Dedicated to stimulate demand for sustainable energy skills in the construction sector

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Report:	**D1.4 Final Executive Publishable Report**
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CHANGE RECORDS

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9.0	15-07-2023	Dirk de Wit	Table with main KPIs added

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SUMMARY

The present document contains a condensed presentation of all BUSLeague deliverables (results) organised around six highlighted topics. These respond to the overall aim of the project, which is to overcome the challenges of both the demand and supply of energy skilled workforce in the construction sector.

1. The first topic is **mutual recognition** of energy skills, featuring reports on effective systems for recognition (and use) of energy skills.
2. The second topic is **awareness raising** of the general public, including reports about the work done with DIY/Hardware stores.
3. The third topic is **capacity building and upskilling**, about the necessary training tools and resources for the workforce.
4. Then fourth topic is **legislative changes and financial mechanisms**, citing new legislative frameworks developed by BUSLeague.
5. Then fifth topic is **ethnographic research**, which portrays the social, cultural, and material contexts and practices of the construction sector industry in partner countries.
6. The last topic is **educational technology research**, featuring the analysis of the project's learning interventions.

The full reports of all the outcomes can be found at https://busleague.eu/outcomes/.

1 BUSLEAGUE STORY

One of the key issues facing the construction industry since 2010 has been the requirement to upskill workers in order to produce high-quality nearly zero-energy buildings (nZEB) and deep energy renovations. By taking a whole-building approach, addressing many systems at once, much greater energy efficiency (EE) can be achieved. BUILD UP Skills (BUS) is a strategic initiative which started under the Intelligent Energy Europe (IEE) programme to boost the education and training of craftsmen and other on-site construction workers and systems installers in the building sector. BUSLeague is a 30-month-long project started in September 2020 and formed by a coalition of former BUS and Construction Skills projects in Austria, Bulgaria, Spain, Ireland, France, and the Netherlands. It was funded by the European Union's Horizon 2020 framework program, which aims to make a real and sustainable difference to the quality of life in the EU, as well as the EU's position in the world, towards implementation of the Sustainable Development Goals (SDG)[1]

Figure 1. BUSLeague Team

Major accomplishments in member states have been made possible by the BUS initiative and the subsequent Construction Skills projects within the Horizon 2020 program. Examples include upskilling plans based on analysis of the status quo, initiation, and continuation of National Qualification Platforms (NQP) and development of qualification and training schemes. These NQPs are networks of ministries, faculties, associations, contacts, and organisations that are involved with ensuring that a competent and qualified national workforce is in place to achieve the EU 2020 energy efficiency (EE) targets.

Despite these successes, the main challenge now is to stimulate the demand for energy skilled workforce (demand side) and upskill both blue-collar workers and white-collar professionals (supply side). For this, cross-European recognition of energy skills and upscaling of successful training methods is needed. By providing recognition of energy skills and qualifications in the construction sector, access to a skilled workforce will be easier for companies and building owners alike, and legislative changes that will stimulate and advance the demand for energy skills will be prompted. To fit these themes to the practice in the field, both anthropologic and educational research is undertaken alongside working on the challenges of the project.

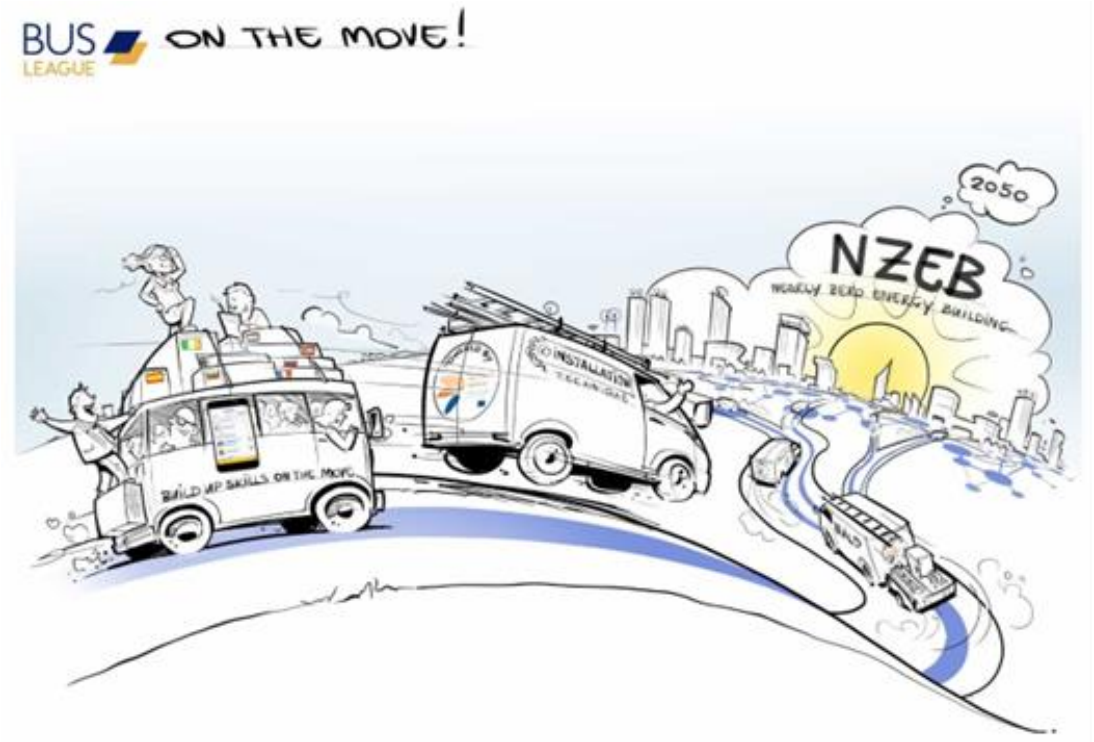


Figure 2. Moving fast forward to a sustained build environment

1.1 Key Performance Indicators

To show in a quantitative way what is reached in the BUSLeague project on the demand for and supply of craftsmen with recognised skills, below an overview of the main Key Performance Indicators and what is achieved on them.

