



Mutual Learning for Energy Efficient Retrofitting

O3-A4: Policy Brief

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1. INTRODUCTION

The LEARN-EER guidelines are designed to develop targeted guides, manuals, recommendations and supporting material to support the wider take-up and roll-out of the project. The following guidelines have been developed within the framework of the project:

- Guidelines for Peer-Learning are directly addressed to target agents (trainers and learners) have been developed based on all the results of the project. Within the guide we distinguish between 2 roles: professionals and future professionals have a learner role within the platform and secondly the . the trainers' role. . This way, 2 parts will be developed: Guidelines for sharing material and Guidelines for looking for material.
- Guidelines for Expert Moderation:: specially focused on those target agents considered as “experts” within the platform. They are allowed to intervene providing expert valuable training content to the platform. The guidelines define how this key users or intermediary bodies, such as sectorial, professional, associations, public bodies, training bodies, etc. can take on the role of moderators and ensure quality
- interaction. The guides also provides advice not only on the benefits of becoming an expert, but also on how do individual experts can become expert moderators.
- Guidelines for VET Organizations: aimed at all type of entities capable of providing training. The guide contains information on how VET organisations can use the peer-to-peer approach and specifically the EER platform and contents to enhance their curriculum and quality of their training and/or education.
- Policy Brief: oriented to the public administration and policy makers in the field of energy efficient retrofitting training and education. It explains explain the underlying issues related to EER and the way the educational and training policies need to be adapted to respond to the demands of the labour market. Attention will also be paid to inform them about the benefits of mutual learning approaches as adopted in LEARN-EER.

The present document is a part of a wider set of guidelines within LEARN-EER.

2. FOR WHOM?

This Policy brief is specially addressed to government, public administration and policy makers in the field of energy efficient retro fitting, training and education. It is necessary to help the building sector make a change and be more aware of the need to focus on energy efficiency when renovating. The result of the LEARN-EER project can help and be an example which policy makers can use to get the movement going in the sector.

 <p>Did you know?</p>
<p>270€ billion</p> <p>Major energy renovation of the existing building could save 270€ billion a year</p>
<p>90 %</p> <p>90 % of our life time is spent inside a house. Investing in major energy efficient retrofits improves physical and mental health, productivity and quality of life</p>
<p>2 million</p> <p>If the existing Eu building stock is energy renovated, it has the potential of creating 2 million jobs</p> <p>Source: www.go-refurb.eu</p>

Figure: Need to save energy in buildings

In all European countries the task is to reduce energy consumption. The Netherlands has concluded, as the first European country, an energy agreement. This has been translated into five themes:

- electricity
- industry
- mobility
- built environment
- agriculture

The LearnEER project connects to “the built environment” and “electricity”. In addition to taking measures, particularly in the "built environment" theme, it is recognized that a lot of workers are needed to achieve the targets for 2030. The online platform can make an contribution to get the EER sector on the right level to achieve this.

Given the number of dwellings to be tackled, it is obvious to focus on renovation. This then means that a lot of work has to be done which currently lacks the capacity and the associated quality. This means that it must be deployed on both the recruitment of (skilled) workers as well as the efficient training and training of labour in the field of energy.

The assignment is great. When all countries want to meet the European Energy targets, a lot still needs to be done. It is clear that much can be achieved in the built environment. This means that the parties that can contribute to this must have knowledge and experience in the field of energy efficient retrofitting, or have access to knowledge. In many countries, steps have to be taken here. This means that the (European) policy must also be used to include the EER sector in the ambitions in order to contribute to the achievement of the objectives, for this knowledge and the unlocking of it necessary!

It requires extra policy measures to enable the sector to fulfill the task. Examples are subsidy measures, laws and regulations, but also an impetus in the field of training and education. This online platform can provide useful support during training and education.

For training, you can call on training institutes, but also on professionals from practice, leanEER is a platform for this and give the opportunity to combine both. When the input from professionals can be used, then there are fewer teachers needed and maximum use can be made of learning from practice and learning from each other by offering a network of professionals.

With the present platform, a first foundation has been laid to bring about knowledge exchange through the "learning from each other" principle.

The main objective of LearnEER is to develop an mutual learning platform for professionals and future professionals of the sector to share knowledge on energy efficient retrofitting. This means:

- the platform will cover the users training needs, where they can select contents that compliments their professional training and raise their capacities and competitiveness within the sector;
- the platform will be flexible and have open access.

3. INTRODUCTION TO LEARNEER

3.1. What is LearnEER?

LearnEER is a European project which enables a flexible and open platform to share knowledge between the Energy Efficient Building Retrofitting (EER) professionals. Thanks to its mutual learning approach, users will look for training content to improve their skills but they may also contribute with interesting material.

