

An innovative project on Training on Renewable Energy solutions and energy Efficiency in retrofitting (REE_TROFIT)

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Abstract:

REE_TROFIT project (founded by EU Commission in the IEE programme) aims to contribute to solve the shortage of local qualified and accredited retrofitting experts, as foreseen in the EPBD and its recast - and as indicated by various European countries in an assessment by the EC - for increasing the energy performance of the existing building stock. REE_TROFIT will use in-house, the know-how and experiences of participants in carrying out vocational courses on innovative eco-building technologies. REE_TROFIT project define best practices for institutionalization and implementation of vocational courses on renewable energy solutions and energy efficiency in retrofitting, set up and implement a large-scale educational scheme and by fostering exchange of knowledge and best practices among stakeholders.

One of the major milestones of REE_TROFIT project is to raise awareness in the regional, national and European policy makers for the full implementation of the EPBD and its recasts. Additionally, during its lifespan, it intends to define an exploitation strategy for assuring the sustainability of training beyond the project duration and increase the local retrofitting markets.

Keywords:

Retrofitting, training, courses, energy.

1. Introduction

The failure to increase energy performance of existing building stock as foreseen in the EPBD and its recast - and as indicated by various European countries in an assessment by the EC - lies in the shortage of local qualified and/or accredited retrofitting experts, the main reasons being:

- Building professionals are still not enough aware of the urgency for implementing low-energy retrofitting techniques for energy saving based on EPBD requirements.
- Building professionals are insufficiently trained on the available low-energy techniques and technologies for retrofitting.

- Building professionals are not enough prepared to convincingly propose and properly apply available most up-to-date techniques and technologies for retrofitting.
- Building professionals show limited motivation for (re)qualification programmes unless proper incentives are put in place (e.g. institutionalization of training).
- Lacking of vocational training programmes on low energy retrofitting techniques and technologies.

The REE_TROFIT Project, started 01/05/2010 to 30/04/13 and funded by the IEE Programme, aims to use in-house, know-how and experiences of participants in carrying out vocational courses on innovative eco-building technologies to define best practices for institutionalization and implementation renewable energy solutions and energy efficiency in retrofitting. It sets up and implement a large-scale educational scheme in 6 MS for training more than 450 building professionals and fosters exchange of knowledge and best practices among stakeholders, provides suggestion to regional, national and European policymakers on how to incentivize the local retrofitting markets for full implementation of the EPBD and defines an exploitation strategy for assuring the sustainability of training beyond the project duration.

The most important scope of the project is to increase the energy performance of the existing building stock, not only building professionals and technicians from SMEs, which are its primary targets, but also citizens, public authorities and trainers, policy makers, house owners, housing and consumers associations.

The REE_TROFIT training scheme is founded on an innovative educational model specifically targeted for the building professionals; the adopting REE_TROFIT training model offers the following attractive features:

Flexibility: is applicable in contexts with different regulatory frameworks, climate, landscape restrictions, qualification levels of learners, etc.

Transferability: is capable of responding to local training needs through methodologies and tools transferable at European level

Innovation: is accessible, affordable and capable of overcoming the problems encountered by previous training program experimented in the partnering countries.

Modularity: offers different training programs which are composed of independent, closed, domain-specific modules that may be activated according to the different training needs

Brevity: offers training courses with a short duration, which are decomposed in shorter training tracks in order to ease the attendance of the targeted professionals

Plurality: different training methods, tools and media might be used in the training process in order to take in regard the trainees needs and to guarantee effectiveness

Interactivity: in order to ensure the active involvement of trainees

Open: can be implemented and replicated in different potential training environment also supported or co-designed with the market leading companies

Pragmatism: is committed to providing high quality and accessible training opportunities to each trainees and effective skills and competence readily applicable in their workplace

Efficiency: allows professional to grow in their jobs and Literature Review

2 REE_TROFIT Project Objectives

The project wishes to establish itself as a key reference in the field of retrofitting experts training, offering advanced training courses for regional, national and European policy makers. It will also serve as an efficient dissemination tool for building professionals and technicians wishing to demonstrate their capabilities and can be used as a useful information tank for citizens willing to learn more about the sector.

