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D7.5 Recommendations for market stimulating and supportive measures

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D7.5. Recommendations for market stimulating and supportive measures

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Publishable executive summary

The Report describes ARISE developed recommendations for national policy makers, public administration, investors, and building owners, intended to assist them in designing, improving and applying advanced procurement requests for construction workforce who are certified for sustainable energy and digital skills in new construction and renovation projects.

Results and findings of D7.4: *Overview of best practices in market implementation of skills* have been used, as well as outputs of the report D7.1, *Guidelines to align ARISE learning outcomes with national qualification frameworks*, describing ARISE framework potential to be matched with national qualifications framework in the fields of digital and sustainable energy skills.

The objective of Report D7.5 is to provide recommendations for market stimulating and supportive measures for enhanced demand of sustainable energy and digital skills, as well as guidelines on how to start and carry out reforms in procurement procedures, in order to implement the suggested measures.

For the purposes of this report, an example of a form of basic specification for competencies in digital and sustainable energy skills, to be applied in procurement procedures, was suggested, based on the ARISE Report D3.3 *Qualification framework of sustainable energy skills leveraged by digitalisation incl. BIM*.

List of acronyms and abbreviations

BIM - Building Information Modelling

EE - Energy efficiency

NZEB - Nearly Zero-Energy Buildings

RES - Renewable Energy Source

GPP – Green Public Procurement

BSI – Building Smart International

NQs – National qualifications

NQF – National Qualification Framework

VET – Vocational Education and Training

CPD – Continuous Professional Development

AEC – Architecture, Engineering and Construction

ULO – Units of Learning Outcomes

WP – Work Package



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1. Introduction

1.1. Subject and objective of the Report

Subject of the Report 7.5 is analysis leading to preparation of a set of recommendations for measures to stimulate market demand for sustainable energy and digital skills in procurement of building projects.

The report was developed on the basis of

- Responses on the survey conducted in project encompassed countries, of national legal and regulatory frameworks for skills demand in procurement and execution procedures (D7.4: *Overview of best practices of market recognition of skills*),
- Outputs of previous and current projects (Train4Sustain, Instruct, BUSLeague, HP4All, See the Skills,) provided by their similar analyses.

Objective of the Report 7.5 is development of recommendations for stimulating and supportive policy measures to increase and accelerate market demand for skilled workforce engaged in building projects. Recommendations are intended for policy makers, public administration, investors and building owners, to assist them in designing, improving and applying advanced procurement requests for construction workforce certified for sustainable energy and digital skills in design and construction of new and renovation projects of buildings. Apart from that, some of the measures suggested in the guidelines are expected to be found of interest by private investors as well and as such, applicable in private procurement.

As an example of a form of basic specification for competences required across the AEC sector in a specific phase of a building life cycle and in various phases of procurement procedures, the ARISE framework of competences is suggested,



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taking in consideration potential thereof to be matched with national qualification frameworks.

1.2. Applied methodology

The applied methodology included a mixed approach of analysis of primary sources of information (Surveys in D7.4) and secondary sources (analyses and findings of other previous and current projects), implemented in the following sequence:

1. Analysis of findings of the surveys conducted within the Task 7.4
2. Desk research on other projects' analyses and recommendations in the subject field
3. Development of ARISE recommendations

1.3. Content of the Report

The content of the Report has been organized in 6 Chapters:

1. Introduction–background, scope, subject, objectives and applied methodology
2. Overview of the findings of the survey conducted within D7.4
3. Desk research on other projects' analyses and recommendations
4. Development of ARISE recommendations
5. Conclusions
6. References

2. Brief overview of the findings of survey within D7.4

2.1. Common findings of the Survey 1 and Survey 2

Both surveys identified insufficient or (in some countries) lack of demand for competences in sustainable energy and digital skills, as well as inconsistency and incompleteness of specifications for skilled workforce in public procurement of buildings, even more emphasized in private procurement. Even in countries with qualifications demand in public procurement, there is a room for improvement, particularly in aspect of assigning more weight to the competences and the method of their validation, in the bid evaluation procedure. On the other hand, the recognized interest and motivation at both demand and supply side are encouraging findings and an inspiring foundation to design and propose stimulating and supporting measures to enhance market demand of skilled workforce.