LearnEER has developed an innovative mutual learning platform to increase professional skills and capabilities towards the Energy Efficient Retrofitting (EER) of buildings. EER competences and skills required in new employment opportunities are relatively new and not included in curricula from the last 30 years. To train EER workforce, the Mutual Learning approach is identified as a good solution to develop a more flexible and open environment for accessing to this training needs.

3.2. What is offered?

The LearnEER platform is applied as a training practice in which learners interact with other learners to share and validate knowledge, thus facilitating new opportunities on the labour market.

The User's Framework is defined by different functionalities that facilitate the operation of the platform. The idea is to provide a clear structure for users to easily access the areas where they can find the information they seek. Some of the functionalities included in the platform are:

- Calendar for sharing events on EER.
- Login via their social media accounts.
- User identification for validation of materials.
- Filtering and searching tools.
- Materials may be shared in different languages.

On the LearnEER platform, materials will be provided by the users: the professionals themselves. The Database will set the specifications of the materials and provide an initial catalogue with best examples shared by the project partners in the following EER categories:

EER PASSIVE SOLUTIONS	EER ACTIVE SYSTEMS	EER SUPPORT
Insulation materials	Thermal systems	Funding opportunities
Envelope Walls	Renewable systems	Management & energy audits
Roofs & floors	Lighting systems	Policies & regulations
Windows/doors	Control systems	
Natural lighting/Shading	Ventilation systems	

3.3. On what is this approach based?

In order to support the development of the LearnEER Platform, a research exercise was carried out studying the EER sector barriers and training needs for professionals and future professionals to gain and share knowledge and have competence in EER. Also an exercise identifying existing best practices of online mutual learning platforms was carried in order to extract the main successful features of these sites and build upon them when designing the LearnEER Platform.

The main knowledge transfer needs categories identified are: (A) Skills & Awareness and (B) Knowledge Management. The conclusions extracted from the study show that improvement in the (A) Skills & Awareness category is ultimately based on the improvement of currently available and new educational qualifications and opportunities at all levels of the EER value chain, end users awareness included, through e-learning tools. Within the Knowledge Management Needs category, research showed that when implementing any of the knowledge management solutions, it is necessary to define strict working areas and modes of operation in order to safeguard the knowledge management rights of each of the individual agents themselves.

4. TECHNICAL CHAPTERS

4.1. Issue

Climate and energy are today key issues that European Member States are paying attention to, not just because of policy objectives imposed by Brussels. Increasingly, energy saving is the most normal thing in the world and it is "not done" to deal with this carelessly. Agreements have been made in the Climate Agreement. The Climate Agreement is a treaty that includes agreements on how 195 countries together combat global warming by emitting fewer greenhouse gases. The goal is to let the earth's temperature rise by no more than 2 degrees on average, but several countries try to maintain a maximum of 1.5 degrees.

On 12 December 2015, the climate agreement was signed in Paris during the Climate Conference of the United Nations. This agreement will apply from 2020 if the Kyoto protocol, the 1997 agreement drawn up in Japan, has been completed. Every five years the countries evaluate their climate actions and discuss what they will do in the coming five years to combat global warming. It is the intention that the plans become more and more ambitious.

In addition to the Climate Agreement, there is also the Energy Agreement that sets European targets. The Energy Agreement contains agreements on energy saving and sustainable energy. The Energy Agreement was established in 2013 and one of the concrete agreements is that energy consumption must be reduced by 1.5 percent per year.

In addition to climate and energy, circular is also a theme that receives more and more attention. The circular economy revolves around the smart use of raw materials, products and goods, so that they can be reused infinitely: a closed cycle. For buildings, for example, 'circular' means that materials are reused, but also that the building can be used flexibly.

The reuse of raw materials, products and materials in a closed loop requires a different way of thinking and working. For example, a producer is no longer solely responsible for supplying materials, but also for retrieving them after use.

The most profit for sustainability can be achieved in existing buildings. The redevelopment and renovation of existing buildings also fits better within a circular approach than demolition and new construction.

 <p>Did you know?</p>
<p>40 %</p> <p>Buildings make up for 40 % of the EUs final energy use</p>
<p>80 %</p> <p>Energy use in buildings can be reduced up to 80 %</p>
<p>80 million</p> <p>80 mio. Europeans live in unhealthy houses. Make energy renovation happen!</p> <p>source: www.go-refurb.eu</p>

Figure: Need to save energy in buildings

The LearnEER project, which is being carried out within the framework of the European Erasmus + Program, is aimed at contributing to Europe's objective to save energy and, on the other hand, shows that e-learning can make an important contribution to a quick and effective way to transfer knowledge.

