



Erasmus+



Project Erasmus+: Training and certification model  
for photovoltaic trainers with the use of ECVET system  
(EU-PV-Trainer). No 2016-1-PL01-KA202-026279

# Development of community certification model for the photovoltaic trainer with regard to the requirements of EN ISO 17024

RESEARCH NETWORK  
ŁUKASIEWICZ

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TECHNOLOGIES



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EDUCATION & INFORMATION TECHNOLOGY CENTRE

**Erasmus+**  
**Cooperation for innovation and the exchange of good practices**  
**Strategic Partnership for vocational education and training**

***“Training and certification model for photovoltaic trainers with the use of ECVET system  
(EU-PV-Trainer)”***

No 2016-1-PL01-KA202-026279

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**Intellectual Output 07.**

**Development of community certification model  
for the photovoltaic trainer with regard to the requirements  
of EN ISO 17024**

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2019

# DEVELOPMENT OF COMMUNITY CERTIFICATION MODEL FOR THE PHOTOVOLTAIC TRAINER WITH REGARD TO THE REQUIREMENTS OF EN ISO 17024

## **Compilation of the team:**

Instytut Technologii Eksploatacji – PIB (Poland)

Stowarzyszenie Elektryków Polskich Oddział Radomski (Poland)

Polskie Towarzystwo Fotowoltaiki (Poland)

Universitatea Dunarea de Jos Din Galati (Romania)

EDITC LTD (Cyprus)

Fundación Equipo Humano (Spain)

**Autorzy:**

Stanisław Pietruszko  
Kamil Kulma  
Radosław Gutowski  
Radosław Figura  
Mirośław Żurek  
Katarzyna Sławińska  
Maria Knais  
Emilia Pechenau  
Adina Cocu  
Jose Enrique Val Montros  
Alfonso Cadenas Cañamás

**Recenzenci:**

Tomasz Magnowski

**Konsultacja metodologiczna:**

Edyta Koziel

**Opracowanie redakcyjne:**

Bożena Mazur

**Korekta językowa:**

Katarzyna Sławińska

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## Introduction

The study presents the results of intellectual work developed as part of the project in output 7: Development of community certification model for the photovoltaic trainer with regard to the requirements of EN ISO 17024 Conformity assessment – General requirements for bodies operating certification of persons (ISO/IEC 17024:2012).

**Output 7 includes the following interim results:**

### **1) Methodology of research (in English)**

Development of a common methodology is one of the activities undertaken in the project to facilitate the recognition and certification of knowledge, skills and competences acquired through formal, non-formal and informal learning and also to increase transparency of qualifications and diplomas in the RES sector in EU.

Validation and certification are based on concrete competence requirements, which serve as clearly defined and agreed reference points (Cedefop, 2009) for building curricula for trainers and for assessing the competences gained at work. The requirements are stated in various documents: (a) occupational standards, describing the profile of a person providing training; (b) qualification standards, describing the learning outcomes (knowledge, skills and competences) that everyone with a trainer's qualification is expected to possess.

Within the EU-PV-Trainer project, the partnerships will try to develop the models/systems of validation and certification of PV trainers' competences in the photovoltaic sector. ITeE-PIB will prepare a set of research tools and methods to describe manpower forecasting work for a given country (or region) by borrowing historical and current manpower data from countries (or regions) at higher stages of development. The premise underlying this method is that different countries (or regions) follow similar growth paths so that at the same level and composition of output they will have rather similar occupational and educational structures. This approach attempts to relate economic growth to the required educational/ training output based on a number of assumptions.

The methodology will focus on the procedures for community certification (by leading industry organizations) of the competences of personnel based on the requirements of the ISO/IEC 17024 standard which was designed to harmonize the personnel certification process worldwide.

### **2) Research report on certification and validation systems of photovoltaic trainer competences in the partner countries (in English)**

The report will present the outcomes of comparative studies of national policies and practices on recognition, validation and certification of non-formal and informal learning, regarding the models of certification and validation systems/ models for VET trainers in the photovoltaic sector in all partners' countries. The opportunities created for PV trainers in the photovoltaic sector, including the possibilities of certification of the competences and qualifications' will be presented.

### **3) Community certification model for the photovoltaic trainer**

On the basis of the national reports, a common certification and validation system(s)/ model(s) for PV trainers in the photovoltaic sector will be developed within the partnership. It will be a reference point for the description of the validation and certification procedures according to the requirements for “Conformity assessment; general requirements for bodies operating certification of persons” ISO/IEC 17024:2012.

### **4) Recommendations for national organisations/authorities responsible for the area of photovoltaics in the EU partner countries (in English and the national languages of the partner countries)**

Under the direction of PV Poland, the partnership will develop joint recommendations on community certification and validation of the photovoltaic trainer’s competences. The recommendations will be presented to European and national organizations working for the development of renewable energy sources, in particular relating to the institutions, employers and professionals in the area of photovoltaics. The aim of the action is to promote community certification of photovoltaic trainers as well as the results developed in the project (modular training programme, educational packages, tests, e-learning course). The recommendations may contribute to the harmonization of qualification requirements for the PV Trainer and improve the recognition and validation processes of competences, including those acquired through non-formal and informal learning.

## 1. Methodology of research (in English)

The given section presents the methodological assumptions of research oriented towards the development of community certification model for the photovoltaic trainer with regard to the requirements of EN ISO 17024 Conformity assessment – General requirements for bodies operating certification of persons (ISO/IEC 17024:2012), agreed under the partnership.

### 1.1. Methodological assumptions of research

For the purposes of implementation of IO.7 Development of community certification model for the photovoltaic trainer with regard to the requirements of EN ISO 17024 under the project, there was accepted the methodology for the research related to a comparative analysis of validation and certification processes for the PV trainer's competences with application of requirements of the ISO/IEC 17024:2012 standard, consolidated for all partner countries (Poland, Spanish, Romania, Cyprus).

The following elements were specified in the methodology:

- Research problem.
- Research objective.
- Specific objectives.
- Research subject.
- Research problems.
- Research methods, techniques and tools.
- Research organisation and area.

### 1.2. Research problem

Which elements of the management system described in the standard EN ISO 17024 Conformity assessment – General requirements for bodies operating certification of persons (ISO/IEC 17024:2012) may be recommended for the PV trainer's certification?

### 1.3. Research objectives

An objective of international research in the partner countries (Poland, Spain, Romania, Cyprus) was constituted by the analysis of intentionally selected documents describing, among others, validation and certification processes for competences of selected experts, conducted by institutions meeting the requirements of ISO/IEC 17024:2012 with regard to the capacity of their use for validation and certification of the PV trainer's competences.

#### **1.4. Specific objectives**

1. Analysis of the requirements of EN ISO 17024 Conformity assessment – General requirements for bodies operating certification of persons (ISO/IEC 17024:2012) with regard to the indication of elements that, according to the partnership, may be applied for the validation and certification processes for the PV trainer's competences.
2. Comparative analysis of exemplary certification processes for persons in accredited institutions meeting the requirements of ISO/IEC 17024:2012.
3. Establishment of a model (exemplary) validation and certification procedure for the PV trainer's competences based on the conducted comparative analysis.
4. Development of an exemplary documentation for the purposes of an institution interested in the PV trainers' certification management in the partner countries.
5. Development of recommendations for national organisations/authorities responsible for the area of photovoltaics in the EU partner countries (in English and the national languages of the partner countries).

#### **1.5. Research subject**

The comparative research subject covered the structure and substantial content of the validation and certification processes for the PV trainer's competences.

#### **1.6. Research methods, techniques and tools**

1. The main research method was the analysis of documents describing validation and certification processes for competences of selected experts, conducted by institutions meeting the requirements of ISO/IEC 17024:2012.
2. A complementary method was constituted by an unstructured in-depth interview, aimed at the supplement and explanation of collected information. The interview was conducted mainly by phone with employees of certifying institutions and institutions having an implemented management system compliant with the requirements of ISO/IEC 17024:2012.

During the interview, notes were taken, while data collected from the analysis of documents and the interview were applied to develop data for the table presented in section 2.

3. Also a focus group method was applied under the partnership, allowing to develop common solutions.

#### **1.7. Research organisation and area**

The research was conducted in the project's partner countries: Poland, Spain, Romania and Cyprus, in the first and second quarter of 2019, with participation of the partner institutions' experts.

Every partner prepared data for a comparative analysis and then provided them to the action leader - PV Poland.

Particular national data were analysed with regard to similarities and differences in validation and certification processes for the personnel competences, as well as they were applied to develop a common model of validation and certification of the PV trainer's competences.

## 2. Comparative analysis of certification and validation systems of photovoltaic trainer competences in the partner countries

### 2.1. Comparative analysis

The comparative analysis covered the processes of validation (examination) and certification of the personnel competences, conducted by accredited institutions with regard to the compliance with the requirements of EN ISO 17024 Conformity assessment – General requirements for bodies operating certification of persons (ISO/IEC 17024:2012).

Prior to the comparative analysis, the project partners were notified of what the standard ISO/IEC 17024:2012 was. That description was prepared by the PV Poland.

**International standard ISO/IEC 17024:2012. Compliance assessment – general requirements concerning personnel certification bodies** defines the principles and requirements concerning the personnel certification body in reference to specific requirements, including the development and maintenance of the personnel certification programme.

The standard includes requirements for the personnel certification body in the following areas:

#### 1) **General requirements**

This section describes, among others:

- general requirements concerning the certification body's legal form,
- issues connected with the body's liability for certification-related decisions,
- neutrality management criteria, including placement of information that the body should have a documented structure, policy and procedures for, among others, personnel certification that ensure the maintenance of neutrality,
- assurance of relevant funds for activities of the certification body, so that the neutrality principle is not violated.

#### 2) **Structure-related requirements**, in particular covering information that the certification body should:

- have a documented organisational structure, described scopes of duties, liability and permits for management and personnel involved in the certification process,
- remain neutral when it conducts both training and certification process, including, among others, proving neutrality between the training and certification processes, demonstrating that persons involved in training cannot participate in the certification process, while the completion of training in the certification body conducting such training cannot be expected from candidates applying for the certification.

### **3) Resource-related requirements**

This section describes requirements concerning resources which the personnel certification body should have at its disposal. Personnel- and resource-related requirements necessary for the certification process (including rooms, didactic aids). Competence-related requirements for personnel involved in the certification process should be written down and updated. Personnel should, among others, sign an obligation to apply the principles concerning confidentiality, neutrality and conflict of interests.

In addition, it presents the general requirements for examiners. In particular, examiners should understand the certification programme, be able to apply the examination procedures and documents, have competences in the area concerned by an exam. Besides, the certification body should monitor actions of examiners and credibility of grades they award.

The standard allows for subcontracting of works related to a part of the certification process, e.g. conducting a test of practical skills. In this case, the certification body should sign an appropriate agreement with the contractor.

### **4) Record- and information-related requirements**

This section describes records and informational requirements for personnel certification bodies. Requirements include criteria concerning records of persons interested in certification. Requirements concerning the scope of information that must be made public, as well as information that must be confidential. This part covers the information security criteria (related e.g. to examination documents, etc.).

### **5) Certification programme**

This section covers the general requirements concerning the development and maintenance of a certification system.

According to the included guidelines, the certification programme should include:

- scope of certification,
- description of work and tasks,
- competence-related requirements,
- skills (if applicable),
- prerequisites (if applicable).

The programme should also include:

- initial and repeated certification criteria,
- assessment methods,
- supervision methods and criteria,
- certificate suspension and cancellation criteria,
- scope change criteria.