REE_TROFIT project intends to reach a series of short term, mid term and long term objectives which are indicated below:

- Raise awareness in the regional, national and European policy makers for the full implementation of the EPBD and its recasts;
- Define best practices;
- Plan, implements and institutionalizes an European vocational training programme including training resources and internal review workshops;

Provide eco-building repository and on-line tools to:

- Improve training courses effectiveness and productiveness
- Ease trained professionals to reach the retrofitting market and give them visibility toward HO and HCA
- Involve the final consumer and its associations offering them the possibility to identify, via website, which professionals have been trained and what did they achieve, igniting a virtuous circle of trust
- Share feedbacks and shining examples from trained professionals
- Carry out 3 cycles of vocational training in the 6 participating countries for Construction Professionals, Electrical Installers and Thermo-Hydraulic Installers, concerning energy efficient buildings retrofitting
- Define a localised training model in agreement with the partner countries leading to the sharing of crystal clear expertise, regardless of the country of origin of participants

During the lifespan of the project, the REE_TROFIT project consortium will define and implement a strong communication and dissemination strategy as well as a coherent validation strategy, in order to make sure the benefits and opportunities available are rightly spotlighted and that the project impact is driven and maximised.

One of the measurable tangible successes of REE_TROFIT project will lay in the fact that at least over 80% of the trainees will evaluate that they have improved their skills in retrofitting solutions. Sustainability will be reached contributing to an estimated saving of 75 TOE of CO² in retrofitted buildings, over the decade.

3 Research Methodology

An Internal Quality Handbook has been drafted in order to ensure the smooth running of the REE_TROFIT activities to be carried out following a coordinated and commonly agreed approach.

In order to implement the correct strategies and the institutionalisation of training courses, the partners group is carrying out an assessment to understand the local state of the art in terms of vocational training institutionalization, existing incentives for supporting the organisation and subscriptions to training courses, vocational training offer pertinent to REE_TROFIT themes. This interesting survey revealed so far a rather inhomogeneous situation throughout the various partnering countries. A particular case was evidenced in France where an institutionalized training programme has already been structured, implemented and running for years.

In detail, the italian partner ABITA (<http://www.centroabita.unifi.it/mdswitch.html>), with support from all partners, has developed a validation methodology aiming at assessing the added value of the project and the impact achieved on market directly from end users.

The strategy will consist of a manual with feedback forms and questionnaires that is translated in national languages. These forms are in common for all countries and contain enough quality information to provide both a quality and a quantitative assessment of the value and the impact of the project. The main components of the strategy will be:

Feedback forms for trainees that are used for assessing the perceived and experienced added value by trainees at the end of each course: they serve to understand the correspondence with market of the skills and knowledge provided (questionnaires at the end of the courses)

Feedback forms for trainers that are used for assessing the perceived and experienced added value by trainers (both internal trainers and external experts) and the quality of the training methodology. These forms are used during the review workshops for collecting feedbacks for improvements.

Energy saving questionnaires that are sent to all trainees at the end of the project for assessing and keeping a track record of the knowhow that has been used in real

life situations and the energy saving achieved in real case situations during refurbishments of buildings.

Analyses of feedbacks and quality assessment feedbacks will be periodically collected examine both in a quantitative and qualitative way following the validation strategy. Feedback analysis will serve for an immediate quality check of the quality delivered to end users.

Impact assessment and suggestions to Policy Makers feedback collected are also analyzed with the scope of improving the training methodology and extrapolating a realist impact of the project and of vocational training initiatives on local markets. They are used for raising awareness of regional, national and European policy makers. The final outcome are suggestions for policy makers on how to create, markets incentivize for qualified/certified retrofitters for full implementation of the EPBD.

3.1 The French model - FEE Bat

As an application of Grenelle law for building and of the 2005-781 law («Loi d'orientation sur l'énergie»), an ambitious training program enabling SME's and craftsmen to become energy efficiency key actors in the building sector, was implemented with the support of professional building organisations.

