

# Modernising the Building Industry:

A New Step-by-step Approach for Building Supply Chains for Micro and Small Enterprises

**ENERGY EFFICIENCY**



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## Executive Summary

New competences are essential for the smooth introduction of new technologies. In the building industry this is even more dramatic as the competences are needed during every phase of the process: the designers have to learn how to introduce the new technology to make the buildings more efficient and resilient to climate changes, the producers need to provide the right information for a proper design and installation, in a digital form, to be used by architects in their software editors and by the constructor for the installations, the installers and the maintainers need the information for the right installation, maintenance and management of the end of life, last but not least, the owners need specific competences to evaluate the benefits compared to other traditional solutions and make informed decisions.

National approaches, such as on the job learning, have not been successful to date in deploying the necessary skills, especially for those required for green construction. Learning is only 50% of the requirement. This process fails to measure impact either at the individual level or task level.

This document proposes a new step-by-step approach for building supply chains to gain the necessary full competences “byte sizes of knowledge”. This approach is particularly suitable for micro and small enterprises that do not like to waste time in long training courses that occur off-site but also for owners that do not need to become “experts” of each technology. The “step by step learning process” will be certified with the cryptocurrency “certcoin” – that is the recognition of a single competence with blockchain system and when he/she has reached the higher level, the final certification can be awarded. The foreseen ARISE platform can be used at European level by allowing the mutual recognition and therefore the mobility of the building workforce through Europe. This solution also satisfies the requirement of European directives to have a public register of designers and workers. The ARISE approach of Technical Innovation in Blended Learning (TIBL) measures delivery, impact, and the end result, thereby proposing an integrated solution to the different competences needs of the supply chain and closing the gaps. The approach establishes the conditions for continuous workplace upskilling and evaluation and affords the learner access to the skills required for the specific tasks he has to perform and is a circular approach that has 360-degree impact.

Lifelong learning must be flexible, accessible and learner driven.

# 1. Topic Overview

## 1.1 Topic

Since the start of BUS initiative through the Construction skills call of H2020, a tremendous number of schemes for training, upskilling and qualification has been produced. These cover a broad scope of occupations involved in construction. During these actions the process of lifelong learning was recognized as a reliable path for keeping-up with the state-of-art development of the sector.

However, this success has allowed to identify the lack of a more international approach, which would be enabled only by mutual recognition of national achievements and by making energy skills comparable and validated across different EU countries.

Despite the importance of the lifelong learning process, so far it a systematic approach, overall quality and transparency of training topics to enable comparability. Moreover, there is also an absence of mechanisms and tools for mutual recognition and acceptance between different countries, and it lacks formal recognition in National Qualification Frameworks (NQFs).

Each of the topics that are the subject of this document: Value of skills-based upskilling, Digitisation of upskilling linked to construction sector, Green Public Procurement are asking for an overarching approach to the national tools, methodologies, and policies. More international actions are required for enabling the mobility of professionals and technologies exchanges, thus enhancing the complementarity of efforts to act toward higher effectiveness.

Acknowledging the importance of an integrated action towards the common climate-resilience goal, it is essential to trigger market demand for energy skills, expressing their benefits for each stakeholder participating in the building life cycle. Potential actions include accelerating the introduction of innovative energy efficiency solutions in the construction chain, and engaging with property owners, managers and learners

## 1.2 Policy challenges

The improvement of green construction faces several Policy Challenges:

### 1. Heat Pumps

- 📦 Implementation issues due to the lack of skilled workers in the market.
- 📦 Public distrust in using a heating system that uses electricity.
- 📦 Not enough incentives for large-scale installations (tax breaks).
- 📦 Lack of skills and understanding of Heat pumps and heating systems among policymakers.

### 2. Innovative technology and techniques

- 📦 Innovative solutions remains unknown for long among most public and private building owners due to time lapses between innovative technology and the update of qualification.
- 📦 The standardisation process identifying new parameters for placing innovative products



on the market is too slow and laborious.

- 📦 Innovative solutions need to be embedded along all the supply chain to ensure the correct design, installation, management, maintenance, end of the life cycle.
- 📦 Single integrated competences to innovative techniques/approaches need to be integrated without the increasing of new qualifications.

### 3. Qualifications

- 📦 Qualification systems differ among European countries (and even regions), making the mutual recognition of qualification impossible and creating workforce movement barriers.
- 📦 European directives do not request the verification of competences of the workforce employed in public tenders. As a result, often new and reformed buildings do not meet the required energy performance.

