Professional

Qualifications included under vocational training diplomas and/or certificates of professional standards.

The Spanish National Catalogue of Professional Qualifications (known in Spanish as CNCP), is an instrument of the Spanish National System for Qualifications and Vocational and Educational Training (VET). Some of the main objectives of the CNCP are to integrate the existing programs on VET in order to adapt them to the characteristics and demands of the productive system and to be a referent to assess the professional competences. The CNCP comprises the most important professional qualifications and includes VET contents related to each professional qualification.

The CNCP consists of professional qualifications arranged in professional families and levels of qualification taking into account UE criteria.

The 26 professional families which make up the CNCP have been created according to the professional competence affinity criteria. The professional families which have to do with the renewable energy sector are Energy and Water, Electricity and Electronics, and Installation and Maintenance.

The 5 levels of professional qualification are based on the professional competence required for each productive activity taking into account different criteria like knowledge, initiative, autonomy, responsibility and complexity, among others, necessary for the accomplishment of every activity.

The assessment of professional skills by a given authority shall be based on professional achievements, performance criteria and professional context, in accordance with the criteria set in the corresponding guidelines. The minimum accreditation unit is the so-called competence unit.

The pertinent administrations shall guarantee an open and permanent service to provide information and guidance to anyone requesting it about the nature and phases of the procedure, the requirements for accessing it, their rights and obligations, the official accreditations available, and its effects.

Features of the certification of skills

The procedure included in Royal Decree 1224/2009, dated 17 July, ruling on the recognition of professional skills acquired through work experience defines the agenda and steps to follow in order to validate and turn such recognition into official.

This procedure comprises three phases:

- Guidance. It is mandatory, and may be individual or collective in accordance with the characteristics of the notice and the procedure, and the needs of the applicants.
- Assessment of professional skills. The purpose of this assessment shall be to prove the existence of the professional skills required at the levels defined in the achievement criteria, and the work situation defined, real or simulated, based on the professional context. The methods regarded as most appropriate shall be

used: observation of the applicant in the workplace, simulations, standard professional skills tests, personal interview, etc.

- Accreditation and registration of the professional skills. Those who pass the assessment process will be awarded a certificate for each of the competence units in which professional skills have been shown.

The recognition of the professional skills acquired through work experience is conducted by the Regions within the corresponding regional scope, although this recognition applies to all of Spain. In other words, a certain competence may be recognised in Galicia, but it is valid in Cataluña, Madrid, etc.

The corresponding authorities make public calls, defining the competences or competence units to be recognised, the timeframes involved, the training activities of the different entities entrusted with conducting the procedure, the different tools to be used, etc.

Summary

In the different EU countries, there are different ways to acquire professional competences in the renewable energy sector. In some of them, there is plenty of training offers addressed to the workers of the sector, from the point of view of formal learning as well as through non-formal and informal training (Germany, Spain). In other countries (Poland) this specific training can be only found at University level, although in-company training implies an important support for workers to increase their competences.

The recognition of professional competences in the sector shows a divergent picture. In Germany there are several opportunities for recognition, being the recognition in the company (KODE) one of the most important ones. In Spain, there is a standardized procedure for the recognition of competences acquired through working experience (Royal Decree 1224/2009). In Italy, the Citizen Training Booklet collects the worker's training in one single file and allows knowing about his/her level of competences in each moment. In France, the recognition of a worker's competences is linked to the accreditations that may be obtained by the company where he/she is working, being these accreditations awarded by public and private entities. And in Poland, the only accreditation recognised is the one provided by formal training through the acquisition of the corresponding diploma or certificate.

Glossary

Accreditation (of prior learning). Procedure for acknowledging a range of prior learning to those citizens who have passed an assessment process. Professional competences accreditation has three stages: counselling, assessment and accreditation, and registration.

Assessments. The sum of methods and processes used to evaluate the attainments (knowledge, skills and competences) of an individual or an institution or programme of study.

Awarding body. A body that issues qualifications (certificates or diplomas) formally, recognising the achievements of an individual, according to a standard assessment procedure.

Bologna Process. Process whose aim was creating a European Higher Education Area by 2010. It emerged from the June 19th 1999 Bologna Declaration, which provoked a series of reforms to achieve more compatible, comparable, attractive and quality European Higher Education. The process set three priorities: introducing the three-cycle system (bachelor/master/doctorate), quality assurance and qualification recognition.

Certificate or Diploma. An official document issued by an accredited awarding body, awarded on successful completion of a training programme, a course of studies or an assessment.

Certification (of knowledge, skills and competences). The process of formally validating knowledge, know-how and/or skills and competences acquired by an individual, following a standard assessment procedure. Certificates or diplomas are issued by accredited awarding bodies.

Competence. The proven ability to use knowledge, skills and personal, social and/ or methodological abilities, in work or study situations and in professional and personal development. In the context of the EQF, competence is described in terms of responsibility and autonomy.

ECVET (European Credit System for Vocational Education and Training). It is a system enabling qualifications to be described in terms of transferable and cumulative learning units (knowledge, skills and competence) to which credit points are attached. These points are used for a numerical representation of each unit and to define its weight and its value compared to the whole qualification.

ECVET is intended to facilitate the transfer and accumulation of learning outcomes acquired by people moving from one learning context to another, from one system of qualification to another.