The certification programme should be approved, periodically reviewed, as records should be kept from these reviews.

## **6) Certification process-related requirements**

This section describes the general requirements concerning:

- application process,
- assessment process,
- decision-making on certification (including, among others, content of a certificate),
- suspension, cancellation or limitation of the certification scope,
- recertification process,
- use of certificates, logos and marks,
- principles of appealing against the certification-related decision,
- complaint procedure.

## **7) Management system-related requirements**

This section describes the requirements concerning:

- documentation of the management system,
- exercising supervision over the management system's documentation and records kept in it,
- conducting review of the management system,
- internal audit,
- performance of corrective and preventive measures.

After acknowledgement of the above information, the partnership agreed that the scope of the comparative analysis of certification processes should be limited to the requirements of ISO/IEC 17024:2012, in which the following was described:

- 1)** Resource-related requirements, in particular laid down for examiners;
- 2)** Certification programme;
- 3)** Certification process-related requirements.

In the further part of works, for purposes of the comparative analysis, a table was developed, covering criteria which should be described by particular partners based on an analysis of a selected personnel certification process conducted by the body with the accredited management system compliant with the requirements of ISO/IEC 17024:2012.

Every national partner in the project is to search for a leading institution in its country that accredits personnel certification bodies, select one institution and fill the table below based on the accreditation that it has.

Table 1. Comparative analysis of the validation and certification processes for the personnel competences compliant with the requirements of Conformity assessment – General requirements for bodies operating certification of persons (ISO/IEC 17024:2012).

Comparative criterion	Poland	Spain	Romania	Cyprus
<b>National institution accrediting personnel certification bodies according to the standard ISO/IEC 17024:2012</b>	Polish Accreditation Centre	National Accreditation Entity, ENAC (National Accreditation Entity, ENAC)	National Authority for Qualifications (Romanian, Autoritatea Națională pentru calificări)	Human Resources Development Authority of Cyprus  Ministry of Energy
<b>Number of accredited personnel certification bodies</b>	14	20	1	2
<b>Accredited personnel certification body that may be associated with the PV trainer (in the future this body may be recommended for the PV trainer certification)</b>	Office of Technical Inspection (OTI)  Justification of association: it conducts certification of RES installation fitters	Agency for Professional Certification of Building and Architecture, S.L.  Justification: carries out certifications of energy audits in buildings, including renewable energy.  Professional Building Certification Agency  Justification: performs energy audit certifications, including renewable energy.	Sectorial Committee: Electrical, Thermic Energy, Oil and Gases <a href="http://site.anc.edu.ro/comitete-sectoriale/">http://site.anc.edu.ro/comitete-sectoriale/</a>	Human Resource Development Authority – HRDA  Justification of association: HRDA has developed a generic Occupational Profile for the trainer (disregard of the topic he/she teaches). This profile defines the knowledge, skills and competences of the trainer. All trainers in Cyprus who wish to train and get funding from the HRDA must be accredited by the HRDA based on the trainer's occupation profile.  Ministry of Energy Justification: At the moment Ministry of Energy facilitates the training and exams for photovoltaic installers by accrediting training providers and trainers through a process defined by the Ministry.
<b>Scope of accreditation of the above selected personnel certification body</b>	Type of certified persons: <ul style="list-style-type: none"> <li>Welding experts</li> <li>Material joining experts</li> <li>Laminating experts</li> <li>Non-destructive test experts</li> <li>Persons filling pressure vessels</li> <li>Persons operating and maintaining the handling machines</li> </ul>	Type of certified people: <ul style="list-style-type: none"> <li>Experts in environmental management.</li> <li>Experts in analysis, evaluation and audit of projects.</li> <li>Experts in diagnosis and pathology in building.</li> <li>Experts in design and calculation of facilities.</li> <li>People with knowledge to comply with current regulations.</li> </ul> Types of certified persons: <ul style="list-style-type: none"> <li>Experts in environmental</li> </ul>	In 28 March 2019 was published the Minister Decree about Methodology for elaboration, updating and management of the National Register of Professional Qualifications in Romania. At the actual moment are not defined the scope of Sectorial Committees and neither the operating methodology.	Type of certified persons: <ul style="list-style-type: none"> <li>PC Technicians</li> <li>Sales people</li> <li>Receptionists</li> <li>Trainer</li> </ul> Department of Energy <ul style="list-style-type: none"> <li>Trainers who deliver at accredited training centres courses for the Photovoltaic installers</li> </ul>

Comparative criterion	Poland	Spain	Romania	Cyprus
		<p>management.</p> <ul style="list-style-type: none"> <li>• Experts in analysis, evaluation and project audits.</li> <li>• Experts in diagnosis and building pathology.</li> <li>• Experts in design and calculation of installations.</li> <li>• People with knowledge for the application of the current regulation.</li> </ul>		
Where is the information on the certification process?	<a href="https://www.udt.gov.pl/kwalifikacje-osob">https://www.udt.gov.pl/kwalifikacje-osob</a>		<a href="http://site.anc.edu.ro/reglementari_rncis/">http://site.anc.edu.ro/reglementari_rncis/</a>	<a href="http://www.hrdauth.org.cy/easyconsole.cfm/page/project/p_id/82/pc_id/17154">http://www.hrdauth.org.cy/easyconsole.cfm/page/project/p_id/82/pc_id/17154</a>  <a href="http://www.mcit.gov.cy/mcit/EnergySe.nsf/All/3FCDDDF3AF023C34C225822F00266422?OpenDocument">http://www.mcit.gov.cy/mcit/EnergySe.nsf/All/3FCDDDF3AF023C34C225822F00266422?OpenDocument</a>
What does the certification process include?	<p>The process includes two stages:</p> <ol style="list-style-type: none"> <li>1) examination (according to the EQF, validation covers two parts - theoretical and practical);</li> <li>2) certificate issuance.</li> </ol>	<p>The process includes three phases:</p> <ol style="list-style-type: none"> <li>1) Registration and application phase. Collect necessary information and documentation (training, experience, merits, etc.). Tax payment.</li> <li>2) Verifications. Verified experience through professional certificate</li> <li>5. Evaluation of training and experience. Verification of training through homologated content and courses.</li> <li>3) Evaluations. Professional exam of 15 questions, 80% pass is required. Technical exam of 50 questions, 60% correct questions. Five additional questions about a specific case. Generic and competence interview is included.</li> </ol>	<p>Certification process consist in three steps:</p> <ol style="list-style-type: none"> <li>1) Course (theoretical and practical)</li> <li>2) Examination</li> <li>3) Certificate issue</li> </ol>	<p>The process includes two stages:</p> <ol style="list-style-type: none"> <li>1) The applicant has to fill in an application in order to be able to proceed with the exam</li> <li>2) The candidate has to take the exam which consists of a short presentation, an exam, a project and an interview.</li> </ol>
Documents applied in the certification process on an example of the selected area, together with a short description of content	Area: <b>certification of persons operating and maintaining the handling machines and filling portable pressure vessels</b>	<p>Area: Certification of Building Technicians, Building Health and Safety Coordinator, Building Energy Auditor and Director of Work execution.</p> <p>Area: certification of technician in edification, coordinator in security in edification, energy auditor and manager of implementation of works.</p>	Certification of Photovoltaic installer (Occupational Standard <a href="http://www.anc.edu.ro/stanarde_app/SO/Montator%20instalatii%20solare.pdf">http://www.anc.edu.ro/stanarde_app/SO/Montator%20instalatii%20solare.pdf</a> )	Area: Certification of trainers delivering VET training
	<b>1. Programme for the</b>	<b>1 INTRODUCTION.</b>	A new qualification is	<b>1. Certified Trainer Guide</b>

Comparative criterion	Poland	Spain	Romania	Cyprus
	<p><b>verification of qualifications and certification of persons operating and maintaining the handling machines and filling portable pressure vessels</b></p> <p>It is some kind of the main guide to the certification process. The document includes:</p> <p><b>1) Introduction</b>, covering references to the subject, type and scope of certification, presenting information on compliances with the ISO/IEC 17024:2014 requirements.</p> <p><b>2) Related documents</b>, i.e. legal deeds (acts, regulations) and standards related to the given area of personnel certification.</p> <p><b>3) Terms and definitions</b> (list of definitions related to the certification programme and associated documents).</p> <p><b>4) Qualification requirements/conditions for application for certification</b> (description of prerequisites to be complied with by a client applying for certification).</p> <p><b>5) Application for qualification/certification.</b> There is described the procedure of application filing together with reference to specimens of applied documents: - confirmation of fee payment, - specimen of an application for qualification verification, - specimen of an application for qualification. There are indicated possibilities of direct application for certification (without verification of qualifications), provided that e.g. an operation certificate issued by the OTI is held.</p> <p><b>6) Assessment</b>, including: <b>6.1) Review and registration of the application</b> (this action is conducted by the selection committee, if the application is incomplete, the candidate is asked for its supplement). <b>6.2) Qualification exam – exam location and scope of knowledge</b> The exam includes two parts: theoretical and</p>	<p>2. PHASES OF PERFORMING AN ENERGY AUDIT</p> <p>3. REQUIREMENTS OF ISO 17024: 2012 AND EVALUATION METHODOLOGY</p> <p>a. Energy planning b. Implementation and operation c. Check d. Management Review</p> <p>4. AUDIT AND INSTALLATION TECHNIQUES AND TOOLS</p> <p>5. CATEGORIZATION AND DRAFTING OF NON-CONFORMITIES</p> <p>6. ELABORATION OF THE AUDIT REPORT</p>	<p>introduced into the National Register of Professional Qualifications conditioned by the existence of a minimum occupation in the classification of occupations in Romania, hereinafter referred to as COR, which can be exercised with that qualification.</p> <p>The National Authority for Qualifications updates, manages and publishes on its website the National Register of Professional Qualifications.</p> <p>The introduction of a new qualification in the National Register of Professional Qualifications is accomplished:</p> <p>a) by taking over the qualifications in the Nomenclature of Qualifications for which can be completed programs with qualification certificates, approved by the Order of the Minister of Labour, Family and the Minister of Education, Research and Youth no. 35/3.112/2004, as subsequently amended and supplemented, and from the National Register of Professional Qualifications in Education</p> <p>b) based on the nationally recognized occupational standard / professional training standard approved under the legal regulations in force.</p> <p>There are two types of programs: assessment and training:</p> <p>1. If the person knows the profession, the best option is to evaluate his professional skills. 2. If the person does not know the profession, the solution is to attend a training course where he will learn from the beginning everything is needed.</p> <p>(1) Persons declared competent following the evaluation process shall receive a certificate of professional competences for the competence units in which they have been declared competent. (2) Persons declared</p>	<p>– Includes the steps for the Trainer certification</p> <p>2. Trainer Guide Glossary – Includes the topics tested during the exam</p> <p>3. Receive a Certificate of attendance in an accredited Train the Trainer programme (duration minimum 60 hours) OR proof of minimum 240 training hours</p> <p>4. Application: Includes personal details of examined (accompanied with a certificate of attendance in a Train the Train course or proofs of training delivery of minimum 240 hours)</p> <p>5. Application approval and exam scheduling</p> <p>6. Exam consists of 3 parts: a) 20 min of teaching in a simulated environment b) written exam c) interview and oral examination d) project</p> <p>7. Passing of the exams requires a minimum of 50 % in the 4 areas mentioned in point 6</p> <p>8. The candidate receives a score sheet and relevant certificate in the case of success</p> <p>9. There is an appeal option in the case the candidate disagrees with the marking</p> <p>10. The candidate can do the exam in the case of failure.</p>