	Description	**Value**
1	Partners involved	12
2	Countries involved	7
3	Anthropological interviews held	47
4	Discussion with small focus groups about the developed qualification framework and mutual recognition	30
5	Developed trainings	64
6	People trained	> 5690

7	Organisations connected with	~ 400
8	Publications on stimulating demand for recognised skills by awareness raising, use of public procurement and financial instruments	6
9	People reached through awareness campaigns	170.370
10	Energy Savings induced by the project	28.10 GWh/year
11	Stories published on the website www.busleague.eu	8
12	Collaboration with other projects funded by the EU	> 12
13	Communication and Dissemination activities	~ 430
14	People reached with communication and dissemination	> 240.000
15	Scientific articles	4

2 BUSLEAGUE OUTCOMES

This chapter contains an overview of the public deliverables of BUSLeague. To relate them to the main themes of BUSLeague, the presentation is done around the following topics:

1. **Mutual recognition** of energy skills, featuring reports on effective systems for recognition (and use) of energy skills.
2. **Awareness raising** of the general public, including reports about the work done with DIY/Hardware stores.
3. **Capacity building and upskilling**, about the necessary training tools and resources for the workforce.
4. **Legislative changes and financial mechanisms**, where the new legislative frameworks developed by BUSLeague can be found.
5. **Ethnographic research**, which portrays the social, cultural, and material contexts and practices of the construction sector industry in partner countries.
6. **Educational technology research**, featuring the analysis of the project's learning interventions.

2.1 MUTUAL RECOGNITION

BUSLeague has gathered knowledge and insights for countries to develop effective systems for recognition (and use) of energy skills. Recognition of skills proving a minimum level of competences has a double effect, gaining the market's trust and motivating the workforce involved. On one side, the market can be sure the person being hired has the right skills and on the other, people seek to be upskilled because the market asks for recognised skilled workers.

2.1.1 D2.1 Report on proven approaches on the recognition of energy efficiency skills

The BUSLeague team took a closer look at available trainings, experiences with recognizing EE skills, and the associated effects on stimulating market demand in partner countries. The main goal of this report was to identify possible solutions from previous projects that can support the further implementation of the BUSLeague project. The following table summarizes the provision of further education and recognition of skills in the building sector among partner countries, indicating country specific strengths and weaknesses in connection with challenges and opportunities.

	Strengths	Weaknesses
Austria	• Dual education system •Personal certification trainings on highly efficient and renewable energy systems are offered	• Hardly any recognition of upskilling courses in the field of energy efficiency and renewables •No trans-national recognition of upskilling courses in the field of energy efficiency and renewables
Bulgaria	• International certification and certification by product suppliers possible and valued •Trainings are flexible and have a short duration to meet the needs of	• Qualification registers and SkillsPassport are met with strong resistance from the mainstream construction sector

	craftspeople (blended learning approaches)	•Further education is not required by the market
France	• The RGE certificate is required by the market, as it enables its clients to benefit from financial support from the state •The RGE certificate requires compulsory further trainings	• Construction companies show little willingness to provide further education to their employees • No trans-national recognition of upskilling courses in the field of energy efficiency and renewables
Ireland	• National Framework of Qualifications provides a structure to compare qualifications based on nationally agreed standards •Irish Qualifications Framework for lifelong learning helps to compare recognised qualifications in Ireland with the rest of Europe	• Hardly any awareness on the importance of cross-craft understanding •Users (homeowners and procurers) cannot identify construction workers who are upskilled in energy efficiency topics
Netherlands	• Well-developed national recognition system on further education (especially in the installation sector) •After the recognition of heat pump trainings, nearly all regions wanted an according training centre	• Only very few upskilling courses on energy efficiency are obligatory by law •Further education is not required by the market
Spain	• The Spanish Ministry of Education has a very detailed qualification framework (QF) for blue-collar workers organised by modules •The Ministry of Spain already has a methodology to recognize the skills of blue-collar workers acquired through experience	• In Spain, there are no training requirements for blue-collar workers in the construction sector • Both vocational training and university training include some aspects related to energy efficiency, but not certified training related to energy efficiency of buildings that addresses this issue as a whole

Table 1. Specific strengths and weaknesses of education and recognition of skills in the building sector per country

Moreover, the report displays solutions to overcome the identified barriers on basis of implemented national or European projects. In this context, it describes various activities, which should counteract the identified problems. These activities are for example: extension of micro learning and e-learning offers, determination and dissemination of a suitable methodology to describe knowledge imparted through courses to compile and recognize additional qualifications, extension of successful training programs in the field of energy efficiency in cooperation with training centres and/or hardware stores.

2.1.2 D2.4 Qualification for the recognition of energy efficiency skills

Now, for effective improvement of the built environment (both new and existing buildings) to nZEB standards, all actors in the value chain need to have a proper, transparent, and up-to-date set of knowledge, skills, and competences. Therefore, BUSLeague created an Energy Skills qualification that is suitable for Recognizing Energy Skills. This recognition is aimed at increasing

the demand of properly skilled nZEB teams and facilitate upskilling providers such as training institutes to deliver practical and effective upskilling that counts.

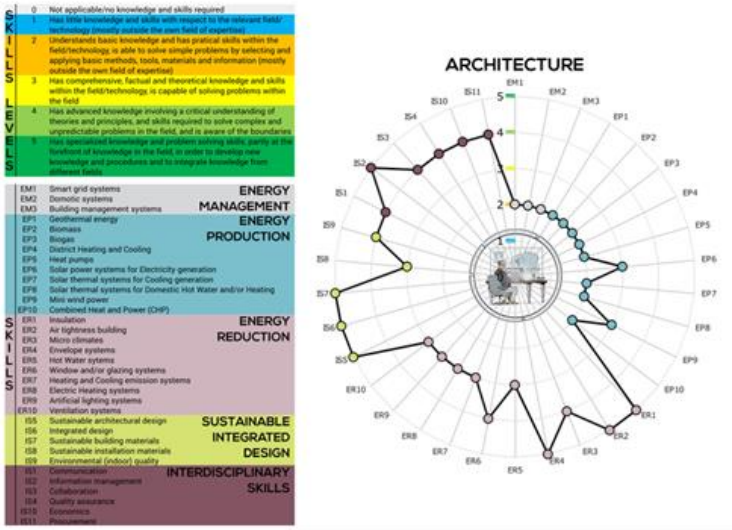


Figure 3. Example of the EU level minimum nZEB skills for professionals in the field of Architecture

2.1.3 D2.5 Recommendations and adapted qualification Report

A stakeholder consultation process was carried out in the 6 partner countries in order to validate the qualification for Recognition of Energy Skills. In total, 100 stakeholders were consulted during 30 sessions held in the Netherlands, France, Bulgaria, Spain, Ireland, and Austria. The resulting qualification, including detailed Unit of Learning Outcomes, is available online in the Unit of Learning Outcomes database of the BUILD UP Skills advisor-app and as Excel file from the BUSLeague website.

