PVTRIN
INSTALLER CERTIFICATION

TRAINING OF PHOTOVOLTAIC INSTALLERS

Development and implementation of a common certification scheme for PV installers

Development of a roadmap for the adoption and implementation of the certification scheme across Europe

April 2013
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PVTRIN: The PVTRIN project scope is the development of a training and certification scheme for technicians, according common accepted criteria and standards, focused on the installation and maintenance of small scale PV.

The expected results are: Accredited training courses and an operational certification scheme for PV installers in 6 participating countries; Practical training material/tools for installers and their trainers; Web portal with access to technical information on PV installation/integration; 8 pilot training courses implemented, a pool of skilled/certified PV installers; A roadmap for the adoption of the certification scheme across Europe.

Long term, PVTRIN will contribute to the PV/BIPV market growth in the participating countries, provide a supporting instrument for EU MS to meet their obligations for acknowledged certifications for RES installers till 31/12/2012 and enforce the MS efforts to achieve the mandatory target of a 20% share of energy from RES in overall Community energy consumption by 2020. The PVTRIN is co-financed by the Intelligent Energy - Europe (IEE) programme.

PROJECT COORDINATOR

Associate Professor, Theocharis Tsoutsos, Renewable and Sustainable Energy Systems Lab.
Environmental Engineering Dpt., TECHNICAL UNIVERSITY OF CRETE (TUC)

PROJECT PARTNERS

Agency of Brasov for the Management of Energy & Environment (ABMEE)	Romania
Building Research Establishment Limited (BRE)	UK
Energy Institute Hrvoje Požar (EIHP)	Croatia
European Photovoltaic Industry Association (EPIA)	EU
Scientific and Technical Chamber of Cyprus (ETEK)	Cyprus
Sofia Energy Centre (SEC)	Bulgaria
Technical Chamber of Greece –Western Crete (TEE)	Greece
Tecnalia Robotiker (TECNALIA)	Spain

WP5 LEADER

BRE

DELIVERABLE EDITOR

EPIA

CONTRIBUTORS

ABMEE, BRE, EIHP, ETEK, SEC, TEE, TUC, TECNALIA

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1. Executive Summary

The EU is characterized by a heterogeneous set of certification schemes for micro-RES which varies a lot in ownership, costs and quality. For PV the situation is similar and in cases more complicated since there are countries with more than one certification scheme with different requirements for each. Furthermore, countries new to PV either due to lack of political and market initiatives or due to lower potential have no certification scheme developed, no proper or recognised training courses or even an agreed definition of what a PV installer is.

This report aims to present a roadmap of how the PVTRIN certification scheme could fit all the different countries' situations mentioned above and be adopted accordingly in order to be sustainable in the future. The adoption could refer to full "PVTRIN certification and training course" package adoption or best possible incorporation to the existing schemes. Such adoption and further promotion after the completion of the project the scheme could survive and naturally evolve, following the needs and the trends of the PV industry and market. The roadmap could be an easy tool for the decision/policy makers to apply the PVTRIN scheme in short and mid-term future.

To ensure this safe transferability of the PVTRIN scheme, the consortium worked towards the direction of:

- Producing outcomes that comply with the RES Directive requirements
- Consolidating and Integrating transnational data and exploiting synergies with PV stakeholders and relevant initiatives
- Examining different Scenarios to facilitate adaptability
- Encouraging "ownership" of the certification schemes in different Member States
- Networking and disseminating the PVTRIN scheme at a European level

2. Introduction

PV technology has grown over the past decade at a remarkable rate – even during difficult economic times – and is on the way to becoming a major source of power generation for the world. After record growth in 2011, the global PV market stabilised, with capacity additions in 2012 slightly above those achieved in 2011.

At the end of 2009, the world's cumulative installed PV capacity was approaching 24 GW. One year later it was 40.7 GW and at the end of 2011 it was 71.1 GW. **In 2012, more than 100 GW of PV are installed globally — an amount capable of producing at least 110 TWh of electricity every year.** This energy volume is sufficient to cover the annual power supply needs of over 30 million European households.

Europe

Europe remains the world's leading region in terms of cumulative installed capacity, with more than 70 GW as of 2012. This represents about 70% of the world's cumulative PV capacity (compared to about 75% of the world's capacity in 2011).

Europe's market development is the result of a few countries that have taken the lead year after year, with Germany showing a constant commitment from policymakers to support the development of PV.

After the Spanish boom in 2008, Germany was the only leading market in 2009, and consequently European growth as a whole was limited. This can be seen in retrospect as a consequence of the first phase of the financial crisis but also a year of stabilisation after the boom PV experienced in 2008. Major growth returned in 2010, with Germany scoring unprecedented installation numbers, and Italy and the Czech Republic adding together close to 3.8 GW of PV systems. As in Spain and the Czech Republic, overheated market development can produce a boom in one year and a bust in the next, as a result of pressure from conventional energy producers and policymakers concerned about the rapid growth of the market. In 2011, the combined boom of Italy's connections and Germany's installations led again to huge growth. France's growth in 2011 was at least partly due to its connection of projects installed in 2010 and consequently in 2012, the French market went down as expected. In 2012, the record year of Germany allowed the European market to keep a reasonable level of 17.2 GW, with 11 GW coming from this country and Italy alone. Behind these two, the UK, Greece, Bulgaria and Belgium provided a large part of the market development.

The evolution of the European PV cumulative installed capacity from 2000 until 2012 is shown in Fig.1 below.