Comparative criterion	Poland	Spain	Romania	Cyprus
	<p>practical. A separate appendix presents the scope of knowledge and skills necessary for acquisition. A theoretical exam is conducted in office premises, while the practical one – in the real station related to the certification area, e.g. shared by the employer under the agreement.</p> <p>The examiner may not examine a candidate employed in the same institution or whom it trained for such an exam.</p> <p><b>6.3) Method of administering the qualification exam and assessment criteria</b> Exam duration - max. 3 hours. Theoretical exam is composed of 10 questions. Positive result – 80% correct answers. Practical exam - 2 tasks.</p> <p><b>6.4) Result of qualification exam</b> Every candidate receives it up to 14 days from the exam date. A negative result of the theoretical part ends the verification process.</p> <p><b>7) Decision</b> A decision-maker in the area of the operation certificate issuance is provided, when the candidate passes the exam. It is indicated who signs the certificate. If the operation certificate or the certificate is destroyed or lost, one may apply for its copy.</p> <p><b>8) Validity of issued documents</b> Operation certificates are valid for an indefinite period, while the certificate – for five years. The certificate specimen is indicated.</p> <p><b>9) Supervision</b> It is mentioned that the assigned inspector may conduct, in the workplace of the certificate holder, a control of correctness of its work within the scope covered by certification.</p> <p><b>10) Recertification</b> There is presented the procedure that should be performed to extend the certificate validity for another 5 or 10 years. Filing an application confirmed by</p>		<p>competent for all units of competences specific to an occupation or qualification shall be awarded a certificate of professional competence which collects all the professional competencies specific to that occupation or qualifications in accordance with the occupational standard or the vocational training standard.</p> <p>Usually the evaluation of professional skills is made by multiple choice test, practice test and recommendation. Each entity that organizes courses and competence assessment chooses how will be the evaluation processes when accrediting the program.</p> <p>In both cases, upon graduation, a Graduation certificate with professional recognition is obtained, cf. O.G. 129/2000, republished. The certificate will be issued with an annex called "Certificate Description Supplement", stating the acquired professional competences.</p> <p>The National Authority for Qualifications prints and manages certificates of professional competence. Stages of the process of evaluation and certification of professional competences:</p> <ol style="list-style-type: none"> <li>1. Programming for evaluation</li> <li>2. Completion of the application for the examination by which you request the assessment and certification of competencies for the desired qualification. With the application, the file must contain: the copy of the valid identity card, copy of the birth certificate, copy of the marriage certificate (only if you changed your name after marriage), the copy of the last degree.</li> <li>3. Appointing an assessor and establishing the program for</li> </ol>	

Comparative criterion	Poland	Spain	Romania	Cyprus
	<p>the employer and fee.</p> <p><b>11) Complaints and appeals</b> There are described the principles of consideration of complaints and appeals (confidentiality, neutrality, independence, open-mindedness). Form – written. A special instruction is referred to.</p> <p><b>12) Application of operation certificates, certificates, logotype and marks</b> Operation certificates/certificates may not be applied in the misleading way, thus exposing the issuer to the loss of credibility and trust.</p> <p><b>13) Suspension of validity of issued documents</b> It may occur after the control, during which improper performance of works being subject to certification is stated, at a request of a certified person, as a result of complaint. Certificate may not be suspended for more than six months.</p> <p><b>14) Cancellation of issued documents</b> It may result from: a) non-compliance with the conditions set out in the decision on suspension of validity of the operation certificate at the fixed date, b) improper use of the operation certificate/certificate, c) resignation from the certificate.</p> <p><b>15) Records in the process of verification of qualifications/certificates</b> There is provided information on the registry of qualification certificates and certificates being conducted and by whom.</p> <p><b>APPENDICES:</b> Appendix 1 Qualification types and scope. Appendix 2 Specimen of an application for verification of qualifications/certification. Appendix 3 Specimen of an application for certification. Appendix 4 Scope of theoretical and practical knowledge depending on the qualification type and scope. Appendix 5 Certificate specimen.</p>		<p>conducting the evaluation process. In order to evaluate your professional skills, you are assigned a professional competence assessor who is responsible for the implementation of the entire evaluation process. Together with the assessor will be to establish: the units of competence to be evaluated; evaluation methods to be used to demonstrate professional competence (written test, oral questions, direct observation, simulation, portfolio, reports from others, project, etc.); date and location for each evaluation stage.</p> <p>4. Fill in the self-assessment sheet. Before completing the evaluation process, you will complete a self-evaluation sheet that analyses your professional performance, assisted by the professional competence assessor. Depending on the outcome of the self-evaluation, the professional competence assessor recommends that you enter the evaluation process for the whole standard or for a part of it or give up the evaluation process. If you do not want to evaluate all units of competence now, they can be evaluated separately over time over several evaluation sessions.</p> <p>5. Take the exam that consists of supporting theoretical and practical tests, to which can be added various documents that can demonstrate the candidate's skills. A multiple choice test that will test your theoretical knowledge. The practical test involves oral questions</p>	

Comparative criterion	Poland	Spain	Romania	Cyprus
			<p>and direct observation under real work or simulation conditions. At this stage it is intended to check the practical skills. Other documents that can demonstrate the experience in the field: Report from others (recommendation); Pictures from the workplace; Past work portfolio (additional proof required to demonstrate the veracity of professional experience).</p> <p>6. The Professional Competence Certificate is obtained when the evaluation process ends with qualification "competent" for all the competence units in which you have been declared competent. Otherwise you will be qualified as "not yet competent". The Professional Competence Certificate is issued within no more than 30 days from the assessment and is recognized on the territory of Romania, and abroad if it is apostilled.</p>	

## 2.2. Conclusions from the conducted comparative analysis:

- 1) Application of the standard EN ISO 17024 Conformity assessment – General requirements for bodies operating certification of persons (ISO/IEC 17024:2012) allows for the development of a consolidated procedure of validation (examination) and certificate issuance, but it should consider specific requirements, in particular, of the partner countries.
- 2) The certification process complying with the requirements of EN ISO 17024 Conformity assessment – General requirements for bodies operating certification of persons (ISO/IEC 17024:2012) is described through the Programme for verification of personnel qualifications and certification, including references to specimens of documents applied in the certification process.

- 3) The personnel certification process covers two stages: examination, i.e. according to the terminology adopted in the European Qualifications Framework, validation of acquired competences and the certificate issuance procedure.
- 4) The examination process is usually conducted traditionally. It takes place before the examination commission appointed specially for this purpose and is composed of two stages: theoretical part and practical verification of acquired competences. No other evidence confirming acquired competences of a person applying for the certificate is allowed, which does not correspond with modern trends of confirmation of competences acquired in various ways and based on various evidence.

### **2.3. Recommendations formed under the partnership based on the conducted comparative analysis**

- 1) It is recommended to adopt the process approach complying with the standard requirements for development of a community certification model for photovoltaic trainer.
- 2) Within the framework of the PV trainer's certification model, it is recommended to develop an exemplary programme for verification of the PV trainer's qualifications and certification, together with exemplary appendices, e.g.:
  - Appendix 1 Specimen of an application for verification of qualifications (validation)/certification;
  - Appendix 2 Specimen of an application for certification and recertification;
  - Appendix 3 Certificate specimen.
- 3) The validation process should consider other methods of confirmation of acquired competences, apart from the traditional examination system.

### 3. Development of a community certification model for photovoltaic trainer

For the purposes of the PV trainer's certification with use of the requirements of EN ISO 17024 Conformity assessment – General requirements for bodies operating certification of persons (ISO/IEC 17024:2012), the exemplary specimens were prepared:

- 1) Programme for verification of the PV trainer's qualifications and certification;
- 2) Appendix 1 Application for verification (validation) of qualifications/certification;
- 3) Appendix 2 Application for certification and recertification;
- 4) Appendix 3 Certificate.

#### 3.1. Exemplary Programme for verification of the PV trainer's qualifications and certification

##### 1. INTRODUCTION

- 1.1. This programme presents the principles for verification of qualifications and certification of persons performing tasks of the PV trainer.
- 1.2. This programme meets the requirements of PN-EN ISO/IEC 17024:2012 Compliance assessment. General requirements concerning personnel certification bodies.

##### 2. ASSOCIATED DOCUMENTS

Poland	Spain	Romania	Cyprus
1) <b>DIRECTIVE 2009/28/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC</b> 2) <b>ISO/IEC 17024:2012 Compliance assessment. General requirements concerning personnel certification bodies.</b>			
<b>Act of 20 February 2015 on Renewable Energy Sources (i.e. Journal of Laws of 2018, item 2389). Regulation of the Minister of Energy dated 9 May 2017 on the detailed conditions for provision of training organiser with accreditation within the</b>	<b>Decree of 13/2012 of March 30 through which the directive approved in the EC in the Spanish legal system is transposed.  DECREE 10/2014, of February 6, of the Governing Council, approving the procedure</b>	<b>The Minister of National Education orders:</b> <ul style="list-style-type: none"> <li>• Order no. 3629/2018 on the approval of the Methodology for establishing the criteria and procedures for evaluation and certification of professional competence</li> </ul>	K.D.P 374/015 Regulation of 2015 – Promoting and encouraging the use of renewable energy sources (Certification for the installer of small scale renewable energy sources)  K.D.P 25/2017 – Promoting and encouraging the use of renewable energy sources

scope of renewable energy sources and training and exams for persons applying for the issuance or extension of the certificate (Journal of Laws of 2018, item 1034).

for carrying out energy efficiency inspections.

assessors, evaluators of **evaluators** and external evaluators

**Ministry of Labor, Social Solidarity and Family and the Ministry of Education, Research and Youth** approved orders:

- no. 35/3112/2004 about qualifications list for that can be organized training programs finished with a Professional Qualification Certificated.
- 29/2010 which stipulates - Annex Conditions for certification schemes relating to installers (including PV installers)

**The National Authority for Qualifications** decisions:

- Decision no. 210 / 26.06.2018 for the approval of the Procedure for evaluation and certification of experts in evaluation and certification and their registration in the Register of Experts in Evaluation and Certification
- Decision no. 120 / 16.04.2019 regarding the modification of the instruction regarding the authorization of centers for evaluation and certification of professional competences obtained in other ways than the formal ones
- Decision no. 232 / 22.07.2019 for the approval of the Procedure regarding the audio-video surveillance activity of the evaluation processes carried out by

(Criteria for the training and examination center of in for the installer of small scale renewable energy sources and procedure for their evaluation)

K.D.P. 6/2017 Promoting and encouraging the use of renewable energy sources (Examination topics for the exam of installers of small scale renewable energy sources).