Figure 4. Market validation in the Netherlands

2.1.4 D2.6 Report on defining personal recognition for each country

To prepare for the implementation of personal and mutual recognition between member states on the qualification for recognition of Energy Skills, two steps were taken. Firstly, each partner's current personal recognition system for knowledge, skills and competences was identified. Then, it was planned out how the mutual recognition goal between each nation could be achieved. Regarding the IT requirements, BUSLeague built on the ongoing NEWCOM project and Build Up Skills advisor Application (smartphone app) which includes a smart mobile web application to locate and recognise the 'skilled' workforce for the demand side.

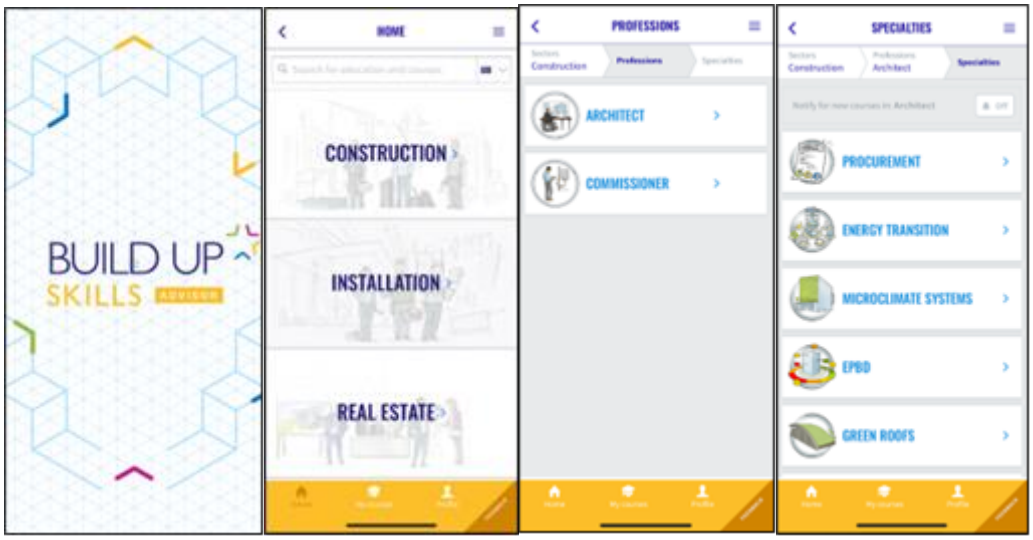


Figure 5. BUILD UP Skills advisor app, use for finding technical training

2.2 AWARENESS RAISING

Energy skills have to be recognized for the market to demand them but what about the general public? BUSLeague also worked on this challenge. By working together with DIY/Hardware stores, the awareness of the general public was increased and thus, the demand for skilled professionals. A recount of the outcomes of these activities is listed below:

2.2.1 D3.6 Awareness Campaign Guide to stimulate skills-based demand

BUSLeague set out to increase the awareness of both the workforce and the general public, as there are minimal market demands for nZEBs, an unqualified workforce for such tasks, and no demand for energy skills training. BAUHAUS, a project partner, carried out awareness campaigns achieving a great impact in terms of actions developed, materials created, and people reached. Most of their professionals are blue-collar workers, self-employed or working in SMEs, and they have been trained in energy efficiency through online micro-trainings in collaboration with the Valencia Institute of Building (IVE) and practical workshops in collaboration with product suppliers. To increase their awareness, customers should understand that every small action counts and that they can consult professionals for support in energy efficiency. Channels commonly used are websites, blogs, social media, newsletter, through the stores, events and fairs, e-books, videos, etc. Awareness actions compiled in D3.6 can serve as an inspiration for other DIY stores interested in the goals of the BUSLeague project to replicate the best practices.