EDF (Electricité de France) decided to co-finance and to implement this program, together with Ademe (Agence de l'Environnement et de la Maîtrise de l'Energie), FFB (Fédération Française du Bâtiment) and CAPEB (Confédération de l'artisanat et des petites entreprises du bâtiment).

Objectives:

FEE Bat systematically: takes into account the energy and environmental dimension in the renovation processes; ensures the quality of work through a good coordination of the various interlocutors and through the capability to anticipate all potential implementation imperfections; increases the role of business and building craftsmen advisors in terms of global renovation and works packages; increases awareness in the professional sector about the available integrated energy efficiency solutions; allows building professionals to carry out adequate analyses and provide advices to their clients.

CAPEB and FFB have established their own label, namely “ECO Artisan®” (CAPEB) and “Pros de la performance énergétique” (FFB).

The following flowchart indicates the steps to be followed by the professionals to obtain the labels.

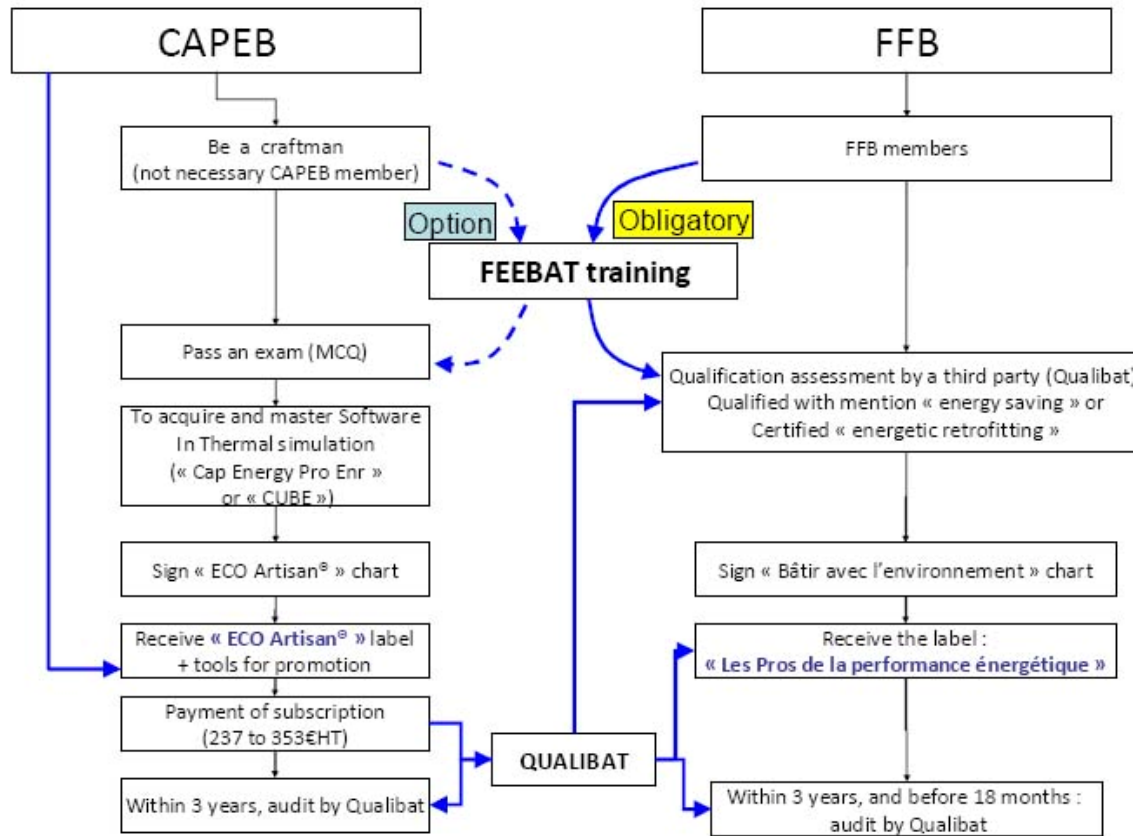


Figure 1. Graphical table of French model

3.2 Training Italian Model

The Italian model are based on the study of special case studies prepared by the research group for the training courses; this model follow an European vocational training including definition of templates for the training material and the guidelines on the training method. REE_TROFIT vocational italian training courses are addressed to the following categories of professionals:

- bricklayers, constructor professionals,
- plumbers, thermo hydraulic installers,
- electrical installers

who intend to develop ability in retrofitting techniques, technologies and products. The programs are developed in direct correspondence with the market of retrofitting and the skills required by professionals.