		<p>the centers for the assessment and certification of professional competences obtained in ways other than the formal ones</p> <p><b>The Administration for Environments Founds:</b></p> <p>Order no. 1287 of December 5, 2018 for the approval of the Program Financing Guide for the Installation of Photovoltaic Panels Systems for Electricity Production in order to meet Consumer Needs and Delivery of the Surplus in the National Network – updated 12 March 2019.</p>	
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### 3. TERMS AND DEFINITIONS

This programme applies terms and definitions provided in the associated documents (item 2) and below:

- 3.1. Certification process – all actions, including application, assessment, decision on certification, recertification and use of certificates and logos/marks, with use of which the certification body establishes that a person meets the certification requirements.
- 3.2. Certification requirements – set of specified requirements, including requirements of the certification programme, to be met in order to establish or maintain certification.
- 3.3. Certification programme – competences and other requirements concerning specific professional categories or skills of persons.
- 3.4. Applicant (client/candidate) – a person interested or an employer employing this person or an entity having powers of attorney of an interested person/employer, filing an application for verification of qualifications/certification of this person with regard to this programme.
- 3.5. Reference document – a document / legal deed / standard constituting the basis for the programme for verification of qualifications and certification.
- 3.6. Selection committee – persons appointed by the head of the OTI branch/office manager to conduct, supervise and assess exams according to the programme.
- 3.7. Examiner – member of the selection committee.
- 3.8. Qualification exam – an exam conducted in a national language by the selection committee, during which theoretical knowledge and practical skills of interested persons are assessed.
- 3.9. Examination centre – a place where exams are conducted.
- 3.10. Extension – a recertification process, after lapse of the first validity period of the certificate, i.e. after five years and after another five years from the first qualification exam or the date

of analysis of submitted documents, under the conditions specified in this certification programme.

3.11. Recertification – a recertification process, after lapse of the second validity period of the certificate, i.e. after five years and after another five years from the first qualification exam or the date of analysis of submitted documents, under the conditions specified in this certification programme.

3.12. Certification body – personnel certification body.

3.13. Complaint – an expression of dissatisfaction, other than appeal, by any person or organisation, against a certification body, concerning actions of this body or a certified person, requiring a response.

3.14. Appeal – an application of an applicant, candidate or certified person for reconsideration of the decision made by the certification body on its expected certification status.

3.15. Competences – an ability to apply knowledge and skills in order to achieve intended results.

3.16. Certificate – a document issued by the personnel certification body, confirming competences of the certified person, specified in this programme for verification of qualifications and certification.

#### 4. QUALIFICATION REQUIREMENTS/CONDITIONS FOR APPLICATION FOR CERTIFICATION

4.1 The candidate applying for verification of qualifications / certification should:

Poland	Spain	Romania	Cyprus
<p>1) <b>Have knowledge and skill of practical performance of operations within the scope of planning, conducting and evaluating classes.</b></p> <p>2) <b>Have knowledge and skill of practical design, performance and maintenance of PV installations.</b></p>			
<p>Within the scope of conducting theoretical classes, those who:</p> <p>1) have tertiary technical education or completed post-graduate technical studies confirmed with diploma or certificate, issued pursuant to the provisions of the Act on Higher Education dated 27 July 2005 (Journal of Laws of 2012, item 572, as amended4)), and documented three-year professional experience, or</p> <p>2) have secondary technical education validated with diploma confirming professional qualifications, issued pursuant to the provisions of the Act of 7 September 1991 on the Educational System (Journal of Laws of 2004, No. 256, item 2572, as amended5), or</p>	<p>Within the scope of theoretical classes, those that:</p> <p>1) It is essential to have one of the university degrees of technical careers that enable the exercise of regulated professions in the field of building and architecture.</p> <p>2) specific training in the field of the profile to be certified in recent years in the profession, requesting that it be accredited according to hours and certified level.</p> <p>3) experience in the field. The experience has been defined as the sum of experience in the field of building + specific experience in the profile, being a certification requirement to meet the minimum requirements for each of the defined typologies.</p> <ul style="list-style-type: none"> <li>• Experience in the field of</li> </ul>	<p>There are two ways for a person to become a VET trainer in one specific area (Government Decision no. 129/2000 about professional education for adult people, Government Decision no. 556/2011 about organization and functioning of the ANC - National Authority for Qualifications):</p> <p>1) To pursue a public school profile.</p> <p>2) To obtain a certification from an authorized training provider (continuous education).</p> <p>Trainers for private sector gain accreditation from NQA's (National Qualification Authority) authorized organisms. These organisms are Companies, Associations or Foundations authorized by NQA as Centres for</p>	<p>Within the scope of conducting any kind of training (regardless of the topic) those who:</p> <p>1) Have at least 240 training hours or attended an accredited by the HRDA 60 hours Train The Trainer training course can apply for certification to the Human Resources Development Authority of Cyprus in order to become a Certified Trainer.</p> <p>Within the scope of conducting classes for the photovoltaic installers, those who are accredited by the Ministry of Energy which must:</p> <p>1) Hold a relevant higher education degree (i.e. Electrical Engineering) and have at least 3 years of experience in the sector.</p> <p>2) Hold a diploma and at least</p>

<p>equivalent document, and documented five-year professional experience;</p> <p>Within the scope of conducting practical classes, those who:</p> <p>1) meet the qualification requirements specified in item 1 or</p> <p>2) have basic vocational education validated with a diploma confirming professional qualifications, issued pursuant to the provisions of the Act of 7 September 1991 on the Educational System, or equivalent document, and documented five-year professional experience, if such a person performs only practical activities as an instructor.</p>	<p>building: experience in any of the building, construction or management profiles in building and construction.</p> <ul style="list-style-type: none"> <li>Profile experience: specific scheme experience + specific profile training that can be transformed into experience.</li> </ul> <p>4) All candidates are required to submit references of their professional performances. Indicating contact person, company, position held, telephone, email. The minimum number of references depends on the level and quality to be certified.</p>	<p>evaluation and certification of competences of trainers.</p> <p>There are two types of specializations in order to be involved into non-formal education:</p> <ul style="list-style-type: none"> <li><b>Trainer</b> – persons must have a higher education diploma (minimum EQF 5)</li> <li><b>Instructor/ Junior training</b> – persons must have high school diploma (minimum EQF 3 or 4).</li> <li>In order to work as <b>PV instaler</b> – covers all PV system phases: design, installing, mentenance (minimum EQF 4)</li> </ul>	<p>5 years of experience.</p>
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## 5. APPLICATION FOR VERIFICATION OF QUALIFICATIONS / CERTIFICATION

5.1. The candidate files an application together with the fee payment confirmation to the personnel certification body. The fee can be paid by transfer / deposit to an indicated account number. The candidate may collaterally apply for verification of qualifications (validation) and certification.

5.2. Specimen of an application for verification of qualifications (validation) / certification constitutes Appendix 2 to the programme.

5.3. Specimen of an application for certification / recertification constitutes Appendix 3 to the programme.

5.3.1. In addition, certification may be applied for by a person having:

Poland	Spain	Romania	Cyprus
<p>Requirements 1.</p> <p>1) diploma of graduation from technical university or certificate from technical post-graduate studies in the field that contained curriculum content related to the PV installation assembly; or</p> <p>2) diploma confirming professional qualifications in the profession of a technician of devices and systems of renewable energetics, and a work certificate or employer's</p>	<p>Requirements 1.</p> <p>Have one of the university degrees of technical careers that enable the exercise of regulated professions in the field of building, architecture, renewable energy and energy.</p> <p>Evaluation:</p> <p>Training: Specific training will be evaluated. The interested party must justify a minimum of 50% of the specific training required to obtain the certificate during the period</p>	<p>Requirements 1.</p> <p>1) diploma from a technical University in the domain of Renewable energy and a Trainer certificate obtained in the conditions stipulated by law for non-formal education. or</p> <p>2) diploma from a University, a Trainer certificate obtained through courses in non-formal education in an authorized training centre and PV Installer Certificate acquired in a authorized</p>	<p>Requirements 1. (For the Photovoltaic Trainer)</p> <p>1) diploma of graduation from a university or certificate from technical post-graduate studies in the field that contained curriculum content related to the PV installation assembly; or</p> <p>2) a work certificate or employer's certificate documenting the relevant professional experience;</p>

<p>certificate documenting a five-year professional experience;</p> <p>and</p> <p>3) certificate of graduation from post-graduate studies preparing for work as a teacher or certificate confirming completion of a teaching course.</p>	<p>of validity of the certificate.</p> <p>Experience: The interested party must justify a minimum of 50% experience in the profile required to obtain the certificate made during the period of validity of the certificate.</p> <p>Examination: The candidate must demonstrate that the competences are maintained, so he must include an exam for the evaluation of his competencies, which allows the continuity of the competence of the certified person to be evaluated.</p> <p>Interview: For all Categories it is a requirement to pass an interview. The interview should include evaluation of competencies through practical assumptions and / or situational questions.</p>	<p>training centre or issued by a producer/importer of PV systems.</p>	<p>Requirements 2. (For the Trainer in general)</p> <p>1. Certificate by the HRDA as an accredited Trainer</p>
<p>Meet the requirements 1 and have an operation certificate for the completion of e-learning training developed under the project "Training and certification model for photovoltaic trainers with the use of ECVET system (EU-PV-Trainer) No 2016-1-PL01-KA202-026279.</p>			

## 6. ASSESSMENT

### 6.1. Application review and registration

An application is registered in the personnel certification body. The selection committee or an appointed person assesses it. If the application is incomplete, the candidate is notified of necessary supplements. In the case of certification process, where the personnel certification body recognises the documents referred to in item 5.3.1 as evidence of a positive result of theoretical and practical qualification exam, and in the recertification process, the application is assessed by an employee trained within the scope of certification of PV trainers and the standard EN ISO/IEC 17024 appointed by the head of the personnel certification body.

### 6.2. Qualification exam – exam location and scope of knowledge

6.2.1. The qualification exam is composed of a written theoretical part and a practical part.

6.2.2. The necessary scope of theoretical knowledge, practical skills and social competences for the PV trainer are presented in the Standard of professional competences for the PV trainer developed under the project "Training and certification model for photovoltaic trainers with the use of ECVET system (EU-PV-Trainer)" No 2016-1-PL01-KA202-026279.

6.2.4. An exam may be conducted in an office of the personnel certification body or remotely with use of the Test Bank developed under the project "Training and certification model for photovoltaic trainers with the use of ECVET system (EU-PV-Trainer)" No 2016-1-PL01-KA202-026279.

### 6.3. Method of administering the qualification exam and assessment criteria

6.3.1. The principles concerning the method of administering the qualification exam for the PV trainer:

- a) Total exam duration - max. 3 hours
- b) During the exam, the candidate must take six single-choice knowledge tests
- c) The exam result is positive, if the candidate answers correctly to at least 70% questions

6.4. Result of qualification exam

6.4.1. The qualification exam's result is generated automatically and after its completion the candidate is notified whether it has passed it, or not.

6.4.2. A negative result of the exam ends the proceedings.

6.4.3. If the exam result is negative, the candidate may apply for repeated verification of its qualifications/certificate after one month from the day of taking the last exam.

## **7. DECISION**

7.1. If the exam result is positive, after compliance with the certification requirements, the head of the personnel certification body or a person authorised by it, according to acquired permits, decides on the issuance of the operation certificate/certificate.

In the case of negative decision on the certificate issuance (e.g. due to negative result of the exam or failure to comply with the certification requirements), the candidate applying for certification should take the exam pursuant to item 6.2.

7.2. The certificate is signed by the head of the personnel certification body or a person appointed by it, according to acquired permits.

7.3. The personnel certification body retains exclusive ownership of every issued certificate.

7.4. If the operation certificate/certificate is destroyed or lost, it is possible to issue a duplicate, at a written request.

## **8. VALIDITY OF ISSUED DOCUMENTS**

8.1. PV trainer's training completion certificates, according to the programme in the project, are issued for an indefinite period, while certificates, in the case of simultaneous application for verification of qualifications and certification, for five years, counting from the date of compliance with all certification requirements specified in this programme.