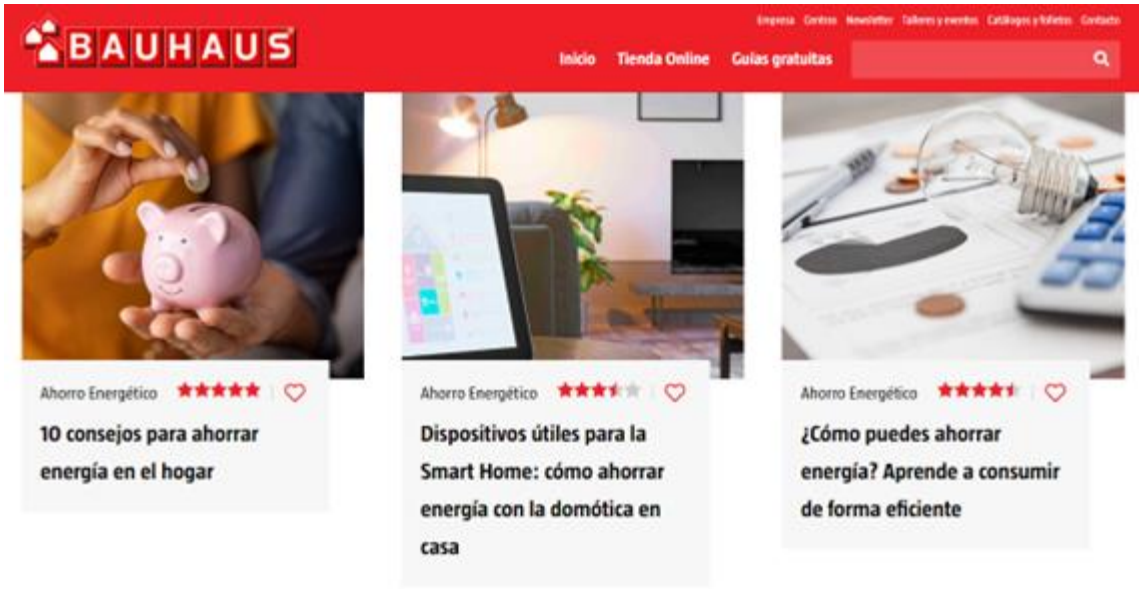


Figure 6. BAUHAUS website

2.2.2 D5.5 Storybook on how to increase the demand for EE skills based on BUSLeague experiences

Stories are powerful ways to share knowledge as the narratives also enable us to reveal more tacit aspects of knowledge, norms, and values. All BUSLeague consortium meetings started with one of the partners telling a story, preferably in relation to something they experienced with a worker, retailer, or producer as part of this project. This way, discussions related to BUSLeague objectives in relation to partners' own context, perspectives and lessons learned were triggered. In addition, by sharing the stories online (social media), knowledge sharing was scaled beyond the project in the network of all partners. Discussions that started internally could continue externally. The stories are presented in this deliverable in the form of a storybook and also online as part of the BUSLeague website (https://busleague.eu/outcomes/) on how to increase the demand for EE skills based on BUSLeague experiences also after the project ends.

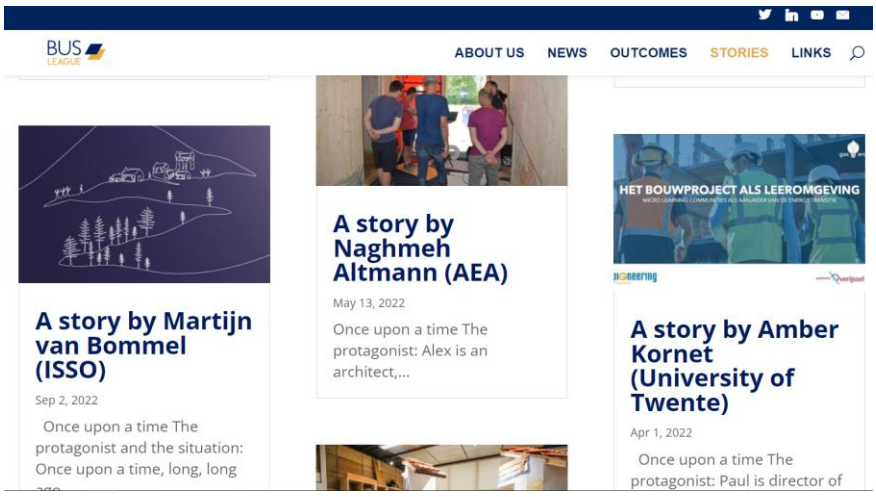


Figure 7. BUSLeague stories available in website

2.3 CAPACITY BUILDING & UPSKILLING

To increase the number of skilled workforce, the challenges related to the lack of awareness, lack of time/motivation, need for practical trainings, integration of new technologies and addressing new societal and technological trends will be properly addressed. BUSLeague developed tools and resources needed to train the needed workforce.

2.3.1 D4.1 Report on training content and resources

Based on national implementation plans in the partner countries, the BUSLeague project identified, assessed, and collected relevant upskilling content and resources (curricula, presentations, handbooks, demos, e-tools, schematics, etc.) from previous national and European projects. Based on the assembled information on the 60 existing trainings or training modules, it was estimated whether they were suitable for the implementation in the frame of the BUSLeague project or to be implemented internationally. Of all the latter, 28 were found to be within the specific scope of the definition of the BUSLeague EE-skills qualification and to provide upskilling content and resources in English.

Figure 8. IVE and the company first training programme in energy efficiency

2.3.2 D4.2 Established Energy Skills Quality Repository

The BUS-app offers the option to link learning content with relevant tasks and subtasks which makes it simple to access. It is also possible to award digital experience points, recognitions, or skill badges. Through the app, partners can: 1) Map content, 2) Find content, 3) Upload content, 4) Accredit learners and 5) Find recognised craftsmen. By the end of the project (Feb 2023), BUSLeague will provide an overview of the implemented content repositories and recognition in the BUS-app, with specific information about the EU-region and each country (Austria, Bulgaria, Spain, Ireland, France, and the Netherlands).

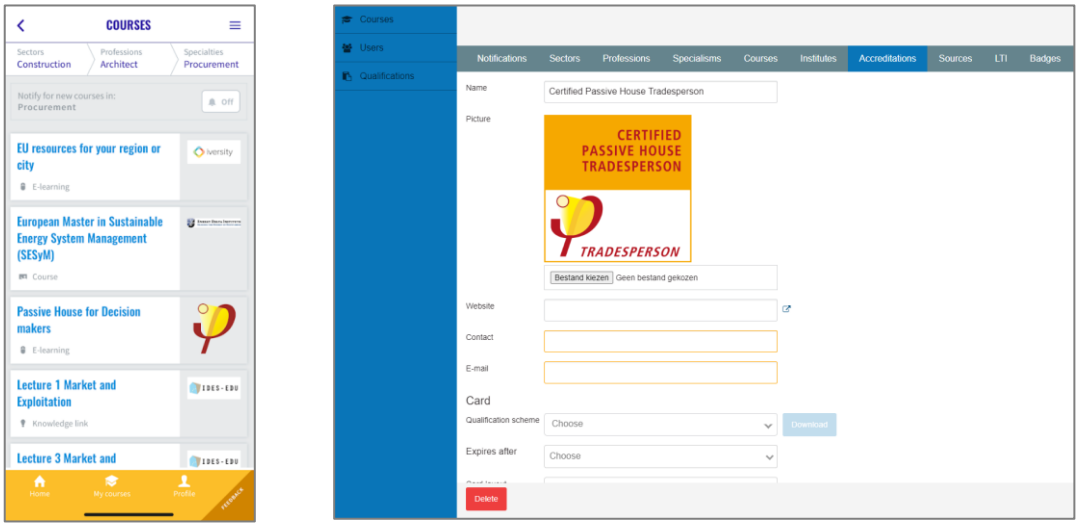


Figure 9. How to find content in the BUS-app and how to accredit learners in the BUS Data Course

2.3.3 D4.3 Guide for Methodologies and Pedagogical Training Tools

This report enlists the pedagogical tools disposed by BUSLeague during awareness and training interventions, including the classification of demonstration models, training platforms, and training centres. All allow spatial and practical upskilling, supported by conceptual and theoretical knowledge development. Tools such as demonstration models, training platforms and centres, product demos, written content, awareness, and training videos, as well as Learning Management Systems (LMS) have been considered. Additionally, to encourage the improvement of the techniques and enrich knowledge, BUSLeague proposes methods such as: direct and indirect instruction models, self-directed and constructivist model, and skill transfer.