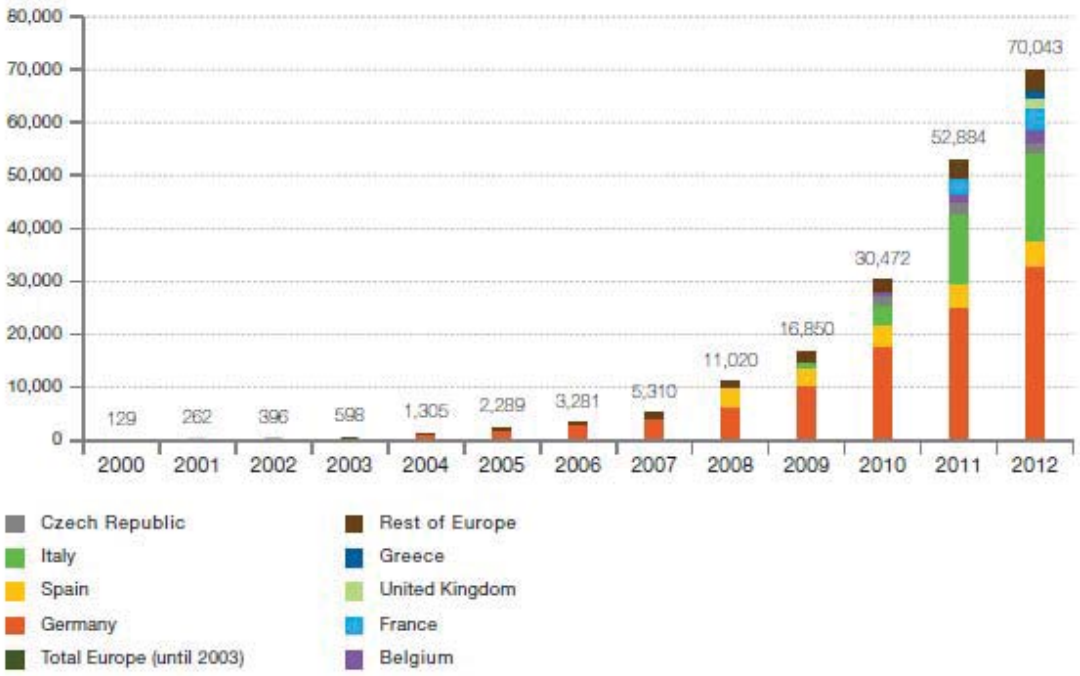

Figure 1: Evolution of European PV cumulative installed capacity 2000-2012 (MW) [1]

Considering newly connected systems, 2012 showed the first PV market decline in Europe since 2000, mainly due to the end of the boom in the Italian market (which was the world's largest in 2011) while the rest of the European market stabilised. Had Italy experienced a more reasonable market level in 2011, the PV market would have stabilised from 2010 to 2012 or experienced slight growth.

Overall, the future of the European market is uncertain for the coming years. The drastic decrease of some FiT programmes will push some markets down in 2013, even though a few emerging markets in Europe could offset any major decline. Given these new conditions, the short-term prospects for the European markets are stable in the best case or declining. In a Business-as-Usual scenario, without support from policymakers to PV, the transition could be quite painful over the next two or three years. In a Policy-Driven scenario, the market could stabilise in 2013 and grow again from 2014 onwards, driven by the approaching competitiveness of PV and emerging markets in Europe.

A market forecast until 2017 can be seen in Fig.2. The forecasting method that has been used by EPIA takes into consideration market trends, support schemes' evolution as well as potential political and economical volatility that can take place over the following years and can have an impact within a timeframe of 5 years on the development of the PV market. Experience showed that longer forecasts are not considered valid enough since the deviation from the actual yearly market can be rather significant. The PV market is driven and affected by different and unstable factors that are being taken into account as mentioned above but can hardly be predicted beyond 5 years. Short term forecasts such as the one presented below are considered more realistic and concrete enough to base other analysis such as this roadmap.

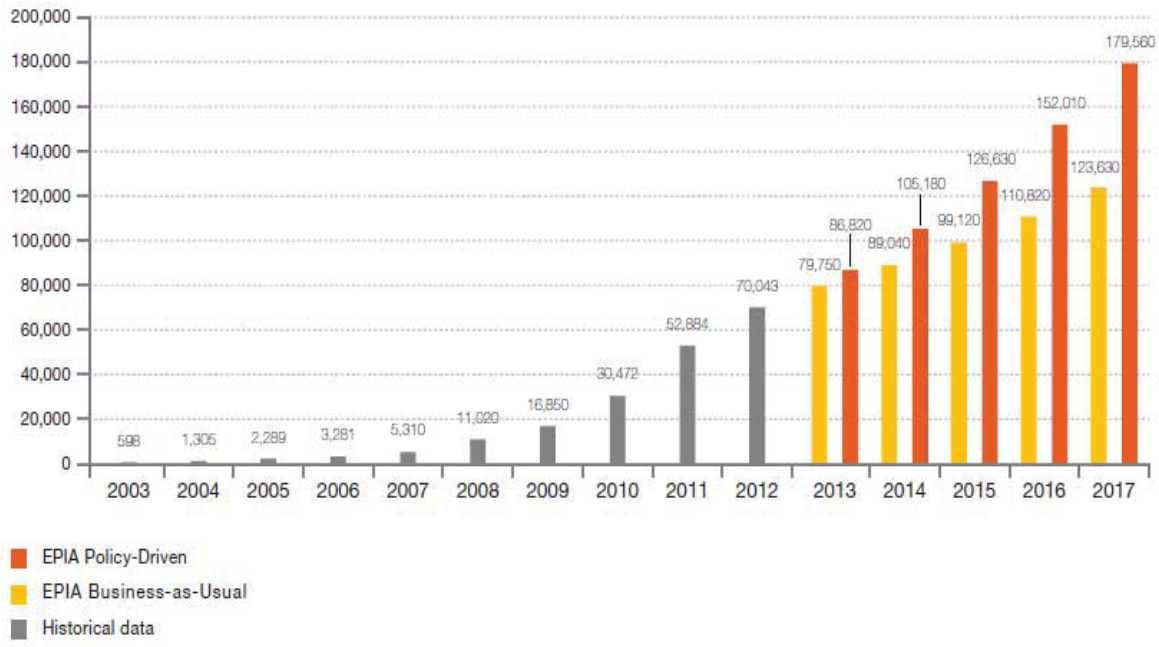

Figure 2: Cumulative Scenarios until 2017 based on different scenarios – Europe [1]

Segmentation

The European PV market remains quite heterogeneous, with diverse segmentation from one country to another. The market segmentation has been split to distinguish among ground-mounted systems, commercial and industrial rooftop applications and residential applications. The segmentation is not classified according to standard sizes, since the size of system largely depends on the respective structure of support schemes, country by country. In general, the commercial segment should be distinguished from the residential segment not only according to the system size but also the nature of the investor (private or public person) and the regime of retail electricity prices he is submitted to. The same classification can be applied to distinguish between commercial and industrial segments, according to the electricity price contracts. The PV cumulative capacity segmentation in 2012 is displayed in Fig.3.