8.2. In the case of certification based on a previously issued operation certificate, documents submitted by the candidate are analysed (application and other appendices). Certificates are issued for five years from the date of positive consideration of the application.

8.3. An exemplary certificate specimen is specified in Appendix 5.

## **9. SUPERVISION**

9.1. Within the framework of supervision over the operation certificate / certificate, an appointed employee of the personnel certification body, under its activities in the employer's organisation, may verify the correctness of conducting classes on the PV installation fitters' course.

- 9.2. Within the framework of supervision over the issued certificate, the personnel certification body verifies the compliance with the reference document's requirements, each time after the candidate's application for recertification.
- 9.3. The personnel certification body, within the framework of supervision over the issued operation certificate/certificate, accepts and analyses complaints and appeals.

## **10. RECERTIFICATION**

### **10.1. Extension of certification**

- 10.1.1. The condition for the certificate extension (after the first five years and after another five years) is the application (Appendix 2 to the programme) being filed prior to the expiry of the certificate. To the application, one should enclose a work evidence to the extent specified in the certificate, covering at least three months in the period of last 12 months of validity of the certificate, in the form of a declaration of the certified person confirmed by its employer.
- 10.1.2. The candidate files an application together in the office of the personnel certification body.
- 10.1.3. After expiry of the certificate, there is applied the mode of proceedings like for new candidates, pursuant to item 5 hereof.

### **10.2. Recertification**

- 10.2.1. The condition for renewal of the certificate validity after the second validity period (recertification) and after another ten years is the application (Appendix 2 to the programme) being filed prior to the expiry of the certificate. To the application, one should enclose a work evidence to the extent specified in the certificate, covering at least three months in the period of last 12 months of validity of the certificate, in the form of a declaration of the certified person confirmed by its employer.
- 10.2.2. An additional condition for recertification is the positive result of the exam, according to the principles specified in item 6 hereof.
- 10.2.3. The candidate files an application in the office of the personnel certification body.
- 10.2.4. After expiry of the certificate, there is applied the mode of proceedings like for new candidates, pursuant to item 5 hereof.

## **11. COMPLAINTS AND APPEALS**

- 11.1. The candidate may file complaints and appeals to the personnel certification body.
- 11.2. The party feeling suffered as a result of operations of a person having the operation certificate/certificate may apply to the personnel certification body with a complaint/appeal, including the description of events and evidence of such operations.
- 11.3. Complaints and appeals constitute the subject of proceedings in the personnel certification body, with maintenance of confidentiality, neutrality, independence and open-mindedness conditions.
- 11.4. Complaints and appeals filed to the personnel certification body should have a written form.

## **12. APPLICATION OF OPERATION CERTIFICATES / CERTIFICATES**

- 12.1. While providing the certification mark / logo on the certificate, the personnel certification body specifies the conditions for their use.
- 12.2. Persons holding operation certificates/certificates and their employers may not overuse operation certificates / certificates and the logo / mark of the personnel certification body.
- 12.3. Operation certificates/certificates may not be applied in the misleading way, thus exposing the personnel certification body to the loss of credibility and trust.
- 12.4. Every improper application of the operation certificate/certificate or misleading use of the document or its loss should be reported to the personnel certification body.
- 12.5. The certified person declares in the certification application that it shall comply with the "Conditions and principles of application of certificates and marks by clients of the Personnel Certification Body".

## **13. SUSPENSION OF VALIDITY OF ISSUED DOCUMENTS**

- 13.1. If the personnel certification body's employee performing control operations states the non-compliance with principles of conducting classes by the contractor, it applies to the head of its personnel certification body with an application for suspension of the operation certificate.
- 13.2. If the operation certificate is suspended, the certificate is suspended as well.
- 13.3. If the head of the personnel certification body acknowledges that the application is legitimate, it issues a decision on suspension of the operation certificate until reverification of qualifications. This decision is delivered to an interested person together with a letter containing information on simultaneous suspension of the certificate and a note concerning the necessity of delivery of the suspended operation certificate and certificate to the personnel certification body.
- 13.4. Suspension of the certificate may also result from:
  - a) reporting a temporary resignation from the certificate by the client,
  - b) receipt of a justified complaint against the certified person by the personnel certification body,
  - c) statement, under the supervision, of non-compliance with the requirements related to the certificate use.
- 13.5. The certificate may be restored at a request of the certified person after consideration of its application pursuant to the procedure foreseen for complaints and appeals.
- 13.6. If the certificate is suspended, the operation certificate is suspended as well.
- 13.7. The certificate may be suspended for up to six months.

## **14. CANCELLATION OF ISSUED DOCUMENTS**

- 14.1. Cancellation of the operation certificate / certificate may result from:
  - a) non-compliance with the conditions set out in the decision on suspension of validity of the operation certificate at the fixed date,
  - b) improper use of the operation certificate/certificate,
  - c) resignation from the certificate.

- 14.2. The personnel certification body's employee applies to the head with its application for cancellation of the operation certificate / certificate, if any.
- 14.3. If the head of the personnel certification body acknowledges that the application is legitimate, it issues a decision on cancellation of the operation certificate / certificate until reverification of qualifications. The decision is delivered to an interested person together with a letter containing information on collateral cancellation of the certificate and a note concerning the necessity of delivery of the suspended operation certificate and certificate to the personnel certification body.
- 14.4. If the operation certificate / certificate is cancelled, one may appeal again for verification of qualifications / certification after at least one month from the cancellation date.
- 14.5. If reverification of qualifications has a positive result, a new operation certificate / certificate is issued.
- 14.6. Cancellation of the operation certificate results in simultaneous cancellation of the certificate.
- 14.7. Cancellation of the certificate results in simultaneous cancellation of the operation certificate.

### **15. RECORDS IN THE PROCESS OF VERIFICATION OF QUALIFICATIONS/CERTIFICATES**

- 15.1. The personnel certification body keeps a registry of issued operation certificates / certificates.
- 15.2. Records of the process of verification of qualifications/certification are stored in the personnel certification body with maintenance of safety and confidentiality conditions, under supervision of the head of or an authorised employee of the personnel certification body.

## **3.2. Appendices to the exemplary Programme for verification of qualifications and certification of the PV trainer**

- Appendix 1 Specimen of an application for verification of qualifications (validation) / certification.
- Appendix 2 Specimen of an application for certification and recertification.
- Appendix 3 Certificate specimen.

**Appendix 1 Specimen of an application for verification of qualifications (validation) / certification**

Town: .....

Date: .....

**APPLICATION FOR VERIFICATION OF QUALIFICATIONS (VALIDATION) / CERTIFICATION<sup>1</sup>**

**PV trainer**

<p><b>1. First and last name (in block letters)</b></p>	<p>..... .....</p>
<p><b>2. Date of birth</b></p>	<p>.....</p>
<p><b>3. Place of birth</b></p>	<p>.....</p>
<p><b>4. Address of permanent residence</b></p>	<p>Street and house number: ..... Postcode: ..... Town: .....</p>
<p><b>5. Education, in particular connected with conducting classes as the PV trainer</b></p>	
<p>Level: School/university name: Faculty/major: Years of education:</p>	<p>..... ..... ..... .....</p>
<p>Level: School/university name: Faculty/major: Years of education:</p>	<p>..... ..... ..... .....</p>

<sup>1</sup> Delete as needed.

Level: School/university name: Faculty/major: Years of education:	..... ..... ..... .....
<b>6. Current place of work</b> (employer's name) Employer's address: Job:	..... ..... .....
<b>7. Course of professional work</b> <i>(chronologically from the recent employer back)</i>	
Employer's name: Period of employment <i>(month.year)</i> Job:	..... ..... .....
Employer's name: Period of employment <i>(month.year)</i> Job:	..... ..... .....
Employer's name: Period of employment <i>(month.year)</i> Job:	..... ..... .....
Employer's name: Period of employment <i>(month.year)</i> Job:	..... ..... .....
<b>8. Appendices confirming acquired qualifications and experience connected with conducting training as the PV trainer</b> <i>(photocopies):</i>	
Appendix 1. ....	
Appendix 2. ....	
Appendix 3. ....	
Appendix 4. ....	

Appendix 5. ....
Appendix 6. ....

**I hereby confirm the above data and enclose the proof of payment of the qualification verification fee.**

.....  
 (signature of the candidate)

I hereby express my consent to my personal data being processed by the personnel certification body, with its registered office in ....., at ul. ...., for the purposes of verification of qualifications required for conducting classes to prepare the PV fitters.

....., **date** .....  
 (town) (first and last name) (signature)

**I apply also for the issuance of the certificate in accordance with the Programme for verification of qualifications and certification of the PV trainer.**

**1. Data of the payer to whom a VAT invoice shall be issued (if the candidate is not the payer)**

.....  
 .....

**2. Form of receipt:** personal receipt / dispatch to the above address<sup>2</sup>

**3. I hereby confirm the above data and enclose the proof of payment of the certificate issuance fee.**

**4. Special needs (if applicable).....**

.....

I hereby express my consent to the compliance with certification requirements and to the delivery of all the information necessary for assessment. I declare that the details that I presented are true.

I hereby express my consent to my personal data being processed by the personnel certification body, with its registered office in ....., at ul. ....

<sup>2</sup> Delete as needed.



**Appendix 2 Specimen of an application for recertification**

Town: .....

Date: .....

**APPLICATION FOR RECERTIFICATION FOR  
PV Trainer**

<p><b>1. First and last name (in block letters)</b></p>	<p>..... .....</p>
<p><b>2. Date of birth</b></p>	<p>.....</p>
<p><b>3. Place of birth</b></p>	<p>.....</p>
<p><b>4. Address of permanent residence</b></p>	<p>Street and house number: ..... Postcode: ..... Town: .....</p>
<p><b>5. Education, in particular connected with conducting classes as the PV trainer</b></p>	
<p>Level: School/university name: Faculty/major: Years of education:</p>	<p>..... ..... ..... .....</p>
<p>Level: School/university name: Faculty/major: Years of education:</p>	<p>..... ..... ..... .....</p>
<p>Level: School/university name:</p>	<p>..... .....</p>

Faculty/major: Years of education:	..... .....
<b>6. Current place of work</b> (employer's name) Employer's address: Job:	..... ..... .....
<b>7. Course of professional work</b> <i>(chronologically from the recent employer back)</i>	
Employer's name: Period of employment ( <i>month.year</i> ) Job:	..... ..... .....
Employer's name: Period of employment ( <i>month.year</i> ) Job:	..... ..... .....
Employer's name: Period of employment ( <i>month.year</i> ) Job:	..... ..... .....
Employer's name: Period of employment ( <i>month.year</i> ) Job:	..... ..... .....
<b>8. Appendices</b> – work evidence to the extent specified in the certificate, for at least three months in the period of last 12 months of validity of the certificate, in the form of a declaration of the certified person confirmed by its employer.	
Appendix 1. ....	
Appendix 2. ....	

**9. Data of the payer to whom a VAT invoice shall be issued** (if the candidate is not the payer)

.....  
.....

**10. Form of certificate receipt:** personal receipt / dispatch to the above address<sup>3</sup>

**11. I hereby confirm the above data and enclose the proof of payment of the certificate reissuance fee.**

**12. Special needs (fill if any).....**  
.....

I hereby express my consent to the compliance with the certification requirements and to the delivery of all the information necessary for assessment. I declare that the details that I presented are true.

I hereby express my consent to my personal data being processed by the personnel certification body, with its registered office in ....., at ul. ....