Case studies intend to document Best Practice of outstanding energy-efficiency and sustainability achievements in some retrofitted building and will be didactic material to give to trainees during the courses. Same Case studies with energy efficiency techniques are shown at the following web page <http://www.reetrofit.eu/content.php?p=cas>.

Courses will be carried out in three different training batches along the duration of the project.

3.2.1 Training Program For Electrical Installers

Addressed stakeholders: professionals from electrical installation SMEs: electrical installers, craftsmen, engineers and architects.

Topics and technologies: recast of the EPDB, energy and environmental certification of buildings, national and EU regulations, national and regional incentives for renewable energy generation, PV technologies, wind technologies, micro co-generators, field visit.

Skills developed: in-depth knowledge of current regulation, knowledge of the state of the art technologies for micro-generation of energy from renewable, choice and dimensioning of plants for residential buildings, basic knowledge on ancillary structural solutions for increasing the energy efficiency, experience on the field.

3.2.1 Training Program For Thermo-Hydraulic Installers

Addressed stakeholders: professionals with competences in thermal plant installation SMEs: plumbers and electrical installers, craftsmen, engineers and architects who wants to acquire practical skills.

Topics and technologies: recast of the EPDB, energy and environmental certification of buildings, national and EU regulations, heat and cold generators: condensing boilers, high efficiency air conditioners, absorption heat pumps, solar thermal systems, PV technologies, micro co-generators, ancillary structural solutions, field visits.

Skills developed: in-depth knowledge of current regulation, knowledge of the state of the art technologies for heat and cold generation and energy efficient retrofitting/construction of buildings, choice and dimensioning of plants, basic knowledge on ancillary structural solutions for increasing the energy efficiency, experience on the field.

3.2.2 Training Program For Construction Professionals

Addressed stakeholders: professionals from construction SME: bricklayers, craftsmen, engineers and architects.

Topics and technologies: recast of the EPDB, energy and environmental certification of buildings, national and EU regulations, building envelope: opaque, transparent and insulation elements, field visit.

Skills developed: in-depth knowledge of current regulation, knowledge of the state of the art technologies for integration of elements into the building structure for increasing the energy efficiency, choice and dimensioning of elements, basic knowledge on ancillary structural solutions for increasing the energy efficiency, experience on the field.

The first results coming from the first cycle courses, started in December 2010, are very useful to understand the real specific local needs in terms of training. In this phase the 3 training programmes will be revised with the experience done:

- the first draft of the REE_TROFIT training model;
- the trainers' guide;
- the training programme addressed to each target group and acting as a common reference for the localization in the partnering countries;
- the localized programme to be implemented in the partnering.

3.3 Website

The website (www.reetrofit.eu) reflects the localization requirements of each national partner of the project and provides localized specific information from the various partnering countries on training courses, related news, events, cases and relevant publications in the sectors targeted by the project.

The website is addressed to building professionals, trainers and training institutions, public authorities and citizens. It features an online repository which represents a perfect occasion for building professionals to showcase their working achievements and get their work spotlighted. Thanks to the online repository, citizens will get a better understanding on which building professionals have taken part to the REE_TROFIT training courses and what they achieved subsequently. Public institutions may also gain a deeper insight into the institutionalization of the REE_TROFIT training courses, while trainers will find in-depth information regarding the REE_TROFIT training model, the training courses organised in the various countries and relevant case studies identified.