Market segmentation in Europe remained roughly stable in 2012 compared to 2011. But given the recent changes in regulatory frameworks, the ground-mounted segment will probably decline considerably in Europe in 2013. Overall a large share of the market in Europe is concentrated in the commercial and industrial rooftop segments; this trend will continue, based on the foreseen evolution of the legal framework. The residential segment has developed rapidly in some countries, such as Belgium, Greece and the UK.

It is important to keep in mind that in terms of number of systems and installations the residential sector exceeds by far the other segments, underlying the importance of high quality work from a roof-top PV installer.

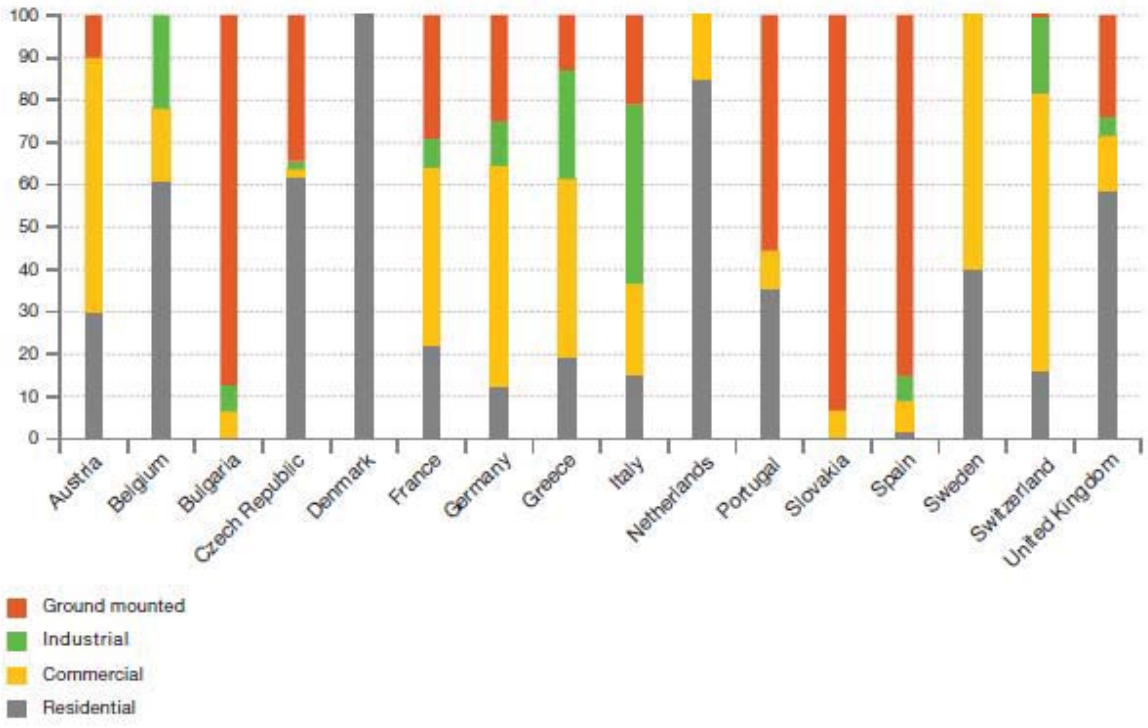

Figure 3: European PV Cumulative Capacity Segmentation in 2012 (%) [1]

The above highlight two things. One is the importance of having well trained and certified PV installers for small scale and roof top applications since this sector will continue bring significant value to Europe and the second is the important role that the PVTRIN scheme can play towards that direction.

2.1 Scope of the EU roadmap

Rationale

PVTRIN clearly and with sufficient level of detail lists the cross cutting requirements for the PVTRIN certification scheme as well as the local requirements that PVTRIN had to comply with in order to be adopted by the six countries during the course of this project.

The package includes a step-by-step approach towards accreditation of the training course, an approved qualification scheme and consequently a certification scheme which, by virtue of its accreditation requirements, will be recognised throughout EU. More specifically the interested parties can find among the deliverables the list of criteria and appropriate metrics for trainers, trainees and the training centres that should be used by a national organisation for assessment, all the different state of the art requirements (applicable regulations and directives, installation and

maintenance requirements, site specific issues, system performance, technical competencies, quality management and customer care) and a certification handbook for national assessors.

The latter provides a methodology to assess the quality of the PVTRIN certification scheme and the underlying training programme and ultimately to ensure that the reputation of the PV industry is maintained and improved, by ensuring that each PV installer that holds a certificate has successfully demonstrated all of the necessary knowledge, skill and competency requirements of the PVTRIN certification scheme (beyond the successful completion of the training course). The certification maintenance to ensure awareness of new regulations and technologies is included too in the PVTRIN package.

In order to make the best of use of the PVTRIN archive and successful outcomes and taking into consideration the EU need for wider implementation of a common scheme for PV installers that was described in the previous chapter an EU roadmap is built.

Objectives

The objectives of the EU roadmap are listed below.

- Stimulate **replication and utilization** of the project's outcomes in order to succeed in the wide adoption of the certification scheme **by as many EU member states as possible.** PVTRIN can be a useful tool for training providers, certification bodies and national authorities who wish to adopt the PVTRIN training and certification scheme

- Provide a **set of guidelines, instructions and plans** to follow based on the PVTRIN training and certification scheme and **according to the different market needs** that can facilitate the adoption by other EU MS.

3. European need for PV certification

The above featured and emphasized the EU need for PV certification. The reasons towards an EU recognised training and certification scheme as PV TRIN can be listed as below:

Certification and training are stimulating the PV market. The high market growth of photovoltaics as seen in the previous chapter has generated an increasing demand for qualified technicians to install, repair and maintain PV panels and systems. Furthermore, all stakeholders (manufacturers, developers, investors) seek the quality assurance that the certification of competences in all phases of the PV installation (design, installation and maintenance) provides.

> *A trained and certified PV installer enhances the quality of the installation, adapts more easily to different site requirements, improves the overall level of service, lowers the overall costs by increasing the productivity and avoiding unintentional failures and finally can improve the return of investment which is the most important factor for the investors, banks and financial institutes. For a future continuous sustainable growth of the PV market the above points are very important. PV systems and PV produced energy should be valorised the maximum possible especially in a post FiT era that is sun rising already today and will be in place in most of the EU countries the next few years. Quality of installation that is ensured via proper certification and training of the installers will be improved enhancing the confidence on the PV technology as such.*

Certification is required for growing and underpinning the reputation of the PV industry. Training and, more importantly, certification provides the customer with reassurance of the competence and technical expertise of the installer to complete a PV installation safely and effectively.