I declare that the certificate will be applied within the given scope. If the Personnel Certification Body suspends or withdraws it, as a result of my unauthorised declarations connected with granted certification, its improper, unfair and misleading use, it will be immediately returned to its issuer, without any claims against the Personnel Certification Body.

I declare that I have read the Programme for verification of qualifications and certification of the PV trainer.

I undertake not to disclose confidential examination materials and not to participate in unfair practice during an exam.

....., **date** .....  
(town)

.....  
(first and last name)

.....  
(signature)

<sup>3</sup> Delete as needed.

**CERTIFICATE**  
of confirmation of the PV Trainer's  
qualifications

**By this document, we certify that Mr./Ms./Mrs.<sup>4</sup>:**

.....  
/First and last name/

Born on: .....

Passed a test confirming the PV Trainer's competences acquired as a result of formal, informal education and through work experience.

**Head of the certification body  
or the authorised person**

.....

**Place:** .....

**Issuance date:** .....

**Number from the certificate registry:** .....

**This certificate is issued for five years, counting from the date of its issuance.  
It may be renewed in an authorised certification body.**

---

<sup>4</sup> Delete as needed.

## 4. Recommendations for national organisations/authorities responsible for the area of photovoltaics in the EU partner countries (in English and the national languages of the partner countries)

### 4.1. Recommendations for Polish institutions constituting authorities in the area of PV

Recommendations and justification in English	Zalecenia i uzasadnienie w języku polskim
<p><b>Recommendations:</b></p> <p><b>I. In the case of Poland, institutions conducting the PV trainer's competence certification process might be constituted by:</b></p> <ol style="list-style-type: none"> <li>1) Office of Technical Inspection,</li> <li>2) PV Poland in Warsaw (project partner),</li> <li>3) Association of Polish Electricians Branch in Radom.</li> </ol> <p>The Office of Technical Inspection conducts personnel certification and has an implemented and accredited management system compliant with the requirements of EN ISO 17024 Conformity assessment – General requirements for bodies operating certification of persons (ISO/IEC 17024:2012). Besides, it occupies with the certification of fitters within the RES scope. Information published on the OTI website shows that certificates issued by it confirm qualifications for fitting of the following types of renewable energy source installations:</p> <ul style="list-style-type: none"> <li>• boilers and biomass-fired furnaces,</li> <li>• photovoltaic systems,</li> <li>• solar heating systems,</li> <li>• heat pumps,</li> <li>• shallow geothermal systems.<sup>5</sup></li> </ul> <p>PV Poland in Warsaw, as the project partner, actively promotes the wide use of photovoltaics, attempting to introduce it to the mainstream of</p>	<p><b>Rekomendacje:</b></p> <p><b>I. W przypadku Polski instytucjami prowadzącymi proces certyfikacji kompetencji trenerów PV mogły by być:</b></p> <ol style="list-style-type: none"> <li>1) Urząd Dozoru Technicznego,</li> <li>2) Polskie Towarzystwo Fotowoltaiki w Warszawie (partner w projekcie),</li> <li>3) Stowarzyszenie Elektryków Polskich Oddział w Radomiu.</li> </ol> <p>Urząd Dozoru Technicznego prowadzi certyfikację personelu i posiada wdrożony oraz akredytowany system zarządzania spełniający wymagania normy EN ISO 17024 Conformity assessment – General requirements for bodies operating certification of persons (ISO/IEC 17024:2012). Poza tym zajmuje się certyfikacją instalatorów w zakresie OZE. Z informacji zamieszczony na stronie UDT wynika, że certyfikaty wydawane przez niego potwierdzają posiadanie kwalifikacji do instalowania następujących rodzajów instalacji odnawialnego źródła energii:</p> <ul style="list-style-type: none"> <li>• kotłów i pieców na biomasę,</li> <li>• systemów fotowoltaicznych,</li> <li>• słonecznych systemów grzewczych,</li> <li>• pomp ciepła,</li> <li>• płytowych systemów geotermalnych<sup>7</sup>.</li> </ul> <p>Polskie Towarzystwo Fotowoltaiki w Warszawie, jako partner w projekcie, aktywnie promuje</p>

<sup>5</sup> <https://www.udt.gov.pl/certyfikacja-instalatorow-oze> (access: 30 March 2019).

<sup>7</sup> <https://www.udt.gov.pl/certyfikacja-instalatorow-oze> (dostęp: 30.03.2019).

research, economy and everyday life in Poland. It courts an increase share of photovoltaics in the country's energy balance and an improved condition of natural environment. It manages the Photovoltaics Training Centre for PV fitters, which is accredited by the Office of Technical Inspection (OTI).

Within the framework of its activities, the Association of Polish Electricians Branch in Radom conducts training for PV fitters and to this extent it is accredited by the Office of Technical Inspection.

Both PV Poland and the Association of Polish Electricians Branch in Radom may successfully conduct the PV trainers' certification, however, due to the costs of accreditation for the compliance with EN ISO 17024 Conformity assessment – General requirements for bodies operating certification of persons (ISO/IEC 17024:2012), it would come down to the so-called environmental certification, without accreditation by e.g. the Polish Accreditation Centre.

**II. It is recommended to perform actions oriented towards making an entry into the Integrated Qualifications System in Poland of two new qualifications connected with the performance of professional tasks by the PV Trainer:**

- 1) K1. Planning, organisation, conducting and assessment of professional training.
- 2) M2. Planning, installation, modernisation and maintenance of photovoltaic installations.

**Justification of the need for the PV trainers' certification:**

The current legislation in Poland describes qualification requirements for trainers quite vaguely. They lack, among others:

- 1) specification of a field of studies to graduate from in order to conduct classes;
- 2) requirements concerning acquisition of any qualifications related to conducting classes.

Introduction of the PV trainers' certification may contribute to the improved quality of conducted training, which shall in turn translate into an improved quality of preparation of qualified PV installation fitters.

It is particularly important that changes introduced in the Polish legislation favour the establishment of

szerokie wykorzystanie fotowoltaiki starając się wprowadzić ją do głównego nurtu badań, gospodarki i codziennego życia w Polsce. Zabiega o zwiększenie udziału fotowoltaiki w bilansie energetycznym kraju oraz o poprawę stanu środowiska naturalnego. Prowadzi Centrum Szkoleniowe Fotowoltaiki dla instalatorów PV, które jest akredytowane przez Urząd Dozoru Technicznego (UDT).

Stowarzyszenie Elektryków Polskich Oddział w Radomiu w ramach prowadzonej działalności prowadzi szkolenia dla instalatorów PV i jest w tym zakresie akredytowane przez Urząd Dozoru Technicznego.

Zarówno Polskie Towarzystwo Fotowoltaiki, jak i Stowarzyszenie Elektryków Polskich Oddział w Radomiu z powodzeniem mogłoby prowadzić certyfikację trenerów PV, jednak ze względu na koszty akredytacji na zgodność z normą EN ISO 17024 Conformity assessment – General requirements for bodies operating certification of persons (ISO/IEC 17024:2012) sprowadziłoby to się do tzw. certyfikacji środowiskowej bez akredytacji przez np. Polskie Centrum Akredytacji.

**II. Wskazane jest podjęcie działań ukierunkowanych na dokonanie wpisu do Zintegrowanego Systemu Kwalifikacji w Polsce dwóch nowych kwalifikacji związanych z wykonywaniem zadań zawodowych przez Trenera PV:**

- 1) K1. Planowanie, organizowanie, przeprowadzanie i ocenianie szkolenia zawodowego.
- 2) M2. Planowanie, instalacja, modernizacja i konserwacja instalacji fotowoltaicznych.

**Uzasadnienie potrzeby certyfikacji trenerów PV:**

W Polsce w obowiązującym ustawodawstwie wymagania kwalifikacyjne dla prowadzących szkolenia zostały dość ogólnikowo określone. Brakuje w nich m.in.:

- 1) sprecyzowania kierunku kształcenia jaki należy ukończyć by prowadzić zajęcia;
- 2) wymagań odnośnie posiadania jakichkolwiek kwalifikacji związanych z prowadzeniem zajęć dydaktycznych.

Wprowadzenie certyfikacji trenerów PV może przyczynić się do poprawy jakości prowadzonych

new PV installations. An increased demand for PV installations is favoured also by the introduction of fees for CO<sub>2</sub> emission, which may soon translate into an increase in electrical energy prices.

Data of the Institute of Renewable Power Industry and annually published reports "The Photovoltaic Market in Poland" show that:

- 1) So far the main segment of development of photovoltaics in Poland has been constituted by the prosumer sector, however since the first RES auction for photovoltaic installations in December 2016 and subsequent auctions in 2017 and 2018, the PV industry image has changed. Since 2017, a capacity increase rate in photovoltaic farms has significantly increased, to become much higher than in the already solidified prosumer segment.
- 2) In the case of additional support (announced programme "Energy plus"), an announced big auction in 2019, which may contract even 1.6 GW of new capacity and capacity increase in the commercial segment (business prosumers bothered by increased energy prices), even 3.2 GW may operate in photovoltaic systems at the end of 2020<sup>6</sup>.

The above presumptions confirm the sense of considering the introduction of the PV trainers' certification. Among others, the materials developed under the project might come in useful:

- 1) Standard of professional competences of the PV trainer, presenting requirements in the form of knowledge, skills and social competences to be acquired by the PV trainer;
- 2) Modular training programme for the PV trainer, considering the ECVET requirements;
- 3) A set of educational packages for the PV trainer, composed of two modules, in each of which three modular units were separated;
- 4) E-learning training for the PV trainer developed with use of a set of educational packages;
- 5) Test bank in the form of IT device to verify the level of professional competences of the PV trainer. Its application has been proposed for the process of examination – confirmation of competences;

Assumption for the personnel certification model

szkoleń, a to z kolei przełoży się na wzrost poziomu jakości przygotowywania wykwalifikowanych monterów instalacji PV.

Jest to szczególnie ważne, że wprowadzane zmiany w ustawodawstwie polskim sprzyjają powstawaniu nowych instalacji PV. Wzrostowi zapotrzebowania na instalacje PV sprzyja także wprowadzenie opłat emisyjnych CO<sub>2</sub>, które to w niedalekim okresie czasu mogą przełożyć się na wzrost cen energii elektrycznej.

Z danych Instytutu Energetyki Odnawialnej i publikowanych corocznie raportów „Rynek fotowoltaiki w Polsce”, wynika m.in. że:

- 1) Dotychczas głównym segmentem rozwoju fotowoltaiki w Polsce był sektor prosumencki, jednak od momentu przeprowadzenia pierwszej aukcji OZE dla instalacji fotowoltaicznych w grudniu 2016 roku oraz kolejnych w latach 2017 i 2018, obraz branży PV się zmienił. Od 2017 roku znacząco wzrosło tempo przyrostu mocy w farmach fotowoltaicznych, które stało się znacznie wyższe, niż w już okrzepłym segmencie prosumenckim.
- 2) W przypadku dodatkowego wsparcia (zapowiedziany program „Energia plus”, zapowiedziana duża aukcja na 2019 rok, która może zakontraktować nawet 1,6 GW nowych mocy oraz przyrost mocy w segmencie commercial (prosumenckim biznesowym, zaniepokojonym wzrostem cen energii), na koniec 2020 roku może pracować nawet 3,2 GW w systemach fotowoltaicznych<sup>8</sup>.