### 4. Internationalisation. Although internationalisation of the approach toward enhancing the value of construction skills is a promising strategy, replication challenges vary across EU regions:

- 📦 The characteristics of the construction market in a country - e.g., the percentage of skilled workers, the characteristics of the building stock, market barriers.
- 📦 Language barriers - training materials need to be translated into several languages.
- 📦 Geographical issues - energy efficiency schemes are more easily applicable among groups of countries with similar climatic conditions.
- 📦 Differences in legislation - replication chances depend on the similarity of legal frameworks for construction skills education/qualifications construction sector and a similarly structured qualification framework/CVET system.
- 📦 National interpretation of EU recommendations for EE measures - national employment policies can clash with EU's rigid legal requirements to member states toward energy efficiency in the Clean Energy for All Europeans package.
- 📦 Lack of investments in qualified workers - Public authorities are not concentrated on these issues, and construction companies have little interest in providing employee training due to the financial burden.

## 2. Recommendations

Based on the topic overview, the policy gaps and what's needed, please give a maximum of 5 policy recommendations, 10 lines maximum for each.

### 2.1 Value of skills-based upskilling

Incentivise government-funded upskilling programmes with the chance to work with government bodies would accelerate the standardization processes, identifying new parameters for placing innovative products on the market. Also, the recognition of new technologies within European and national legislation needs to be more immediate and transparent, incentivising production companies to propose increasingly innovative solutions. This could be accomplished by, creating a system of recognising the new skills and teaching to correctly use new products and technologies in the construction supply chain. The platform that ARISE proposes, based on the recognition of the skills necessary to carry out a specific activity within the construction process, already satisfies this need. Practical sessions are required for skills-based workers, so a blended approach or a full in person is advisable. There also needs to be benefits to workers for undertaking courses and degrees. Finally, the direct stimulation of demand for energy skills in construction could be tackled on a wide interregional level by creating an online repository for skills registration (i.e. Integrated Register of energy skills), to make the skills visible, accessible and available on the interregional level; then enabling interregional cross VALIDATION of energy skills by making them comparable. Such efforts would, in turn, raise the VALUE of the skills and tackle their market demand internationally and globally. An Integrated register of energy skills should incorporate 3 different types of databases offering multiple functionalities: 1) a database of qualification schemes showing how to obtain skills; 2) a database of skilled and certified workers and professionals; 3) a database of EE construction materials.

Smart financial incentives (e.g., tailored subsidiary schemes and installation bonuses) should be used to re-train existing heating system installers. New approaches to training regulations should be set up with exemptions for the traditional certification process (e.g., in Germany exemption from the Craftsman rule where a “Meister” title is required to be an independent craft person). Capacity of installers should be increased through the introduction of a “renewable heat installer” (test joint education of PV and heat pump installers) and a new category of a “fitter” (to be obtained through limited specific training).

### 2.2 Digitisation of upskilling linked to construction sector

Create a digital certificate (similar to the Covid pass or the safe pass) that shows clients, the qualifications, courses/workshops, and the time as a contractor. This will alleviate distrust and also for a register to be easily completed. Time-served workers must also be able to be accredited and certified. Digitalization should be seen as a new way to design, realize, maintain, manage, and consider the life cycle of a building and each single component. New skills are required more than new jobs. As a way to offer training schemes for wide range of users without geographical constraints, digitalisation of the training process itself is also necessary. E-learning or at least a blended-learning process needs to be established to correspond to



the current needs of the learners and to ease the uptake of new technologies. In light of global actions toward digitisation, adjusting the procedure as online process, submitting documentation for evaluation, evaluating submitted documents and issuing certification can be realised through web-based platform for e-learning, to ensure a widespread use of E-RPL tool. A final step toward digitalisation of upskilling process is proposing web-based solution of Digital badge which will include each skill, knowledge and competence that a worker has ever gained to enable mobility of staff, identify the need for upskilling of worker within the company, and show the company's competitiveness.