2.2. Findings of the Survey 1 responses, related to stimulating measures

According to the responses of Survey 1,

- 1) The main barriers to change the current legislative framework, for public procurement of building projects, concerning the requirements on sustainable energy skills are:
 - Lack of awareness of the policy and market drivers,
 - Lack of information on benefits,
 - Increase of operational costs for companies, particularly for SMEs
 - Lack of adequate trainings for sustainable energy skills

2) The stimulating measures for procurement demand of qualified construction sector workforce applied in project partner countries are:

- Capacity building of public administration,
- Capacity building of private investors,
- Taxation free incentives,
- Free upskilling of construction sector workforce,

3) Additional stimulating measures for demand of qualified construction sector workforce, recommended by the respondents are:

- Involve insurance company that could decrease the cost if all the workers are qualified for the right task,
- Skills assessments at team level,
- Introduce energy and carbon requirements from the outset of the project.
- Access to investment funds (e.g. green building funds) for investors willing to employ a contractor with qualified workforce in sustainable energy skills.
- By bringing the energy requirements and carbon footprint into the concept phase of the design so that targets are formed and met throughout the design and not as a post-exercise after the design.
- More bonus points in procurement when related for workforce skills. The submission of digital files and data driven assessments regarding further mandatory but subsidised certification for designers, and installers.

2.3. Findings of the Survey 2 responses, related to stimulating measures

According to the responses of Survey 2,

- 1) The main barriers to change the current legislative framework, for public procurement of building projects, concerning the requirements on sustainable energy skills for workers and professionals, identified by the respondents are:
 - Lack of finance to start reforms in legislation,
 - Lack of awareness of the policy and market drivers for demand of skills in procurement procedures

The two thirdly ranked options comply with the results of the same question in the Survey 1:

- Lack of information on benefits
 - Increase of operational costs for companies
- 2) The three most effective stimulating measures for procurement demand of qualified construction sector workforce applied by the respondents are:
 - Capacity building of public administration,
 - Capacity building of private investors
 - Free upskilling of construction sector workforce
 - 3) Additional stimulating measures for demand of qualified construction sector workforce, recommended by the respondents, are basically financial support and stimulus for the service supply side/
 - 4) Most of the respondents (65%) stated that public administration, on national and regional level, should take an initiative for introducing/ improving the requirements in tendering procedures, leading to stimulating market demand for skilled workforce.



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- 5) An interesting finding is that, although most of the respondents are familiar with the fact that BIM leverages effects of sustainable energy skills, they think that competences in BIM for EE should only bring bonus points to the bid.

3. Analysis of findings and recommendations from other projects

3.1. Introduction

Five projects were analysed, in aspect of their research and findings on measures and instruments for increased market demand of skilled workforce in construction:

- 1) Train4sustain (<https://train4sustain.eu/>), Reports: *D2.1: Baseline of national qualifications standards and recognition policies*¹, and *D4.3 Development of policy recommendations and a guideline for fostering requirements on sustainable energy skills in GPP*²,
- 2) Instruct (<https://instructproject.eu/>), Reports *D2.4 Requirements for new instruments for skills recognition in the construction industry*³; *D4.4. Energy skills recognition policy making*⁴; *D3.3 New legislative frameworks*⁵
- 3) Bus League (<https://busleague.eu/>), Report *D.3.2 Using Public Procurement to Incentivise Upskilling - Best Practice Guide*⁶; *Deliverable 3.1: Main barriers to incorporate “Energy efficiency/nZEB” training clause into Public Procurement*⁷
- 4) HP4ALL (<https://hp4all.eu/>), report *D5.4 – Legislation and Policy Recommendations*⁸

¹ https://train4sustain.eu/assets/content/TRAIN4SUSTAIN_deliverable_D21.pdf

² <https://cordis.europa.eu/project/id/894514/results>

³ https://instructproject.eu/wp-content/uploads/2021/10/INSTRUCT_Requirements-for-new-instruments.pdf

⁴ https://instructproject.eu/wp-content/uploads/2023/03/Demo-4-Energy-skills-recognition-policy-making_v1.0_final-pdf-1.pdf

⁵ <https://instructproject.eu/wp-content/uploads/2023/03/D3.3-New-legislative-frameworks.pdf>

⁶ https://busleague.eu/wp-content/uploads/D3_2_user_friendly.pdf

⁷ https://busleague.eu/wp-content/uploads/D3_1_full_version.pdf

⁸ <https://hp4all.eu/wp-content/uploads/2023/01/Legislation-and-Policy-Recommendations.pdf>



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5) See the Skills (<https://seetheskills.eu/>), *D2.1. Interregional survey on the measures toward EE in different partner countries*.⁹, and *D5.1: Report from on-line survey on awareness on energy skills*¹⁰,

The selection of the explored projects was made on the basis of: 1) specifics of their objectives, focus and approach, compared to the ARISE concept and mission, 2) geographical coverage of the project included countries.

The final goal of this selection was to provide new, complementary views and recommendations that can be combined with those developed by other projects into a comprehensive set to be of use for the European construction sector.