Figure 10. Example of a pedagogical tool that illustrates the effect of airtightness on the mechanical ventilation by running a smoke generator

2.3.4 D4.5 Report on strategies to improve the energy skills of blue-collar workers

BUSLeague has identified strategies to improve the assessment process in small building sites. The report encompasses three main areas: energy renovation in Europe, small worksites in Europe, and the corresponding challenges. The report examines the current experiences of on-

site training, particularly the assessment section, and then reviews the identified contents, methods, and tools of tasks to prepare a skill assessment strategy that may solve the requirements of the market recognition. The following are the strategies proposed by each country:

- **Austria**'s strategy is to raise the competence of building professionals and to avoid frequent mistakes on the construction site in line with energy efficiency. They developed a new Action Plan for Sustainable Public Procurement.
- **Bulgaria**'s strategy is to create the preconditions necessary for the establishment and development of an appropriate certification process related to upskilling SMEs workers on small building sites in energy-efficient building methods. They propose training strategies suitable for a wide range of construction professionals in a variety of building projects in flexible conditions, and consistent with perceived methodologies for mutual recognition of acquired skills.
- **France** developed a new training tool (Practee Truck) which can be useful for hosting various training programs. The assessment path of the BTP method serves to classify the hired workers aiming to help assigning them to different educational paths to upskill them in the shortest time possible.
- **Ireland**'s strategy is based on the EE trainings developed for all the white- and blue-collar workers. These training modules are suitable to be conducted in practical training centres or as on-site and digital/online trainings and to be also used by suppliers and product manufacturers to train their workers.
- The **Netherlands**' strategy is to establish the conditions and requirements that shape and regulate the operation of the Certification Scheme of persons for the category of "Expert in the replacement of conventional windows by the installation of windows with thermal breaks". The objective of the scheme is the recognition of the set of competences necessary to intervene in the building in order to improve its energy efficiency by replacing existing windows with windows with thermal breaks.

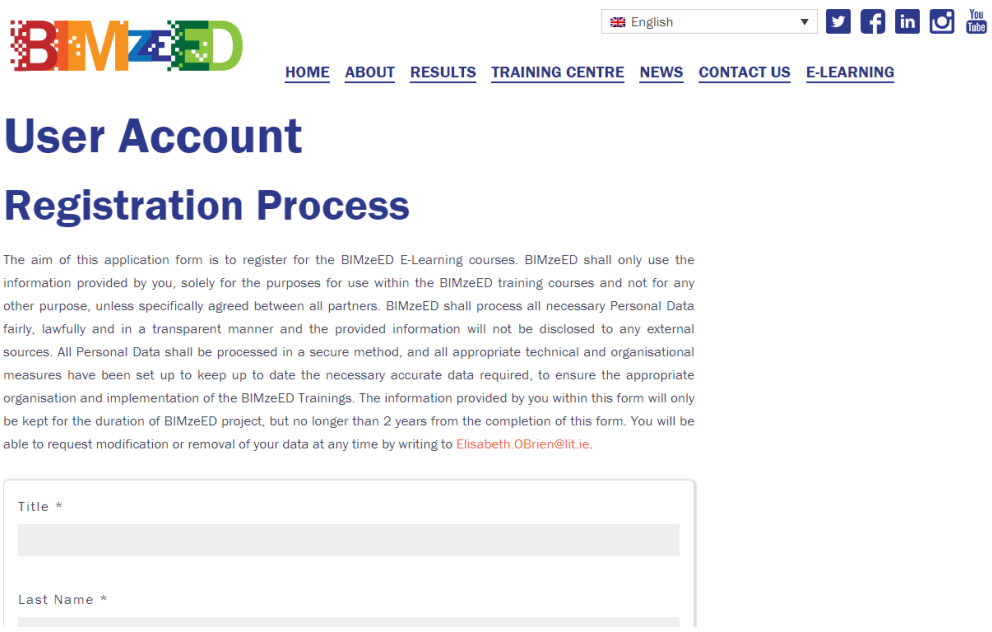


Figure 11. Ireland's strategy included the BIMzeED (Digitalisation & NZEB) training, which can be used for other partners with the corresponding adaptations.

2.3.5 D4.6 Overview of applied e-learning interactions

BUSLeague works with e-learning systems such as the BUILD UP Skills advisor-app (BUS-app), learning from building mistakes, Trivia functionality (small sets of learning questions, used in a Trivia competition) and several others. During the project, BUSLeague explored how these systems can be connected with the BUSLeague developed task-based EE-skills qualification, to enable micro-recognition/learning of micro-credentials. This report contains an overview of the applied e-learning interactions and experiences with their use in practice. These interactions are short and challenging, so-called micro-learnings, and were applied during the EE-upskilling interventions in the BUSLeague implementations at national level. Learned experiences and the applied applications and interactions are also detailed. To allow for a proper interpretation and documentation of the experiences, the report includes a chapter on the evaluation of the timeliness and effectiveness of applied e-learning interactions.

2.4 LEGISLATIVE & FINANCING CHANGES

Another step taken by BUSLeague to stimulate the demand was through legislation and financial mechanisms. These must be supported by public authorities through the development of new legislative frameworks (e.g., requirements for skilled workers in public procurement) and provision of financial incentives for renovations completed using skilled professionals. Work done related to this is listed below.