> A certified PV installer maintains agreed standards and promotes confidence. By becoming a certified PV installer one gains a professional advantage to be distinguished from the competition and have the opportunity to join the European skilled workforce database.

Additionally, certification schemes such as **PVTRIN greatly contribute to the creation of new jobs** as a result of the development of specialisations that improve confidence in both the technology and the industry. Green employment is one of the values created within a Green Economy in EU and is of major importance on the EU agenda today and in the coming years.

The PVTRIN scheme is designed to fulfil the regulatory requirements of 2009/28/EC. Article 14 of the RES Directive on the promotion of the use of energy from renewable sources (2009/28/EC) obliged EU MS to develop a mutually recognized certification framework by December 2012. PVTRIN offers a readymade solution to all member states where this framework is still incomplete and challenging for the future.

In a market such as PV that still lives its growth phase and is expected to cover more than 4% (between 4% and 8%) of the electricity consumption in EU until 2020 all the above matters are very important [2].

4. Different market needs within EU

In order to meet the objectives of the EU roadmap five different clusters were created that represent different market needs. The reason for this grouping is to facilitate the interested stakeholder to identify easily the country's status, needs and necessary steps to facilitate adoption of the PVTRIN scheme upon use of the necessary mechanisms and contacting the relevant actors.

The five different clusters – "Market types" and the respective needs are summarized below in Table 1. A definition of the market needs is given too.

Table 1: Different market needs identified within PVTRIN roadmap

Market type	Certification scheme	Qualification scheme	Training program / infrastructure	Professional networks	Definition of PV installer
Mature market					
Developed market					
Developing market					
Basic market					
New market					

= exists
= doesn't exist

Certification scheme: This market need refers to the existence of a process that includes the assessment of the trainee's/ PV installer's knowledge of PV systems and practical installation skills. The trainees' will have to demonstrate to a third party (accredited certification body) that have the overall capacity to install a PV system safe and efficient. The certification scheme includes maintenance certification procedure normally through refresher events and/or seminars.

Qualification scheme: This market need refers to the existence of an officially recognised training course that can be delivered by an accredited training organisation or a national recognised organisation responsible for issuing a qualification. The qualification scheme is the roadmap for achieving a professional certification.

Training program / infrastructure: This market need refers to the existence of training program developed partly or fully for photovoltaic technology and updated on matters of new technologies and current national and European related legislation. This training program should provide trainees with all the necessary knowledge (theoretical and practical) and therefore proper state-of-the-art infrastructure is required. Such training programs can be delivered by universities, institutes, public

institutions or other training organisations and can be in the form of short or long term seminars or in the best case accredited training programs.

Professional networks: This market need refers to the existence of professional networks that involve key actors that are related to the photovoltaic sector. These networks act normally as consultants and supporting instrument being a link with the local decision makers reinforcing networking activities. Such networks might include ministries, regulatory authorities, associations, employer associations, universities, institutes etc.

Definition of PV installer: This market need refers to the existence of a recognised qualification title that possibly is based on relevant occupation codes and clearly incorporates a set of knowledge and skills that are required to perform this profession.

5. PVTRIN meeting the different market needs

Judging by the different PV market needs that exist among EU Member States it is sensible for the efficient and smooth adoption of PVTRIN that respective methods should be followed. In this chapter it is described how can PVTRIN scheme enter different countries based on which category they belong. Appendix D provides some additional help to identify in which category some Member States fall into.

Mature PV market

The PVTRIN training and qualification may be included in the existing training course and the qualification can contribute to some or all of the training/qualifications requirements of the existing certification process.

That can be done by assessing the openness of the market to new entries and identifying and contacting the actors. Compare the PVTRIN training course and certification scheme requirement with those of existing schemes in the identified markets. Identify areas of equivalence with existing training and certification requirements, and where there are differences works with the identified actors to adapt PVTRIN so that it is considered equivalent to some or all of the requirements of the existing scheme(s). A simplified approach for PVTRIN scheme to be adopted by mature markets is presented in Fig.4. Relevant regions for this cluster are again mostly Central and Western EU countries with a certification scheme in operation (see Appendix D).

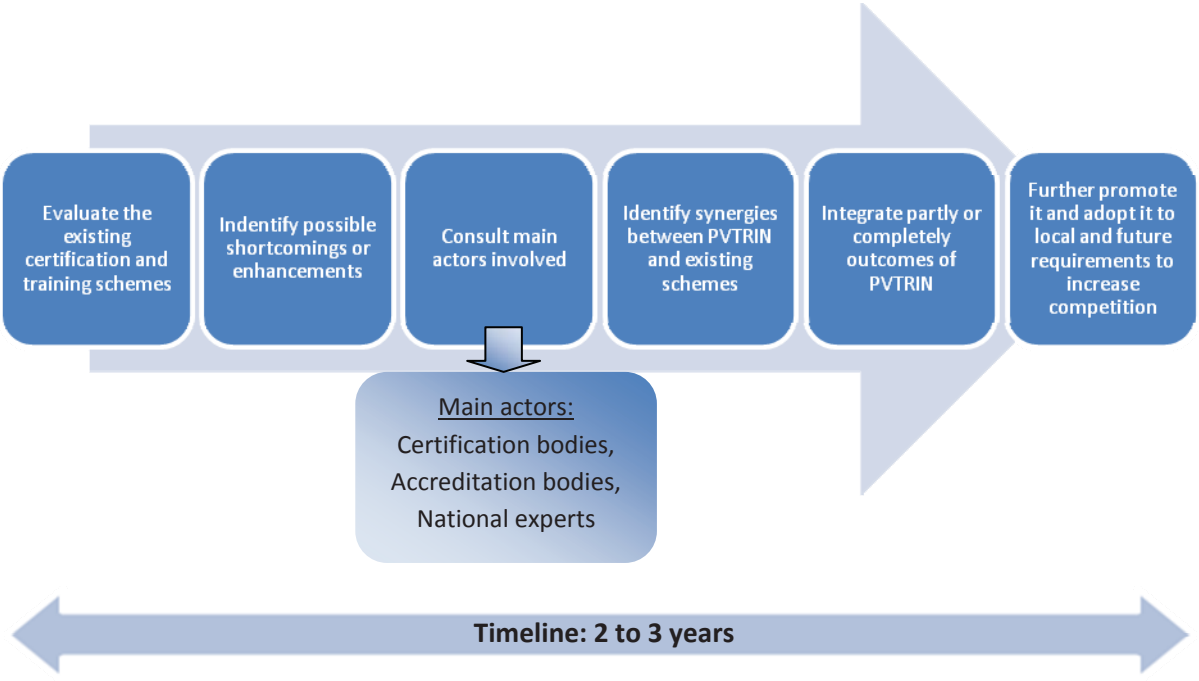

Figure 4: Simplified approach for PVTRIN scheme to be adopted by mature markets

Developed PV market

Offer the PVTRIN certification scheme package (i.e. certification requirements, accreditation routes for training courses and certification bodies, recognition of training courses and certification requirements).