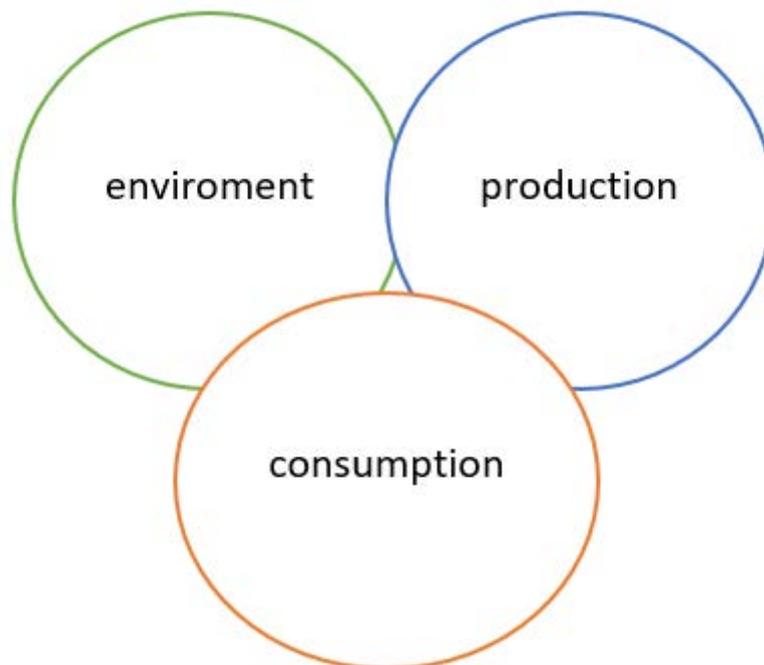
## 2.3 Green Public Procurement

Public buildings are changing to incorporate a green element to their design and planning. This can be incentivised through reductions in local property tax (LPT) for each green element introduced. For Heat pumps, having a minimum COP requirement of 3.0 (a good COP) through the use of external and high-quality heat and electricity meters. This will ensure that heat pumps are properly monitored and well installed. In this context, the digitalisation of the building supply chain can facilitate the application of green procurements. For instance, a digital library of local products with a carbon footprint could support the designer to choose the product with less environmental impact. The BIM methodology can accelerate the “dynamic” evaluation of the environmental impact through technical design and construction. Moreover, comparing different legal obligations in EU countries and sharing good practices could help draft national “micro” roadmaps for legislation changes necessary to stimulate demand for energy skills. These roadmaps may be offered to public authorities and sector organisations to support the changes or development of new legislative frameworks. Awareness-raising activities among the salesforce and consumers can be tackled by introducing the database of energy-efficient products/materials linked with their producers and containing the scope of product properties, especially in terms of energy efficiency and its “greenness”. Finally, the initiatives reinforcing the link between skills/education and energy performance/quality of construction can be incorporated into the actions toward expressing the value of energy skills through digital tools like BIM.

## 2.4 Recommendation toward energy efficiency from the Polish National Chamber of Construction, including members of construction sector associations and private companies:

1) Global policy over local (EU level): European Union legislators should pursue a global policy on energy efficiency and exert political and economic pressure on the largest CO<sub>2</sub> emitters. The situation is similar to reducing plastic consumption; belt-tightening and restrictive laws in the EU do not prevent the littering of the environment. By taking a broader view, EU politicians could be pressured to start exerting influence on non-EU countries. This requires a great deal of change in the global economy, such as bringing production back to EU countries or significantly reducing imports. 2) Diversification of production: in shaping production policy, quality should be prioritised over quantity. Production should focus on sustainable and energy-efficient products cheaper, less durable products should not be abandoned altogether, but attention should be paid to increasing the use of recycled materials and to ensuring that new products can also be reused at the end of their life. 3) Uniform and transparent regulation: there is a great need for uniform regulations, at least within the EU, regarding

the technical parameters of products manufactured in the construction value chain. It is also important to properly define the percentage of recyclates used in manufacturing, access to raw materials and the introduction of transitional periods so that national economies and individual companies can adapt. 4) National and European social programmes (in the context of education): a very important issue is the introduction of elements of public education on energy efficiency. To increase knowledge of the subject, solutions should be implemented at the compulsory school level, with dedicated classes in technical and energy studies. Global social campaigns targeting the older part of society should also be considered. Grassroots work is an important element in raising awareness. Furthermore, several projects should be implemented to promote energy reduction and energy efficiency measures, such as tax incentives for home renovations (insulation, alternative energy installations), subsidy programmes for such renovations, or programmes for the purchase of cleaner technologies.



## 3. Project Group

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