2.4.1 D3.1 Report on incorporating "Energy efficiency/nZEB" training clause into Public Procurement

Green Public Procurement (GPP) is a strategic instrument for each Member State, as it can significantly influence the market. By using GPP, public authorities can provide the industry with real incentives for upskilling, and other stakeholders with the confidence they need to upgrade their buildings. Yet, public procurement is currently not widely used to support EE upskilling. BUSLeague identified the key barriers to using EE/nZEB training and competency-based clauses; the lack of awareness of GPP and of nZEB and the importance of strong quality assurance in relation to it, and the lack of knowledge and skills within public administration. Thus, partners will focus the awareness raising activities towards senior management within public bodies and specialised departments within these organisations (e.g., building procurement offices and architecture offices).

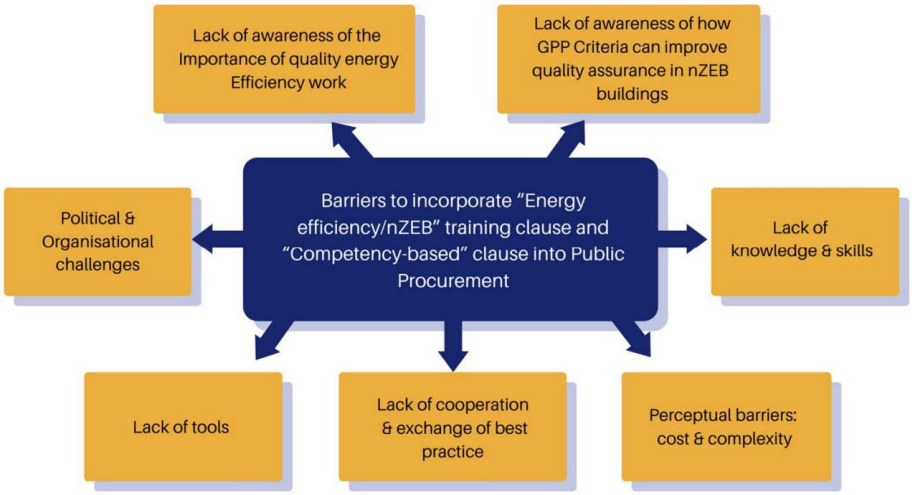


Figure 12. Barriers to incorporating nZEB/EE training clauses or competency-based clauses into Public Procurement

2.4.2 D3.2 Initial Best Practice Procurement Policy Guide with energy efficiency clause

To successfully decarbonise Europe's building stock, middle- and senior-level building professionals as well as trade professionals must upskill in sustainable energy-efficient construction. As the largest single consumer in the EU economy, the public sector can use its purchasing power to influence the market. GPP can stimulate the provision of more resource-efficient, less polluting goods and services within the marketplace. By using GPP, public authorities can provide industry with real incentives for upskilling, and other stakeholders with the confidence they need to upgrade their buildings. Public procurement can support EE upskilling both directly and indirectly. Directly, through the use of competency-based clauses and EE training clauses, and indirectly, for instance by introducing quality checks going beyond regulatory standards. BUSLeague identified best practices from across Europe on how to use public procurement to incentivise EE upskilling and elaborated key recommendations for public bodies that may be interested in using public procurement to incentivise upskilling.

Figure 13. Case study in Ireland, St. Bricins Pre& Post\Renovation

2.4.3 D3.3 Final Best Practice Procurement Policy with energy efficiency clause

Based on the previous report which presented initial results on best practices on procurement policies with energy efficiency clauses, BUSLeague gathered successful case studies to inspire public bodies across Europe to drive upskilling. During the exploration of how public procurement could be used to incentivise energy efficiency upskilling, the project partners faced a number of challenges, including uncertainties surrounding the process, legislation and policies, competition with existing mechanisms, and reluctance from public bodies to introduce new rules in their roles of recruiting contractors to complete projects.

Key recommendations include:

- Public procurement can be used to incentivise energy efficiency both directly and indirectly.
- New requirements must be developed in close cooperation with a broad range of stakeholders, including industry.
- Energy efficiency training clauses are typically used for ambitious projects over a certain size.
- Additional requirements should initially be piloted on some specific projects.
- High quality templates and guidance documents should be available to public bodies.
- On-site training is usually well received by building professionals and tradespeople working on a project.

Figure 14: The Integrated Work Training (FIT): how the energy efficiency training clause was used by social housing provider/landlord CLESENCE for the renovation of residential units in Avesnes-les-Aubert, France.

2.4.4 D3.4 Initial guide on Financial Mechanisms for Renovations

BUSLeague collected and analysed the existing financial mechanisms that encourage the use of EE-skilled workers in home/building renovations. A deep analysis of the available related literature was conducted, allowing to collect several examples and good practices of existing

mechanisms already applied all over the world. This compilation served as a basis for initiating a round of contacts with financial institutions and public administrations detailed in D3.5.