The exploitation route is similar to that of the mature market, but work with actors to gain recognition and accreditation of the PVTRIN certification scheme instead of seeking equivalence with existing schemes. A simplified approach for PVTRIN scheme to be adopted by developed markets is presented in Fig.5. Relevant regions for this cluster are again mostly Central and Western EU countries as well as countries like Croatia and Italy with existing training courses but not developed certification scheme.

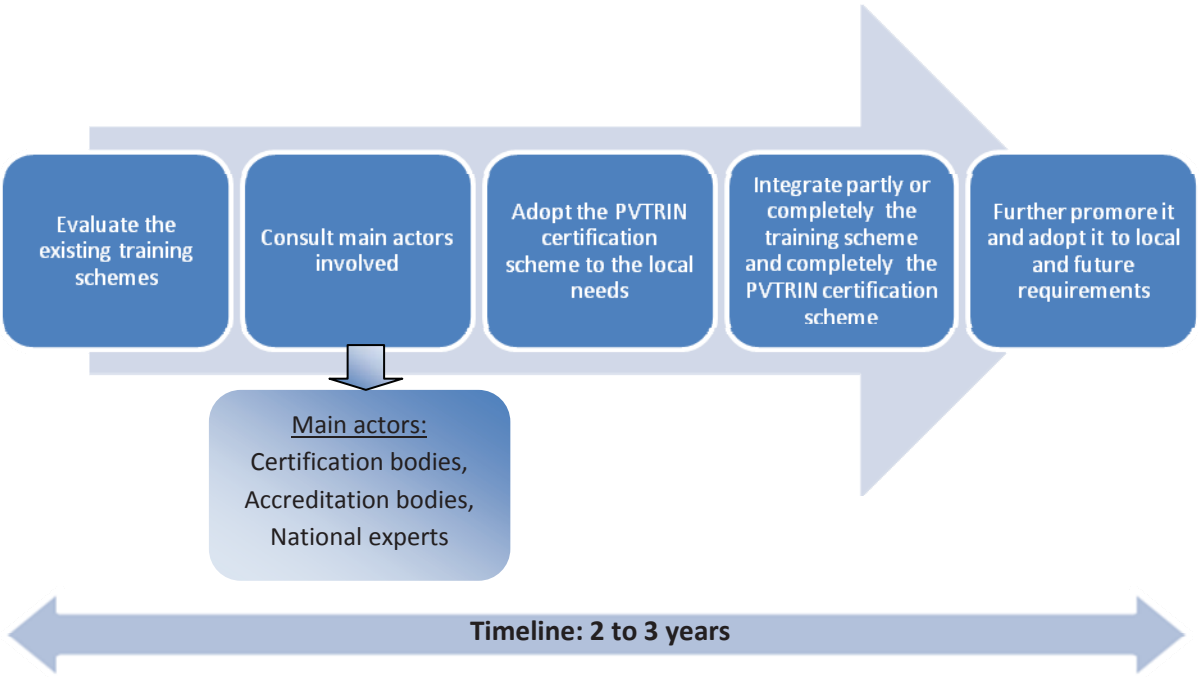

Figure 5: Simplified approach for PVTRIN scheme to be adopted by developed markets

Developing PV market

Offer the training course package, examinations and the certification scheme. Help identify the accreditation routes for training organisations and certification bodies.

As developed market but also seek recognition by national bodies of the PVTRIN training course. Work with training organisations in the identified markets to adopt and offer PVTRIN training. A simplified approach for PVTRIN scheme to be adopted by developing markets is presented in Fig.6. Relevant regions for this cluster are mainly North Europe, Central East EU countries, Portugal etc.