Increasing knowledge, skills and competencies is necessary for professionals to meet EU requirements:

- Energy Performance of Buildings Directive (EPBD)
- Energy Efficiency Directive (EED)
- Renewable Energy Directive (RED)

The LearnEER users are the ones that will use and take advantage of the mutual learning platform and its contents. Users want to get to know the latest energy measures in a fast and efficient way and how these can be applied in the most sustainable way, within an available budget. The target agents of the LearnEER platform have been classified in direct and indirect agents.

Direct target agents

Professional and future professionals: These profiles constitute the main user of the LearnEER mutual learning platform. They include different agents with the Energy efficient building retrofitting professionals. According to the value chain defined for the sector, the LearnEER users are:

Knowledge and Product Providers		Energy and Retrofitting Service Providers		Other groups
Technical solutions		ESCO		Individual professionals at public administrations, energy providing and quality assurance entities
Manufactures		Architecture and Engineering		
Installers		Audit Firms		

figure: Users' profiles

In these groups we can find professionals specialized as passive solutions developers, building element producers, building materials manufactures, renewable energies specialist, installers, ESCOs, architects, engineers, energy auditors, etc.

Indirect target agents

The indirect profiles includes VET organizations involved in the energy efficient building retrofitting sector, as well as public administration and entities providing training to professionals. The agents, with these profiles are interested in the LearnEER platform to raise the EER capacities of their members.

The indirect target agent' profiles are:

- **VET training entities:** entities that offer education and training in the field of building, construction and energy at regional and national level.
- **Professional organizations:** those that belong to all activities related to building, construction and energy and that are integrated in its value chain (including umbrella organizations such as Architects and Engineers professional Associations).

- **Other stakeholders:** Such as policy makers and public administrations with competences in the field of education, building and energy (for example R&D Institutes).

Current education is subject to renewal. In addition to classroom learning, individual learning with e-learning tools is growing rapidly. The purpose of this is to train and train the student in such a way that he / she fits in with what the labor market demands. Peer-to-peer learning also contributes to a better connection to the labor market because it can respond more quickly to the needs of the student and to trends and developments in the sector and the changes in policy.

Given the challenges and ambitions in the field of energy in general and energy efficiency in the construction (renovation) in particular, it is important that those involved in the chain have access to information and knowledge quickly. In short, parties in the chain must continue to develop themselves independently of time and / or place. E-learning can make an important contribution to this in order to transfer or share knowledge quickly and effectively. The LearnEER platform is a building block in this. The platform focuses on sharing knowledge between professionals active in the field of energy-efficient renovation of buildings (EEA).

The Energy Efficient Retrofitting (EER) sector is the result of the transformation of the construction sector after Europe2020 initiative established energy objectives for buildings and two directives: Directive 2010/31/EU "Energy Performance of Buildings", and Directive 2012/27/EU "Energy Efficiency".

4.2 Interests

Peer to peer learning / mutual learning

Peer-to-peer (P2P) learning is where one person leads another through a concept, in which the former is a 'trainer' and the latter is a 'learner'. Thus, with this technique, the two persons are learning from each other in a bi-fold way since peer-to-peer learning is helpful for both: by explaining and presenting a concept, the 'trainer' takes their own understanding on a level, and also develops their exposition skills.

One reason for the growing popularity of peer learning is the formation of an approach that emphasizes discovery learning and viewing knowledge acquisition as a social activity rather than one that is limited to structured courses and classrooms. Furthermore, the scope of the LearnEER platform offers other advantages such as opening doors for educational formation to persons who do not have the possibility to attend for classroom sessions or fixed course structures. Research indicates that peer learning activities typically result in:

- a) team-building spirit and more supportive relationships
- b) greater psychological well-being, social competence, communication skills and self-esteem
- c) higher achievement and greater productivity in terms of enhances learning outcomes.

It is clear that e-learning is a new and valuable addition to classroom education and e-learning can make peer-to-peer easier because contacts can be made easily via the platform, but also for instance via social media.

How e-learning is designed also depends on the type of technology that is used and especially the extent to which technology is used. Initially e-learning was mainly identified with full online learning. This way of learning did not always work well in practice. Many learners stopped the course prematurely. Then people started thinking about a desirable mix between "face-to-face" learning and online learning. This is called "blended learning". For example, it looks at how ICT can reinforce the physical learning activities ("technology enhanced learning"). Full online learning usually only takes place if those involved are unable to meet each other in person (for example by large distances), or if the learner needs information quickly and has little or no time to follow structured classroom education. This certainly plays a role for a part of the learner target group. Workers in the building industry will sooner resort to e-learning instead of following

The combination between classroom and e-learning (“blended learning”) is growing rapidly and it is necessary to further stimulate this development.