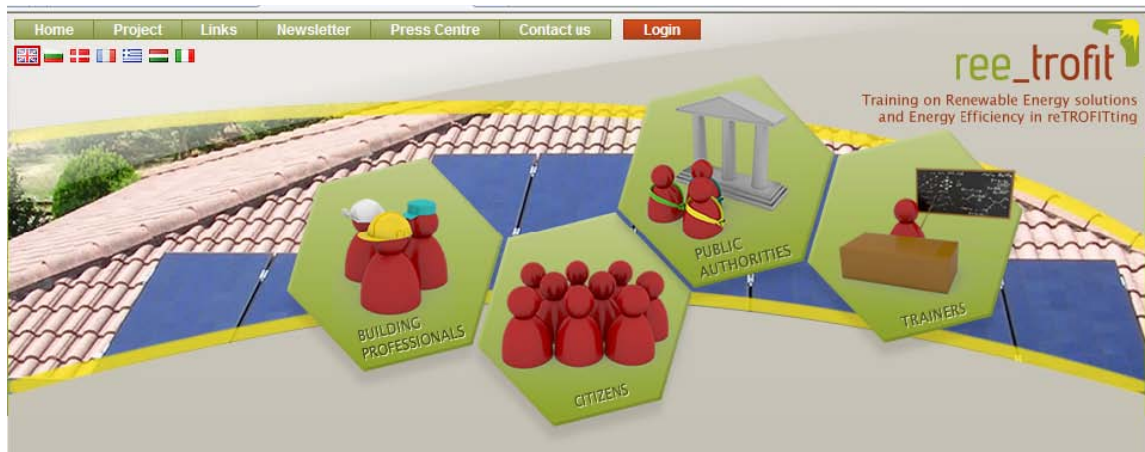


Figure 2. Graphical picture of the web site

The web takes the following information:

- Implementation of training programme in each country with the localization of all programmes, the selection and hiring of trainers, and have been identified the first batch of courses and scheduled the potential venues. Last but not least, the web takes the criteria for the selection of the applicant trainees.

- Preparation of training materials. The training materials (including PPT presentations, exercise, etc.) to download. Moreover, the feedback forms that will be delivered to all trained professionals at the end of a course to evaluate its global impact and adjust it wherever necessary for the next batch of courses is under process, will be published on the web site.
- Promotion and dissemination. The planning of the promotion campaigns, finalised for almost all partners, is in good shape and will be available on the web site, with the promotion and dissemination materials in order to efforts have to promote the Project at large.

4. Conclusion and Further Research

The REE_TROFIT project aims at establishing the resource base for massive replication of the developed European Training Programme through institutionalised vocational courses on retrofitting in several Member States (MS) beyond duration of the project. Regional and national stakeholders may replicate the training programme in all European languages (starting from English) and set up educational courses in order to speed-up the qualification of building professionals on low-energy retrofitting.

The strategic objectives of the REE_TROFIT project are:

- to develop an exploitation and roll out strategy for assuring the expected massive replication of training and a drastic acceleration of energy savings in existing buildings (through qualification of professionals in the retrofitting market). This objective will be accomplished by
 - Midium Term: carrying out at least 2 training course in each participating country beyond the project duration
 - Long Term: encouraging and stimulating other stakeholders to start up vocational training courses on retrofitting in 5 EU MS after the projects ends.

The REE-TROFIT project assume the continuation of training beyond project duration in 5 EU MS with a target of 20 participants to each course every year.

It is supposed a qualification of over 100 retrofitters per year with more than 1000 trained professionals in the next decennium. If on the average each trained professional in Europe refurbishes 50 houses with an average total floor area of 100 m² assuring a net reduction of 15 litres of equivalent heating oil per m² and year the total estimated saving over the decade could be 75 million of litres of equivalent heating oil saved.

The REE_TROFIT project is still on going, the first cycle of training courses started from December 2010 are terminated, and all the partners of the project are making feekback to trainers and trainees to collect information on the estimated savings produced by participants.

This first results are very useful to understand the real specific local needs in terms of training and to revise and refine the 3 training programmes which were originally developed by the partners

5. Acknowledgement

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