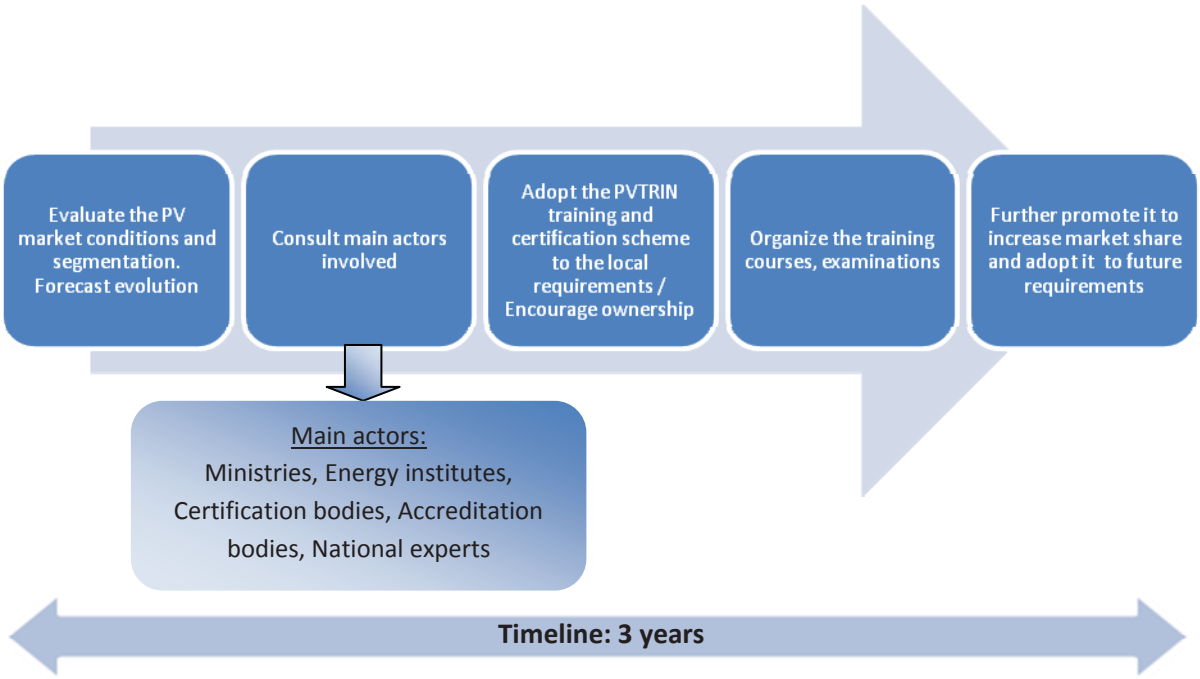

Figure 6: Simplified approach for PVTRIN scheme to be adopted by developing markets

Basic PV market

Offer all-the above package and additionally the coordination of the different actors and the creation of professional networks, possibly through the setting up of a National Consultation Committee.

As developing market, but also identify actors for the development and recognition of new professional networks. A simplified approach for PVTRIN scheme to be adopted by developing markets is presented in Fig.7. Relevant regions for this cluster are mainly East EU countries and some Balkan countries.

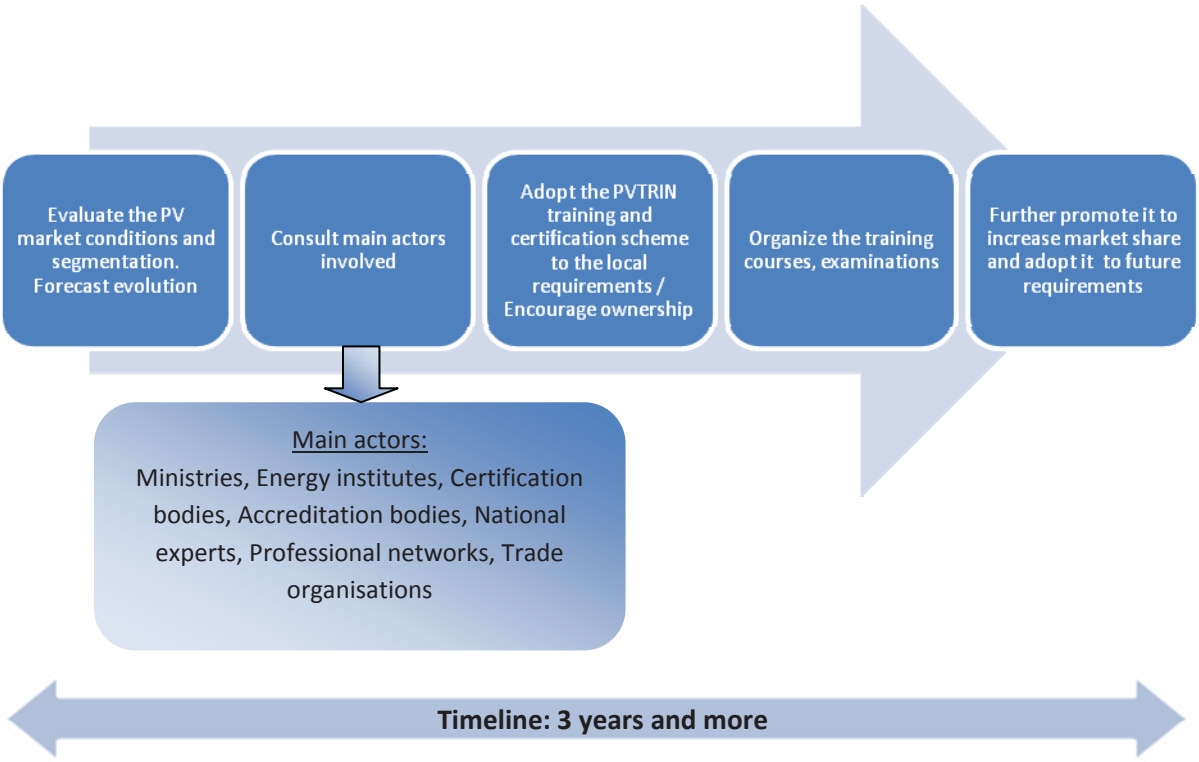

Figure 7: Simplified approach for PVTRIN scheme to be adopted by basic PV markets

New market

This situation is very similar to that of the partner countries at the beginning of the PVTRIN project.

Identify relevant actors and work with these to set up a National Consultation Committee in each territory to implement the outputs of the PVTRIN project (e-learning, training course, certification scheme etc.). The NCC could also identify the regulatory framework for PV installations and facilitate the setting up of professional networks. A simplified approach for PVTRIN scheme to be adopted by developing markets is presented in Fig.8. Relevant regions for this cluster are mainly countries similar to the ones with basic PV market needs.