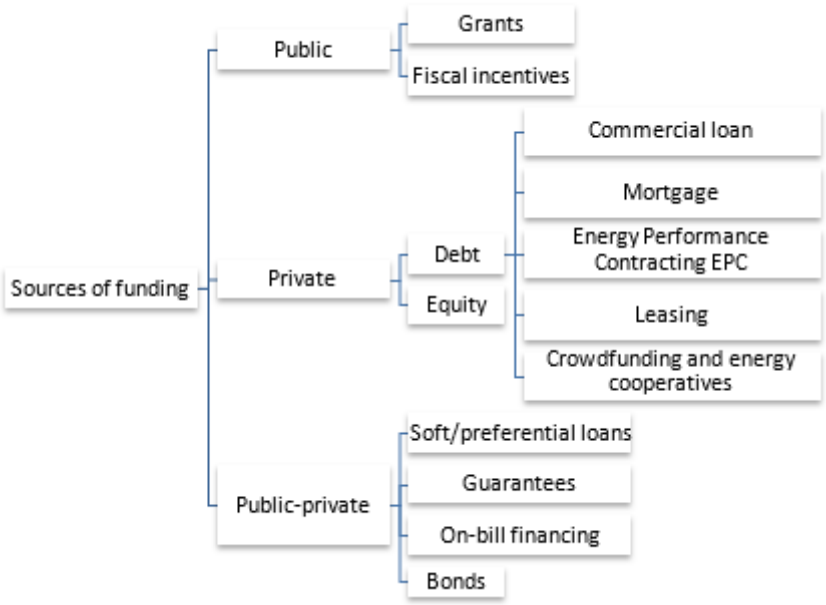


Figure 15. Classification of financial mechanisms according to funding sources

2.4.5 D3.5 Final Report on Financial Mechanisms for Renovations

The BUSLeague partners contacted financial institutions and public administrations (at least 3 per country) located in Austria, Bulgaria, France, Ireland, the Netherlands, and Spain. In total, 23 entities have been consulted through surveys and interviews. This report collects their views and perceptions in order to fine-tune the proposed mechanisms and adapt them to their needs and contexts. In most cases, only a SWOT analysis has been possible to make key actors reflect on the importance of this topic and, hopefully, elicit a reaction in the near future. On the positive side, during the BUSLeague project, four financial mechanisms were influenced; two of them managed by Irish banks, AIB and HBFI, and the other two by a public entity in Spain, the Generalitat Valenciana. As a main conclusion, we can state that existing labels, certifications, and tools can help to establish environmental quality eligibility criteria as a pre-condition for subsidies such as the "Register CHC" in Spain, the "RGE label" in France, or the "Home Performance Indicator (HPI)" in Ireland.

Figure 16. "Register CHC", "RGE label" and "HPI" logos respectively

2.5 ETHNOGRAPHIC RESEARCH

In parallel to the work done on the four aforementioned topics, mutual recognition of energy skills, awareness raising, capacity building and legislative changes, BUSLeague did ethnographic

research. Complementing the results with such research was key in generating fresh insights into the social, cultural, and material ways that the industry, behaviours, knowledge, and conditions of work in it are experienced and played out. The aim of the insights was to use them to adapt the results of BUSLeague as much as possible to the work field. It started with research in every country to understand the country specific context and was followed by an evaluation of the activities played out. The following deliverables are part of this outcome:

2.5.1 D2.3 Ethnographic Research Report on the recognition of energy efficiency skills

BUSLeague is dedicated to increasing demand for EE and sustainability skills in the construction sector. To find solutions to challenges in existing markets for EE Skills, BUSLeague decided to focus on people. Thus, researchers incorporated ethnographic research principles into their project work. This allows them to gain a better understanding of the social, cultural, and material realities of the construction and renovation industry. This research provided the BUSLeague with an insight into the diverse landscape of the EU construction and renovation sector, with a particular emphasis on complexities in the existing markets for EE Skills. In addition, it was a key milestone on the path to people-centred products and effective, long-term solutions.

	No. of activities per stakeholder group	No. of participants per stakeholder group
National Gov.	3	3
Regional Gov.	3	3
Local Gov.	5	5
DIY retailer companies	3	4
Small and Medium Enterprises	5	9
Independent workers and experts (blue and white collar)	2	2
Female workers and experts	4	4
Building managers	1	1
Professional associations	6	10
Construction sector training providers	5	7
Building owners	3	3
Financial bodies	5	5
Suppliers	2	2
Total No.	**47** interviews	**58** participants

Table 2. Total BUSLeague research participants and interviews/activities in T2.2

2.5.2 D5.3 Report on BUSLeague activities from an anthropological perspective

BUSLeague has put special emphasis on people and made ethnographic research principles an integral part of our work. This report is a reference point regarding challenges in the existing market for EE Skills, and a collection of the most relevant first-hand reflections on experiences with BUSLeague interventions, which reflect on their effectiveness and timeliness. The framework includes five key steps/tasks, which allowed the contributors to gain a good

understanding of people's experience of the interventions, as well as the social, cultural, and material realities of the construction and renovation sector.

Figure 17. On-site skills recognition in action (Photo credits: IVE)

The BUSLeague project has been instrumental in the positive assessment of timeliness and effectiveness with respect to participants engaging in interventions/activities, proactive engagement, market trends, and alignment of interventions with participants' patterns and/or principles of work. Negative factors that contributed to negative assessment include COVID-19 restrictions, impacts and complexities of institutional/business structures and processes, lack of motivation and understanding, and time constraints. Future directions for BUSLeague include research involving children, training clause for public procurement tenders, and untapped potential in training DIY stores staff.

Figure18. Transition year students in a VR retrofit training (Photo credits: TUS)

2.6 EDUCATIONAL TECHNOLOGY RESEARCH

In addition to the ethnographic research, educational research was required to understand the effects of the learning interventions and optimize the training interventions. The efficiency of the upskilling measures was be maximized based on the educational technologists' study. The following deliverable describes the research done on this topic and the instruments developed to do the educational evaluations of the interventions:

2.6.1 D5.4 Evaluation Report of the educational perspective and roadmap

The BUS League consortium has conducted upskilling interventions and trainings to address the stimulated demand for a skilled workforce in the energy transition. To design interventions and evaluate their effectiveness, it is important to identify what learning outcomes want to be addressed and what learning outcomes have been achieved. The EVALUATION123 is a guide to guide the evaluation of use and outcomes of upskills interventions. It consists of an evaluation framework suitable for a broad variety of interventions and a toolset to support its self-directed application. It also provides awareness about benefit and use of learning analytics and paths. This report includes three chapters explaining the point of departure for effective evaluations, the co-design of support means and the achieved insights. The full reference guide and toolset can be accessed via the following Google Drive link and copied for use and adaptation: https://drive.google.com/drive/folders/1sKn0ZBdj__neC8BdCpqW_d9NcabfCrM3.