Powyższe przesłanki potwierdzają celowość rozważenia wprowadzenia certyfikacji trenerów PV. Pomocnym w tym mogłyby być m.in. materiały wypracowane w ramach projektu :

- 1) Standard kompetencji zawodowych trenera PV, w którym przedstawiono wymagania w formie wiedzy, umiejętności i kompetencji społecznych jakie ma posiadać trener PV;
- 2) Modułowy program szkolenia dla trenera PV, w którym uwzględniono wymagania ECVET;
- 3) Zestaw pakietów edukacyjnych dla trenera PV, składający się z dwóch modułów, w których wydzielono po trzy jednostki modułowe;
- 4) Szkolenie e-learningowe dla trenera PV

<sup>6</sup> <https://www.ieo.pl/pl/projekty/raport-rynek-fotowoltaiki-w-polsce-2019> (access: 27 March 2019).

<sup>8</sup> <https://www.ieo.pl/pl/projekty/raport-rynek-fotowoltaiki-w-polsce-2019> (dostęp: 27.03.2019).

compliant with the requirements of EN ISO 17024 Conformity assessment – General requirements for bodies operating certification of persons (ISO/IEC 17024:2012).

opracowane z wykorzystaniem zestawu pakietów edukacyjnych;

5) Bank testów w postaci narzędzia informatycznego do sprawdzania poziomu kompetencji zawodowych trenera PV. Jego zastosowanie zaproponowano w procesie egzaminowania – potwierdzania kompetencji;

Założenie do modelu certyfikacji personelu spełniającego wymagania normy EN ISO 17024 Conformity assessment – General requirements for bodies operating certification of persons (ISO/IEC 17024:2012).

## 4.2. Recommendations for Spanish institutions constituting authorities in the area of PV

Recommendations and justification in English	Recommendations and justification in Spanish
<p><b>Recommendations:</b></p> <p><b>I. In the case of Spain, institutions conducting the PV trainer's competence certification process might be constituted by:</b></p> <p><b>1) Accredited University or Technical Institute.</b> They will be the ones that would organize courses and evaluations for both Trainer and PV Installer. These institutions have to be listed on the National List for the Evaluation and Certification of Professional Competence from the National Government. <a href="https://www.agenciacertificacionprofesional.org/proceso-de-certificacion/">https://www.agenciacertificacionprofesional.org/proceso-de-certificacion/</a></p> <p><b>2) Accredited Training Centres.</b> These centres need to deliver specific training in the scheme of a photovoltaic-related field. Moreover, they need to have certain kind of certification system in line with the Spanish scheme of certification taking into account hours and level of training. Training centres also need to have qualified personnel in order to assess the experience accredited by candidates. Experience and background is also an asset when it comes to certification at National Level</p>	<p><b>Recomendaciones:</b></p> <p><b>I. En el caso de España, las Instituciones realizando formaciones para el desarrollo de competencias de instalación de paneles fotovoltaicos, deben estar constituidos por:</b></p> <p><b>1) Institutos Técnicos y Universidades Acreditados.</b> Ellos son las instituciones que organizarían los cursos y las evaluaciones para ambos el formados y el Instalador de placas fotovoltaicas. Estas instituciones están listadas en un listado Nacional para la Evaluación, Acreditación y Certificación de Competencias por parte del Gobierno Nacional. Un ejemplo del proceso se puede encontrar en este link. <a href="https://www.agenciacertificacionprofesional.org/proceso-de-certificacion/">https://www.agenciacertificacionprofesional.org/proceso-de-certificacion/</a></p> <p><b>2) Centros Acreditados de Formación.</b> Estos centros necesitan emitir específica formación en el ámbito de lo relacionado con el campo fotovoltaico. Además, necesitan disponer de un sistema de certificación en línea con el sistema español de certificación y teniendo en cuenta las horas y el nivel de formación. Estos centros de formación también necesitan disponer de</p>

in Spain.

#### **Justification of the need for the PV trainers' certification:**

The constant changes in the field of photovoltaics at National Level have made difficult for trainers and accredited centres to keep up with the results and specifications resulted from them. As pointed out before, the EUPV Trainer project has delivered several outcomes and activities that are aimed at homogenizing and making easier the recognition of skills among countries. Among others, the materials developed under the project might come in useful:

- 1) Standard of professional competences of the PV trainer, presenting requirements in the form of knowledge, skills and social competences to be acquired by the PV trainer;
- 2) Modular training programme for the PV trainer, considering the ECVET requirements;
- 3) A set of educational packages for the PV trainer, composed of two modules, in each of which three modular units were separated;
- 4) E-learning training for the PV trainer developed with use of a set of educational packages;
- 5) Test bank in the form of IT device to verify the level of professional competences of the PV trainer. Its application has been proposed for the process of examination – confirmation of competences;

Overall, its usefulness resides in a set of tools where institutions and centre of training can find guidance in the way competences, skills and qualifications are recognized at different levels in EU countries.

personal cualificado disponible para evaluar las competencias y experiencia de los candidatos.

#### **Justificación de las necesidades de la certificación PV trainer**

Los cambios constantes en el campo de la fotovoltaica a nivel nacional ha hecho bastante difícil para los formadores y los centros de acreditación, mantener las exigencias, resultados y especificaciones que exigen. Como se ha señalado antes, el proyecto EUPV Trainer ha desarrollado distintos resultados y actividades que tienen como objetivo homogeneizar y hacer más fácil el reconocimiento de habilidades entre los países. Entre otros, los materiales desarrollados bajo el proyecto son útiles en tanto cuanto son:

- 1) Un estándar profesional de competencias del Formador Fotovoltaico, donde se presentan los conocimientos, habilidades y competencias sociales que tienen que adquirir.
- 2) Programa de formación modular en línea con las exigencias ECVET.
- 3) Un conjunto de paquetes educaciones compuestos de dos módulos, donde tres unidades han sido separadas.
- 4) Formación online para el formador PV junto a un conjunto de paquetes educacionales.
- 5) Banco de preguntas para verificar las competencias profesionales del Formador PV.

Por lo general, su utilidad reside en el desarrollo de un conjunto de herramientas donde instituciones y centros de formaciones pueden encontrar orientación en la forma en que competencias, habilidades y cualificaciones son reconocidas a diferentes niveles en la Unión Europea.

### 4.3. Recommendations for Romanian institutions constituting authorities in the area of PV

Recommendations and justification in English	Recommendations and justification in Romanian
<p><b>Recommendations:</b></p> <p><b>I. In the case of Romania, institutions conducting the PV trainer's competence certification process might be constituted by:</b></p> <ol style="list-style-type: none"> <li><b>1) Accredited Training Centre</b> who organize courses and evaluations for both Trainer and PV Installer. The Centre have to be listed in National Register of Centers for the Evaluation and Certification of Professional Competence Centers obtained in other ways than formal ones (<a href="http://site.anc.edu.ro/Reg-centre/">http://site.anc.edu.ro/Reg-centre/</a>).</li> <li><b>2) Technical Universities</b> who prepare engineers in the Renewable energy domain and also offer Pedagogical courses. In this way, students are preparing to become technical specialists, but will also have competences related to the planning, organization, conducting of professional training.</li> </ol> <p><b>II. It is recommended to perform actions oriented towards making an entry into the National Qualifications System in Romania of two new qualifications connected with the performance of professional tasks by the PV Trainer:</b></p> <ol style="list-style-type: none"> <li>1) Trainer PV with minimum EQF 5</li> <li>2) Instructor PV with minimum EQF 3 or 4.</li> </ol> <p><b>Justification of the need for the PV trainers' certification:</b></p> <p>In Romania, there are clear specifications regarding the conditions that future trainers must meet, no matter what is the educational field. Instead, there are no specifications for those who want to become instructors to deal with the practical part of courses. There is also a legislative gap on learning in the workplace. For these situations a new qualification for instructors should be introduced.</p> <p>For several years, the government has been encouraging programs to fund the acquisition and installation of systems that use renewable, non-</p>	<p><b>Recomandări:</b></p> <p><b>I. În cazul României, instituțiile care desfășoară procesul de certificare a competenței formatorului PV pot fi:</b></p> <ol style="list-style-type: none"> <li><b>1) Centru de formare acreditat</b> care organizează cursuri și evaluări atât pentru instructorul PV, cât și pentru instalatorul PV. Centrul trebuie să fie înscris în Registrul Național al Centrelor de Evaluare și Certificare a Centrelor de Competență Profesională obținute în alte moduri decât cele formale (<a href="http://site.anc.edu.ro/Reg-centre/">http://site.anc.edu.ro/Reg-centre/</a>).</li> <li><b>2) Universități tehnice</b> care pregătesc ingineri în domeniul energiei regenerabile și oferă cursuri pedagogice. În acest fel, studenții se pregătesc să devină specialiști tehnici, dar vor avea și competențe legate de planificarea, organizarea, desfășurarea formării profesionale.</li> </ol> <p><b>II. Se recomandă introducerea în România a două noi calificări legate de îndeplinirea sarcinilor profesionale de către formatorul PV:</b></p> <ol style="list-style-type: none"> <li>1) Trainer PV cu EQF minim 5</li> <li>2) Instructor PV cu EQF minim 3 sau 4.</li> </ol> <p><b>Justificarea nevoii de certificare a formatorilor de formare PV:</b></p> <p>În România există specificații clare cu privire la condițiile pe care trebuie să le îndeplinească viitorii formatori, indiferent de domeniul educațional. În schimb, nu există specificații pentru cei care doresc să devină instructori pentru a face față părții practice a cursurilor. Există, de asemenea, o lacună legislativă în ceea ce privește învățarea la locul de muncă. În aceste situații, ar trebui introdusă o nouă calificare pentru instructori.</p> <p>De mai mulți ani, guvernul a încurajat programe de finanțare a achiziționării și instalării de surse de energie regenerabile și non-poluante. Scopul acestor programe este de a spori eficiența</p>

polluting renewable energy sources. The aim of these programs are to increase energy efficiency, improve air quality and reduce greenhouse gas emissions by using photovoltaic panels to produce the electricity needed for its own consumption and to deliver the surplus in the national energy system. The objective of the programs is to increase the capacities to produce electricity from renewable sources. The programs are multiannual and applies at national level, by regions. At the national level, a lot of PV installers are needed for the implementation of these programs. The program implementation methodology describes a procedure whereby only persons with legal authority can apply to be accepted into the list of validated and accredited installers.

In conclusion, the official introduction of a methodology by which qualified PV installers could become PV trainers and PV instructors would greatly help the private environment. Thus, those who have experience in the photovoltaic field could train other people directly at workplace.

energetică, de a îmbunătăți calitatea aerului și de a reduce emisiile de gaze cu efect de seră prin utilizarea panourilor fotovoltaice pentru a produce energia electrică necesară pentru consumul propriu și pentru a furniza surplusul din sistemul energetic național. Obiectivul programelor este creșterea capacităților de producere a energiei electrice din surse regenerabile. Programele sunt multianuale și se aplică la nivel național, pe regiuni. La nivel național, un număr mare de instalatori PV sunt necesari să implementeze aceste programe. Metodologia de implementare a programului descrie o procedură prin care numai persoanele cu autoritate juridică pot solicita să fie acceptate în lista de instalatori validați și acreditați.

În concluzie, introducerea oficială a unei metodologii prin care instalatorii de echipamente fotovoltaice calificați ar putea deveni formatori PV și instructori PV ar ajuta foarte mult la mediul privat. Astfel, cei care au experiență în domeniul fotovoltaic ar putea instrui alte persoane direct la locul de muncă.