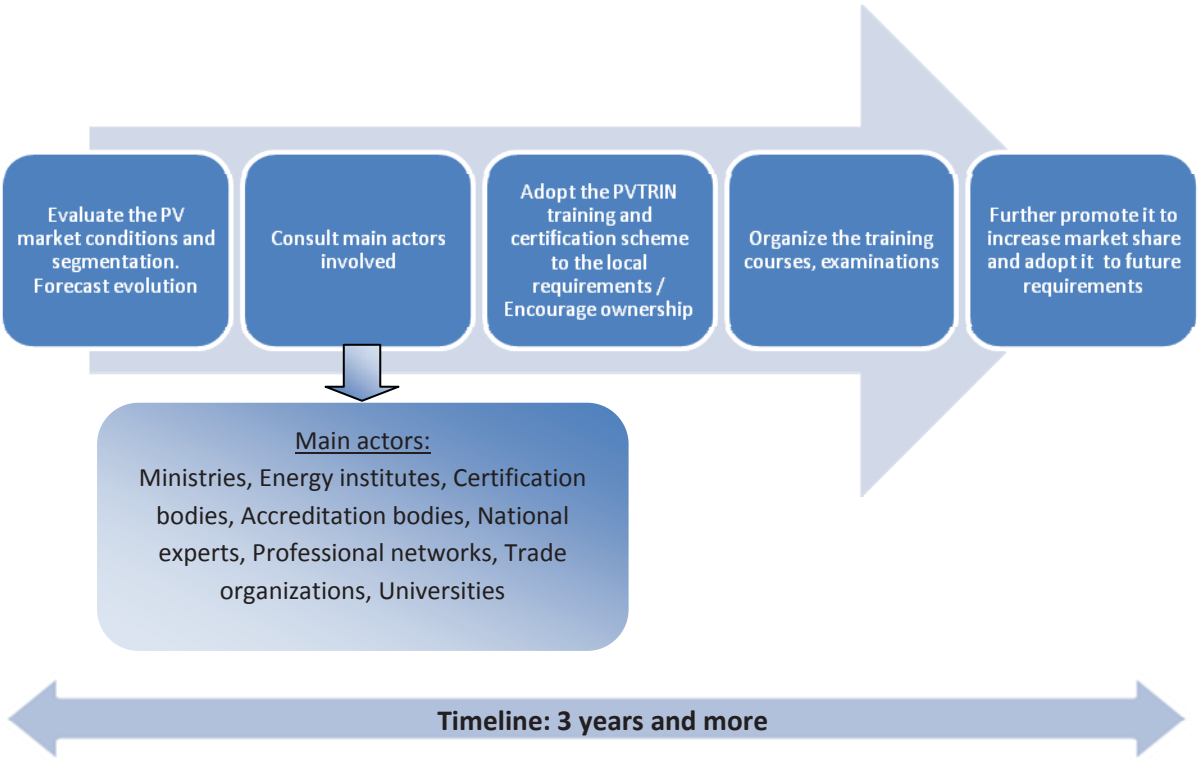

Figure 8: Simplified approach for PVTRIN scheme to be adopted by new markets

6. General approach / Main stakeholders involved

Having identified the type of market and understanding the type of interaction with PVTRIN that is possible, the adoption of the PVTRIN certification scheme may be promoted through a number of mechanisms and actors. Those actors form a consultant tool that could guide the interested party towards the best possible results based on the local requirements. Those are:

- **Concerted Action for RES (CA-RES) – *see Appendix A***
  - Ministries (e.g. Energy, Industry, Employment)
  - Energy Agencies
  - National Research Centers and Laboratories
  - Energy Institutes

- **Certification bodies –** existing PVTRIN certification bodies either independently or working with certification bodies in the identified market.

- **Accreditation bodies –** by facilitating the accreditation of training organisations and certification bodies. ***– see Appendix B***

- **National Bodies for training and qualifications** – by recognising and promoting the PVTRIN training course and certification scheme. ***– see Appendix C***

- **Trade organization and professional networks** (e.g. electricity and PV associations) - by promoting the benefits of the PVTRIN (and other) training courses and certification schemes

- **Universities, Training Organisations and National Experts –** by adopting the PVTRIN training course and/or certification scheme and contributing to the adaption to national requirements of the certification scheme.

- **EPIA + other PVTRIN partners –** through promoting the PVTRIN certification scheme and providing assistance to local organisations in the setting up and operation of the PVTRIN training course and certification scheme. ***– see Appendix D***

References

[1] "Global Market Outlook, for Photovoltaics 2013-2017", EPIA, 2013

[2] "Connecting the sun, PV on the road to large scale grid integration", EPIA, 2012

Appendices

Appendix A - Concerted Action supporting the transposition and implementation of Directive 2009/28/EC on energy from renewable sources CA-RES / National representatives

Country	Organisation
Austria	Austrian Energy Agency (AEA)
Belgium	Service Public de Wallonie (SPW)
Bulgaria	Ministry of Economy, Energy and Tourism (MEET)
Croatia	Ministry of Economy (MINGO)
Cyprus	Ministry of Commerce, Industry and Tourism (MCIT)
Czech Republic	Ministry of Industry and Trade (MIT)
Denmark	Danish Energy Agency (DEA)
Estonia	Ministry of Economic Affairs and Communications (MKM)
Finland	Ministry of Employment and the Economy (TEM)
France	Direction générale de l'énergie et du climat (DGEC)
Germany	Federal Ministry for the Environment, Nature Conservation & Nuclear Safety (BMU)
Greece	Center Renewable Energy Sources (CRES)
Hungary	Hungarian Energy Office (HEO)
Iceland	Ministry of Industries and Innovation (ANR)
Ireland	Department of Communication, Energy & Natural Resources (DCENR)
Italy	Energy Service System Operator (GSE)
Latvia	Ministry of Economy (EM)

Lithuania	State Enterprise Energy Agency (ENA)
Luxembourg	Ministry of Economy and External Trade (MINECO)
Malta	Malta Resources Authority (MRA)
Netherlands	NL Agency (ANL)
Norway	Ministry of Petroleum and Energy (OED)
Poland	Polish National Energy Conservation Agency (KAPE)
Portugal	National Energy and Geology Laboratory (LNEG)
Romania	Ministry of Economy, Trade and Business Environment (MECMA)
Slovakia	Slovak Innovation and Energy Agency (SIEA)
Slovenia	Ministry for Infrastructure and Spatial Planning (MZIP)
Spain	Institute for the Diversification and Energy Saving (IDAE)
Sweden	Swedish Energy Agency (STEM)
United Kingdom	Energy Saving Trust (EST)

Appendix B - Signatories to the European Co-operation for Accreditation Multilateral Agreement (MLA)

Country	National Accreditation Body
AUSTRIA	BMWFJ
BELGIUM	BELAC
BULGARIA	BAS
CROATIA	HAA
CZECH REPUBLIC	CAI
DENMARK	DANAK
ESTONIA	EAK
FINLAND	FINAS
FRANCE	COFRAC
GERMANY	DAkkS
GREECE	ESYD
HUNGARY	NAT
IRELAND	INAB
ITALY	ACCREDIA
LATVIA	LATAK
LITHUANIA	LA
LUXEMBURG	OLAS
MALTA	NAB-MALTA
NETHERLANDS	RvA
NORWAY	NA
POLAND	PCA
PORTUGAL	IPAC
ROMANIA	RENAR
SLOVAKIA	SNAS
SLOVENIA	SA
SPAIN	ENAC
SWEDEN	SWEDAC
SWITZERLAND	SAS
TURKEY	TURKAK
UNITED KINGDOM	UKAS

Appendix C - National Contact Points (NCPs) for the European Qualifications Framework