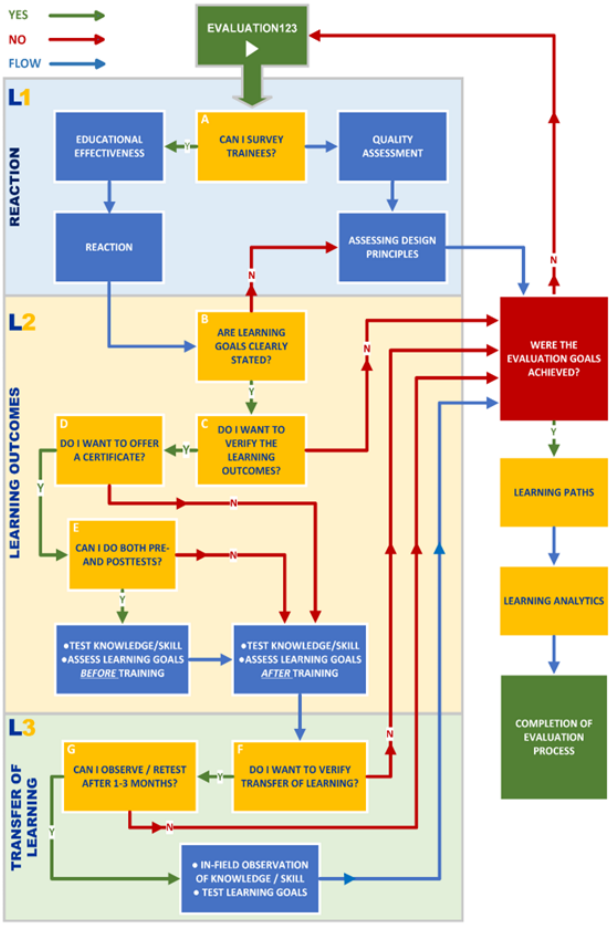


Figure 19: Evaluation123 Decision Tree

3 BUSLEAGUE TIMELINE

February 2021 - D4.6 Overview of applied e-learning interactions

In this deliverable, the BUSLeague consortium documented the possibilities for short and challenging micro-learnings to apply during the EE upskilling interventions at a national level. The report explores how those interactions could be connected with the BUSLeague-developed task-based EE-skills qualification.

May 2021 D2.3 Ethnographic Research

This research provided the BUSLeague with an insight into the diverse landscape of the EU construction and renovation sector, with a particular emphasis on complexities in the existing markets for EE Skills.

May 2021 D2.1 Report on proven approaches on the recognition of energy efficiency skills

The report summarizes the provision of further education and recognition of skills in the building sector among the partner countries (Austria, Bulgaria, France, Irelands, the Netherlands, and Spain), indicating for each country specific strengths and weaknesses in connection with challenges and opportunities.

August 2021 – D3.4 Initial guide on financial mechanisms

Partners were able to assess the viability of their adaptation to regional and or national contexts as well as they could contact financial bodies and public authorities to promote the launch of financial mechanisms that award the hiring of EE-skilled professionals.

September 2021 – D3.1 Main barriers to incorporate EE/nZEB

BUSLeague identified the lack of awareness of GPP and nZEB, the importance of strong quality assurance in relation to it, and the lack of knowledge and skills within public administration as the key barriers to using Energy Efficiency/nZEB training and competency-based clauses.

February 2022 – D4.1 Report on available training content

The BUSLeague project identified, assessed, and collected relevant curricula, presentations, handbooks, demos, e-tools, and schematics from previous national and European projects. 28 training modules were found to be within the specific scope of the definition of the BUSLeague EE-skills qualification and to provide upskilling content and resources in English.

March 2022 – D3.2 Public procurement to incentive upskilling

By using GPP, public authorities can provide the industry with real incentives for upskilling, and other stakeholders with the confidence need to upgrade their buildings. BUSLeague elaborated key recommendations for public bodies that may be interested in using public procurement to incentivise upskilling.

March 2022 - D3.3 Final Best Practice Procurement Policy with energy efficiency clause

The report presents examples and best practices of 'how public procurement can be used' to incentivise energy efficiency upskilling in the construction industry. The successful cases included methodologies fully compliant with EU tendering rules, hoping to inspire public bodies to drive upskilling.

September 2022 – D4.2 Established Energy Skills Quality Repository

The BUS-app offers the option to link learning content with relevant tasks and subtasks which makes it simple to access. Through the app, partners can: 1) map content, 2) find content, 3) upload content, 4) accredit learners and 5) find recognized craftsmen.

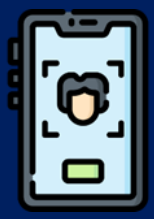
November 2022 - D4.3 Guide for Methodologies and Pedagogical Training Tools

This deliverable lists an inventory of training tools consisting of demonstration models, training platforms, and training centres that support conceptual and theoretical knowledge. The consortium identified different sources to characterize these tools and their suitability for specific contexts.

December 2022 - D4.5 Report on strategies to improve the energy skills of blue-collar workers

The document presents a variety of strategies to improve the energy skills assessment process in small worksites. The deliverable proposed an approach to focus on small strategies, which can produce significant improvements.

January 2023 - D5.4 Evaluation Report of the educational perspective and roadmap



This deliverable contains an overview of how upskilling interventions currently record learning outcomes and what research recommends, guides the design and implementation of evaluations of upskilling interventions, and demonstrates evaluation designs and insights of selected interventions to inspire future evaluations in the energy transition.

February 2023 – D3.6 Awareness Campaign Guide to stimulate skills-based demand

This report contains detailed information and lessons learned about the experience of working in collaboration with DIY/ Hardware-stores to increase awareness for both the general public and the workforce.

February 2023 - D5.3 Report on BUSLeague activities from an anthropological perspective

The report is a collection of the most relevant first-hand reflections on experiences with the BUSLeague interventions. They reflect on the effectiveness and timelessness of the BUSLeague interventions, distinctively from a qualitative point of view.

February 2023 – D5.5 Story to increase the demand for EE skills

Stories to increase the demand for EE skills based on BUSLeague experiences are presented as part of this deliverable. The nine stories told by BUSLeague project partners are presented here: https://busleague.eu/stories/

February 2023 - D3.5 Final Report on Financial Mechanisms for Renovations

This report collected the partners' views and perceptions about the mechanisms to encourage the use of skilled workers in home/building renovations, to fine-tune and adapt them to their contexts and needs.

Figure 20. BUSLeague timeline – based on first editions of deliverables.

BUS LEAGUE

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