#### 4.4. Recommendations for Cypriot institutions constituting authorities in the area of PV

Recommendations and justification in English	Recommendations and justification in Greek
<p><b>Recommendations:</b></p> <p><b>I. In the case of Cyprus, institutions conducting the PV trainer's competence certification process might be constituted by:</b></p> <ol style="list-style-type: none"> <li>1. Accredited Training and Testing Centers by the Human Resources Development Authority of Cyprus</li> <li>2. Accredited Trainers by the Human Resources Development Authority of Cyprus</li> <li>3. Accredited Photovoltaic Trainers by the Cyprus Energy Office</li> <li>4. Accredited training and testing providers <b>for the Photovoltaic installers</b> by the Cyprus Energy Office</li> </ol> <p>The Accredited Training and Testing centres are</p>	<p><b>Εισηγήσεις:</b></p> <p><b>I. Στην Κύπρο, εκπαιδευτικά κέντρα που διενεργούν τη διαδικασία για την πιστοποίηση της ικανότητας του Εκπαιδευτή Φωτοβολταϊκών Συστημάτων αποτελούνται από:</b></p> <ol style="list-style-type: none"> <li>1. Πιστοποιημένα Εκπαιδευτικά και Εξεταστικά Κέντρα από την Αρχή Ανάπτυξης Ανθρώπινου Δυναμικού της Κύπρου</li> <li>2. Διαπιστευμένοι εκπαιδευτές από την Αρχή Ανάπτυξης Ανθρώπινου Δυναμικού της Κύπρου</li> <li>3. Διαπιστευμένοι Εκπαιδευτές για τα Φωτοβολταϊκά Συστήματα από το Κυπριακό Γραφείο Ενέργειας</li> <li>4. Διαπιστευμένοι παροχείς κατάρτισης και εξετάσεων για τους εγκαταστάτες φωτοβολταϊκών από το Κυπριακό Γραφείο</li> </ol>

responsible for the delivery of the Train the Trainer courses (if required, in the cases where the person can not proof that he/she has 240 teaching hours) and organization of relevant exams to become an HRDA Accredited Trainer.

Additionally, the accredited Training and Testing Centers and Accredited Trainers for the Photovoltaic Systems must be accredited by the Cyprus Energy Office (runs under the Ministry of Energy)

However because the HRDA accreditation and the Cyprus Energy Office accreditation does not comply with EN ISO 17024 Conformity assessment – General requirements for bodies operating certification of persons (ISO/IEC 17024:2012), the candidates will be accredited, but will not comply with ISO17024.

**II. It is recommended to perform actions oriented towards making an entry into the Integrated Qualifications System in Cyprus of two new qualifications connected with the performance of professional tasks by the PV Trainer:**

1. K1. Planning, organisation, conducting and assessment of professional training.
2. M2. Planning, installation, modernisation and maintenance of photovoltaic installations.

**Justification of the need for the PV trainers' certification:**

At the moment, in Cyprus there is the Trainer accreditation and VET Institute accreditation which is managed by the HRDA. These accreditations are required by any training provider that wishes to implemented courses which are subsidized by the government. The first (Accredited Trainer validates the capacity of the trainer to design and deliver courses regardless of the topic. The 2<sup>nd</sup> accreditation for VET providers checks whether the institute has in place processes and staff to organize and deliver courses.

On the other hand, the Cyprus Energy Office

Ενέργειας

Τα Πιστοποιημένα Εκπαιδευτικά και Εξεταστικά Κέντρα είναι υπεύθυνα για την παράδοση των μαθημάτων Εκπαίδευσης Εκπαιδευτή (εάν απαιτείται, στις περιπτώσεις που το άτομο δεν μπορεί να αποδείξει ότι έχει 240 ώρες διδασκαλίας) και διοργάνωση σχετικών εξετάσεων για να πιστοποιηθεί ως αναγνωρισμένος εκπαιδευτής της ΑνΑΔ .

Επιπροσθέτως, οι Διαπιστευμένοι παροχείς κατάρτισης και εξετάσεων και οι Διαπιστευμένοι Εκπαιδευτές για τα Φωτοβολταϊκά Συστήματα πρέπει να είναι διαπιστευμένοι από το Κυπριακό Γραφείο Ενέργειας (λειτουργεί στο Υπουργείο Ενέργειας)

Ωστόσο, επειδή η διαπίστευση της ΑνΑΔ και του Γραφείου Ενέργειας δεν συμμορφώνονται με το EN ISO 17024 - Γενικές απαιτήσεις για φορείς πιστοποίησης προσώπων (ISO / IEC 17024: 2012), οι υποψήφιοι θα είναι διαπιστευμένοι, αλλά δεν συμμορφώνονται με το ISO17024.

**II. Συνιστάται η διεξαγωγή ενεργειών με στόχο την εισαγωγή στο Σύστημα Ολοκληρωμένων Προσόντων στην Κύπρο δύο νέων προσόντων που συνδέονται με την εκτέλεση επαγγελματικών καθηκόντων από τον Φ / Β εκπαιδευτή:**

1. K1. Σχεδιασμός, οργάνωση, διεξαγωγή και αξιολόγηση της επαγγελματικής κατάρτισης.
2. M2. Σχεδιασμός, εγκατάσταση, εκσυγχρονισμός και συντήρηση φωτοβολταϊκών εγκαταστάσεων.

**Αιτιολόγηση της ανάγκης πιστοποίησης των εκπαιδευτών Φ / Β:**

Επί του παρόντος, στην Κύπρο υπάρχει η διαπίστευση του Εκπαιδευτή και η διαπίστευση του Ινστιτούτου Επαγγελματικής Εκπαίδευσης και Κατάρτισης που διαχειρίζεται η ΑνΑΔ. Αυτές οι πιστοποιήσεις απαιτούνται από οποιονδήποτε φορέα παροχής κατάρτισης που επιθυμεί να υλοποιήσει μαθήματα επιδοτούμενα από την κυβέρνηση. Το πρώτο (Πιστοποιημένος Εκπαιδευτής ΑνΑΔ) επικυρώνει την ικανότητα του

(Ministry of Energy) has defined the requirements for an Accredited Training and Testing provider on Photovoltaic Systems as well as the requirement for the Trainers for the delivery of Photovoltaic installer courses. The accreditation for the Training and Testing provider checks whether the required equipment, labs and trainers are in place to deliver the courses.

These 2 bodies (HRDA and Energy Office) run independently which means the HRDA does not require the accreditations provided by the Energy Office and vice versa.

The PV-Trainer project touches both issues addressed by 2 different bodies in Cyprus a) the pedagogical capacity of the trainer b) the knowledge of the trainer on the specific topic. Moreover it provides a concrete curricula of the required knowledge and skills required for both (pedagogical capacity and knowledge and skills on photovoltaic installations).

It should also be noted that the Cyprus Energy Office does not check the knowledge of the trainer on the topic – it only requires a relevant degree and some years of professional experience which does not verify the capacity of the trainer on photovoltaic installations.

The above presumptions confirm the sense of considering the introduction of the PV trainers' certification. Among others, the materials developed under the project might come in useful:

- Standard of professional competences of the PV trainer, presenting requirements in the form of knowledge, skills and social competences to be acquired by the PV trainer;
- Modular training programme for the PV trainer, considering the ECVET requirements;
- A set of educational packages for the PV trainer, composed of two modules, in each of which three modular units were separated;
- E-learning training for the PV trainer developed with use of a set of educational packages;
- Test bank in the form of IT device to verify the level of professional competences of the PV

εκπαιδευτή να σχεδιάζει και να παραδίδει μαθήματα ανεξάρτητα από το θέμα. Η δεύτερη διαπίστωση για τους παρόχους ΕΕΚ ελέγχει εάν το ίδρυμα διαθέτει διαδικασίες και προσωπικό για να οργανώσει και να προσφέρει μαθήματα.

Από την άλλη πλευρά, το Κυπριακό Γραφείο Ενέργειας (Υπουργείο Ενέργειας) έχει ορίσει τις απαιτήσεις τους Διαπιστευμένους παροχείς κατάρτισης και εξετάσεων καθώς και την απαίτηση για τους Εκπαιδευτές για την παράδοση μαθημάτων για τους Εγκαταστάτες Φωτοβολταϊκών Συστημάτων. Η διαπίστωση για τον φορέα κατάρτισης και εξετάσεων ελέγχει εάν υπάρχει ο απαιτούμενος εξοπλισμός και εργαστήρια καθώς επίσης την ικανότητα των εκπαιδευτών να παραδώσουν τα μαθήματα.

Αυτά τα δύο όργανα (ΑνΑΔ και Γραφείο Ενέργειας) λειτουργούν ανεξάρτητα, γεγονός που σημαίνει ότι η ΑνΑΔ δεν απαιτεί τις διαπιστεύσεις που παρέχονται από το Γραφείο Ενέργειας και αντιστρόφως.

Το έργο PV-Trainer αγγίζει και τα 2 θέματα που διαχειρίζονται αυτοί οι δύο φορείς στην Κύπρο α) την παιδαγωγική ικανότητα του εκπαιδευτή β) την γνώση του εκπαιδευτή στο αντικείμενο. Επιπλέον, παρέχει ένα συγκεκριμένο πρόγραμμα σπουδών με τις απαιτούμενες γνώσεις και δεξιότητες που απαιτούνται για τις δύο (παιδαγωγική ικανότητα και γνώσεις και δεξιότητες στις φωτοβολταϊκές εγκαταστάσεις).

Πρέπει επίσης να σημειωθεί ότι το Κυπριακό Γραφείο Ενέργειας δεν ελέγχει τις γνώσεις του εκπαιδευτή σχετικά με το θέμα απαιτεί μόνο – σχετικό πτυχίο και κάποια χρόνια επαγγελματικής εμπειρίας που δεν επαληθεύει την ικανότητα του εκπαιδευτή στις φωτοβολταϊκές εγκαταστάσεις.

Τα παραπάνω τεκμήρια επιβεβαιώνουν την ανάγκη της εισαγωγής της πιστοποίησης των εκπαιδευτών Φ / Β. Μεταξύ άλλων, τα υλικά που αναπτύσσονται στο πλαίσιο του έργου θα μπορούσαν να είναι χρήσιμα:

- Πρότυπο επαγγελματικών ικανοτήτων του εκπαιδευτή φωτοβολταϊκών, που παρουσιάζει απαιτήσεις υπό τη μορφή γνώσεων, δεξιοτήτων και κοινωνικών ικανοτήτων που πρέπει να

trainer. Its application has been proposed for the process of examination – confirmation of competences;

αποκτήσει ο Φ / Β εκπαιδευτής.

- Εκπαιδευτικό πρόγραμμα σε τμήματα για τον εκπαιδευτή ΦΒ, λαμβάνοντας υπόψη τις απαιτήσεις του ECVET.
- Ένα σύνολο εκπαιδευτικών πακέτων για τον Φ / Β εκπαιδευτή, αποτελούμενο από δύο ενότητες, σε κάθε ένα από τα οποία χωρίστηκαν τρεις αρθρωτές μονάδες.
- Εκπαίδευση ηλεκτρονικής μάθησης για τον εκπαιδευτή ΦΒ που αναπτύχθηκε με τη χρήση ενός σετ εκπαιδευτικών πακέτων.
- Μία διαδικτυακή δεξαμενή από εξεταστικά δοκίμια για την επαλήθευση του επιπέδου επαγγελματικών ικανοτήτων του εκπαιδευτή ΦΒ. Η εφαρμογή της προτάθηκε για τη διαδικασία εξέτασης – επιβεβαίωση των ικανοτήτων.