Country		EQF National Coordination Points Institution (in national language(s) and English)
Austria		NKS Coordination Point for the NQF in Austria – OEAD / National Agency for Lifelong Learning NKS Koordinierungsstelle für den NQR in Österreich – OEAD / Nationalagentur Lebenslanges Lernen
Belgium	Flemish Community	Agentschap voor Kwaliteitszorg in Onderwijs en Vorming (AKOV) Flemish Agency for Quality Assurance
	French Speaking Community	Service Francophone des Metiers et des Qualifications
Bulgaria		дирекция „Международно и европейско сътрудничество”, Министерство на образованието, младежта и науката - International and European Cooperation Directorate, Ministry of Education, Youth and Science
Croatia		Ministarstvo znanosti, obrazovanja i športa – Ministry of Science, Education and Sports
Cyprus		Εθνικό Σημείο Συντονισμού, Υπουργείο Παιδείας και Πολιτισμού – Department of Technical and Vocational Education, Ministry of Education and Culture
Czech Republic		Národní ústav pro vzdělávání (NUV) – National Institute for Education
Denmark		Styrelsen for International Uddannelse – Ministry of Science, Technology and Innovation
Estonia		Sihtasutus Kutsekoda Estonian Qualifications Authority
Finland		Opetushallitus – Finnish National Board of Education
France		Commission National de Certification Professionelle
Germany		Bundesministerium für Bildung und Forschung – Federal Ministry of Education and Research
Greece		Εθνικός Οργανισμός Πιστοποίησης Προσόντων (ΕΟΠΠ) – National Organization for the Certification of Qualifications (E.O.P.P.)
Hungary		Nemzeti Eroforras Miniszterium - Ministry of National Resources
Iceland		Mennta- og menningarmálaráðuneytið / Ministry of Education, Science and Culture / Undervisnings-, forsknings- og

		kulturministeriet
Ireland		National Qualifications Authority of Ireland (NQAI)
Italy		Istituto per lo sviluppo della formazione professionale dei lavoratori. (ISFOL) – National Institute for Development of Vocational Training
Latvia		Akadēmiskās informācijas centrs – Academic Information Centre
Lithuania		Kvalifikacijų ir profesinio mokymo plėtros centras – Qualifications and Vocational Education and Training Development Centre
Luxembourg		Ministere de l'Education nationale et de la Formation professionelle
Malta		Malta Qualifications Council
Netherlands		Ministry of Education, Culture and Science
Norway		Nasjonalt Organ for Kvalitet i Utdanningen (NOKUT) - Norwegian Agency for Quality Assurance in Education
Poland		Biuro Uznawalności Wykształcenia i Wymiany Międzynarodowej - Bureau for Academic Recognition and International Exchange
Portugal		Agência Nacional para a Qualificação I.P – National Agency for Qualifications
Romania		National Authority for Qualifications (NAQ)
Continued on next page		
Slovakia		Národný ústav celoživotného vzdelávania National Institute for Lifelong Learning
Slovenia		Center RS za poklicno izobraževanje (CPI) - National Institute for Vocational Education and Training
Sweden		Myndigheten för yrkeshögskolan (YH) - Swedish National Agency for Higher Vocational Education
Spain		Ministerio de Educación - Ministry of Education
Turkey		Mesleki Yeterlilik Kurumu Vocational Qualifications Authority
United Kingdom	England and Northern Ireland	Office of Qualifications and Examinations Regulation (Ofqual) Council for the Curriculum, Examinations & Assessment (CCEA)
	Scotland	Scottish Credit and Qualifications Framework Partnership (SCQF)
	Wales	Llywodraeth Cynulliad Cymru Welsh Government

Appendix D – Existence of Certification and Training Course schemes per EU Member State / National Association Contacts

EU Member State	Existence of Certification scheme	Name of certification	Existence of Training course	National Association Contact
Austria	YES	(Austrian institute of technology)	YES	Photovoltaic Austria - office@pvaustria.at
Belgium	YES	PV QUAL, QUEST, Q-DIRECT	-	PV Vlaanderen - info@ode.be Edora - info@edora.be
Bulgaria	NO		YES	BPVA - office@bpva.org
Croatia	NO		NO	-
Cyprus	NO		-	-
Czech Republic	-		-	CZEPHO - secretariat@czepho.cz
Denmark	-		-	Dansk Solcelleforening - sekretariat@solcelleforening.dk
Estonia	-		-	
Finland	-		-	Finnish Solar Energy Society
France	YES	QUALIBAT, QualiPV, Qualifelec	-	ENERPLAN - contact@enerplan.asso.fr Syndicat des Energies Renouvelables(SER) - contact@enr.fr
Germany	NO		YES	BSW - Bundesverband Solarwirtschaft - info@bsw-solar.de
Greece	NO		NO	HELAPCO - Hellenic

Hungary	-		-	HUPIA- Hungarian PV Industry Association - info@manap.hu
Ireland	-		-	
Italy	NO		YES	Assosolare - info@assosolare.org GIFI - gifi@anie.it APER - info@aper.it
Latvia	-		-	-
Lithuania	-		-	Photovoltaic Technology and Business Association - paulius@pvatvirainovacija.lt
Luxembourg	-		-	-
Malta	-		-	-
Netherlands	NO	(certif. scheme operated by the KBI Foundation)	-	Holland Solar - hollandsolar@hollandsolar.nl
Poland	-		-	Polish Society for Photovoltaics - informacja@pv-polska.pl
Portugal	-		-	APISOLAR - apisolar@apisolar.pt APREN - info@apren.pt APESF - info@apesf.pt
Romania	NO	(only guidelines for a certification scheme)	-	-
Slovakia	-		-	SIEA Slovak innovation and energetic agency

Slovenia	-		-	-
Spain	NO	initiative led by AENOR and FENIE	-	APPA - Spanish Renewable Energy Association - termoelectrica@appa.es UNEF – Spanish Photovontaic Union - info@unef.es
Sweden	-		-	The Swedish National Board of Housing, Building and Planning - hanna.karlsson@boverket.se Swedish Energy Agency - lina.groth@energimyndigheten.se
United Kingdom	YES	MCS	YES	British Photovoltaic Association - info@bpva.org.uk Solar Trade Association - enquiries@solar-trade.org.uk MCS - http://www.microgenerationcertification.org/about-us/contact-us