Blended Learning



Once 'face-to-face' learning was the most popular way of learning. The 'offline' learning in a classroom is still very common. However, online learning is now also, partly due to the arrival of (fast) internet and increasing digitization. If you mix these two forms of learning, then blended learning is created. Nowadays you can design blended learning programs with numerous work forms and tools. This way you use online and offline activities to arrive at an ideal mix.

Most important features

- The benefits of both online and offline methods.
- You can choose the most effective approach for each learning goal.
- A mix of offline learning interventions can also be seen as a form of blended learning. Think of a mix of classroom training, coaching, mentoring, group discussion and role play.
- A mix of online learning interventions can also be seen as a form of blended learning. Think of a combination of various online training such as e-learning, social learning, memo training, online simulations and online assessments.
- Participants are looking for learning activities that are effective and meaningful with regard to their work situation / practice.
- The different types of interventions provide an inspiring learning trajectory

In view of the energy task that is required, training and education of the sector is essential. This means that knowledge must be made available in a fast and accessible manner. "Peer to peer" and “blended learning” are key words in this. This gives flexibility to users to learn what they want, where they want, when they want!

5. CONCLUDING REMARKS

Energy efficient retrofitting is a serious topic in Europe, it contributes to a more sustainable world and it simply saves money. It is necessary to train the different target groups in order to stay up-to-date on trends, developments and possibilities to choose for an energy efficient form when renovating. E-learning provides the opportunity to quickly access information for target groups who have little to no time to follow classroom instructions.

It's already said: the assignment is great. When all countries want to meet the European Energy targets, a lot still needs to be done. It is clear that much can be achieved in the built environment. This means that the parties that can contribute to this must have knowledge and experience in the field of energy efficient retrofitting, or have access to knowledge. In many countries, steps have to be taken here. This means that the (European) policy must also be used to include the EER sector in the ambitions in order to contribute to the achievement of the objectives, for this knowledge and the unlocking of it necessary!

Although the online platform developed by the cluster of partners was very positively received in meetings with students, entrepreneurs and employees from the energy-related sectors, the received piloting (external testing) results and piloting evaluation interviews show that even more attention has to be paid to the improving the user interface, the technical aspects and the way in which content can be searched and uploading possible is.

Use can be promoted through the addition of videos, publicity, use social media such as twitter, linking with the smartphone and developing an app.

Ensure that Modules for Skills and Awareness with test components become available, so that training is possible at the desired level and for the desired specific target group. Assessment consists of the following components: knowledge, skills and attitude. In order to carry out energy efficient renovation, it is important that this is done in a qualified and, if possible, certified way so that knowledge sharing is possible on a European scale.

With reference to the interviews held, a link between e-learning and practice should be sought. A combination of e-learning and classroom, the so called "blended learning" is growing rapidly and can build a bridge in this.

We have developed an online platform, which is now partly filled. This first set-up needs to be further filled and developed into a fully-fledged online tool that can be used in combination with various forms of classroom education.

For the further approach, it is important that an industry organization or training institution adopts the achieved result and allows it to land further in its network and implements the feedback and new input.

Energy Efficient Retrofitting

The challenge is to meet the European objectives with the current building stock. This means renovating what is possible and disassembling and recycling what needs to be done. In this way, a building can match the objectives but also meet the needs of the current users and take into account the wishes of future users.

Instead of demolishing a building and building a new one, you can opt for a nice integration of new and old. In addition to smart use of materials, energy efficiency and limiting maintenance costs, flexibility is therefore very important.

We make the following recommendations:

1. Building energy efficiently

Not only the development of new construction and renovation creates environmental impact. It is also important what happens during the use phase of buildings and infrastructure. Due to energy-saving measures in design and construction, the demand for energy will decrease. For example because less energy is required for heating up space or water. The construction sector plays a crucial role here in making the built environment more energy-efficient. This means that the construction sector needs to be trained to make this contribution. The online platform can play a role for this.

For instance the so-called 'zero on the meter homes' in the Netherlands go one step further. There the energy meter is at zero at the end of the year, so no more energy is used than is generated. Savings measures are supplemented with sustainably generated energy

2. Circular building

The circular economy revolves around the smart use of raw materials, products and goods, so that they can be reused infinitely: a closed cycle. For buildings, for example, 'circular' means that materials are reused, but also that the building can be used flexibly. Circular building actually goes a step further than energy-efficient building. The online platform can also make a contribution here.

The reuse of raw materials, products and materials in a closed loop requires a different way of thinking and working. For example, a producer is no longer solely responsible for supplying materials, but also for retrieving them after use.

3. Improvement of competitiveness

To fulfill the EED requirements it is necessary to improve (future) professional skills and the sector's competitiveness to overcome employment barriers and increasing their capacity. This is a tremendous challenge where considerable steps have to be taken. It is clear that additional policy will be required for this.