Europass. A personal, coordinated portfolio of documents which citizens can use on a voluntary basis to better communicate and present their qualifications and competences throughout Europe. The Europass documents include: the Europass CV and the Europass Language Portfolio, which may be filled out by the individual; the Europass Certificate Supplement, the Europass Diploma Supplement and the Europass Mobility, which must be filled out and issued by the relevant competent bodies.

European Qualifications Framework (EQF). Common reference framework, acting as a translation device among the different systems, to make qualifications more readable and understandable across different countries and systems in Europe. It includes qualification levels, corresponding to general and higher education and to vocational education and training, and including the possibility of covering non-formal training. It has two main aims: to promote citizens' mobility between countries and to facilitate their lifelong learning.

Formal learning. Learning that generally occurs in a school/training centre, with a structured nature (in terms of objectives, time or resources) and typically leading to certification. Formal learning is intentional from the learner's point of view.

Formal training paths. They are training processes whose content are explicitly geared towards a program resulting in official accreditation.

Fossil fuels. Fuels found in the strata of the Earth derived from the fossilized remains of animals and vegetable matter over millions of years. Fossil fuel includes oil, natural gas, shale and coal. Fossil fuels are considered to be non-renewable since they are consumed faster than their natural production.

Global warming. An increase in the global mean temperature of the Earth that is (or is thought to be) a result of increased emissions of greenhouse gases that are trapped within the Earth's atmosphere. Global warming is believed to have adverse consequences such as climate change and a rise in sea levels.

Greenhouse Effect. Greenhouse effects in the Earth's atmosphere that allow solar radiation to pass through, but prevent most of the reflected infrared radiation from the Earth's surface and lower atmosphere to be ejected into outer space. This process occurs naturally and has kept the Earth's average surface temperature. Life on Earth would not be possible without the natural greenhouse effect.

Green Power. Electricity generated from renewable energy sources (solar, wind, biomass, geothermal and hydroelectric).

Informal learning. Learning resulting from daily activities related to work, family or leisure. It is not organised or structured (in terms of objectives, time or learning support) and it typically does not lead to certification. Informal learning may be intentional, but is in most cases it is unintentional from the learner's perspective (it is fortuitous).

Knowledge. It's the outcome of the assimilation of information through learning. Knowledge is the body of facts, principles, theories and practices that is related to a field of work or study. In the context of the EQF, knowledge is described as theoretical and/or factual.

Learning outcome. Expression for what a person knows, understands and is able to do after completing a learning process.

Level (within a Qualifications Framework). The referent, as defined in generic descriptor terms, for the different qualifications' classification, expressed in learning outcomes, to which a concrete qualification can be ascribed through the appropriate comparison.

National Qualifications Framework. Instrument for the classification of qualifications according to a set of criteria for specified levels of learning achieved, which aims to integrate and coordinate national qualifications sub-systems and improve the transparency, access, progression and quality of qualifications in relation to the labour market and civil society.

National Qualifications System. All aspects of a Member State's activity related to the recognition of learning and other mechanisms that link education and training to the labour market and civil society. This includes the development and implementation of institutional arrangements and processes relating to quality assurance, assessment and the awarding of qualifications. A national qualifications system may be composed of several subsystems and may include a national qualifications framework.

Non-formal learning. Learning which is not offered by an educational or training centre, and which usually does not lead to a certification. It has a structured nature (in terms of didactic units, duration or means) and is intentional from the learners' point of view.

Non-formal training paths. Training processes not geared towards official accreditation.

Non-renewable energy sources. Energy resources that cannot be restored or replenished by natural process and are depleted through use. Commonly used non-renewable energy resources include coal, oil, natural gas, and uranium.

Renewable energy sources. Energy sources that replenish themselves naturally within a short period of time. Sources of renewable energy include solar energy, hydroelectric power, geothermal energy, wind power, ocean thermal energy, wave power, wind power and fuel wood.

Professional profile. It defines the skills an individual needs to master to perform a professional activity.

Qualification. Any title, diploma or certificate issued by a competent body, as the formal result of an assessment and validation process, proving that an individual has achieved a specific level of learning outcomes.

Qualifications framework. It is a structure, internationally recognised, where all qualifications are coherently described so that they can be related and compared. Therefore, it serves to facilitate people's mobility within the Lifelong Learning European Space and within the international labour market.

Quality assurance. A wide range of mechanisms whose aim is assuring quality in educational processes. Quality assurance may be considered at different levels: quality in training processes; quality in processes through which the assignation of a level to a

programme of study is validated (ex-ante and ex-post); quality in the self-certification process of a qualifications framework.

Quality assurance is an essential dimension of national frameworks and a key element to generate confidence in the participating countries. Quality assurance systems should include the following elements: clear and measurable objectives and standards; guidelines for implementation, including stakeholder involvement; appropriate resources; consistent evaluation methods, associating self-assessment and external review; feedback mechanisms and procedures for improvement; widely accessible evaluation results.

Skill. The ability to apply knowledge and use know-how to complete tasks and solve problems. In the context of the EQF, skills are described as cognitive (involving the use of logical, intuitive and creative thinking) or practical (involving manual dexterity and the use of methods, materials, tools and instruments).

Sustainable development. It is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs. (United Nations World Commission on Environment and Development, UN, 1987)

Transparency of qualifications. The degree to which the value of qualifications can be identified and compared on the (sectoral, regional, national or international) labour and training markets.

Validation (of non-formal and informal learning). The process of assessing and recognising a wide range of knowledge, know-how, skills and competences, developed by people throughout their lives within different environments, for example through education, work and leisure activities.