Approaches, methodologies applied, results and recommendations produced by the analysed projects are presented in sub- Chapters 3.2 to 3.6.

⁹ https://seetheskills.eu/wp-content/uploads/2022/12/D2.1-Interregional_survey_on_energy_skills_SEEtheSkills_final_31.05.2022.pdf

¹⁰ https://seetheskills.eu/wp-content/uploads/2022/12/D5.1_Report-from-on-line-survey-on-awareness-on-energy-skills_SEEtheSkills_final_30.11.2022.pdf

3.2. Train4Sustain project approach and recommendations

3.2.1. Project objectives

TRAIN4SUSTAIN project (*Establishing Future-Oriented Training And Qualification Quality Standards For Fostering A Broad Uptake Of Sustainable Energy Skills In The European Construction Sector*) objective was to stimulate demand for skilled construction sector professionals (architects, contractors-SMEs and workers) through raising acceptance of regional and national qualifications and skills on the EU construction market. T4S project aimed to foster a common understanding of sustainable energy skills across Europe by promoting a competence quality standard, a European Skills Registry and a Skills Passport for facilitating transnational recognition of learning outcomes and skill levels of existing qualifications and vocational trainings.¹¹

3.2.2. Project outputs related to increased market demand for skills

The project deliverable *D2.1: Baseline of national qualifications standards and recognition policies* described the actual usage of requirements concerning sustainable skills for professionals and blue collars in public tenders for buildings and how they are formulated, while the report *D4.3 Development of policy recommendations and a guideline for fostering requirements on sustainable energy skills in GPP* was an analysis on the exploitable approaches, methods and initiatives for improving the public procurement processes focused on sustainability and energy efficiency in the building sector, specifically in

¹¹ <https://cordis.europa.eu/project/id/894514>

constructions, renovations and maintenance and related skills, at European and international level.

Gaps and requirements identified by the project team led to the following List of the Policy Recommendations divided into the different belonging fields.

Field: Professional Competences

1. Promote the objective verification and measurement of professional's competences through a uniform System
2. Promote a multidisciplinary team approach in GPP

Field: Public Tender Requirements

1. Transnational Harmonisation of GPP criteria for sustainability skills
2. Inclusion of mandatory requirements in public tenders concerning the competence of professionals
3. Raise awareness and importance on the awarding score concerning professional's competence requirements
4. Promote a Multilevel Governance Approach

Field: Training

1. Promote a more stringent continuous professional training
2. Promote a specific training activity addressed to the writers of the tenders in the public authority

Field: Communication and Services

1. Promote ad hoc communication campaigns at regional/national level to raise awareness and disseminate the available tools
2. Promote specific support services (help desks) at regional/national level aimed at the various players
3. Promote benchmarking at national level to identify market needs and tendencies



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4. Promote international exchange of knowledge between professionals/workers and civil servants to adapt the construction requirements according to each climatic zone

The recommendations have been described through a template structured in few section areas, summarising the main information concerning the Recommendation analysed.

The T4S project also developed two approaches for competence requirements in public procurement procedures:

- the minimum competence requirements approach,
- the competence requirements, in relation to a specific project.

The minimum competence requirements approach is the easiest modality to recognize professionals and blue collars competences; it is a mechanism that rewards professionals able to prove they have the minimum scores required in the different areas of expertise.

Competence requirements, in relation to a specific project is a rewarding mechanism of the individual competences based on the characteristics of the tender's project. It is designed to be carried out in three steps STEP 1: Competence requirements identification, based on GPP criteria; STEP 2: Competence requirement level specification; STEP 3: Competence requirements verification.

3.3. Instruct project approach and recommendations

3.3.1. Project objectives¹²

The Instruct project (*Evidence-based market and policy instruments Implementation across EU to increase the demand for eEnergy Skills across conSTRUCTION sector value chain*), aimed to act at a market level by providing an operational framework and set of services for a new generation of skilled and certified workers and fitters and paving the way to legislative changes that overall will stimulate the demand for energy skills across lifecycle and supply chains. Key outputs include: (a) quantitative and qualitative evidences that corroborate and reinforce the correlation between skills and education and energy performance and quality; (b) a set of tools and instruments facilitating the mutual recognition of energy skills and qualifications in the construction sector; (c) real-world demonstrations; (d) dissemination and awareness raising actions in consortium members countries; (e) new legislative frameworks enabling reliance on skilled workers in public / private procurement.

3.2.2. Project outputs related to increased market demand for skills

The project developed tools facilitating the mutual recognition of energy skills and qualifications in the construction sector, reported in the *D2.1: Baseline of national qualifications standards and recognition policies*. This was informed by a Europe-wide consultation using a mixed-method approach, involving secondary (*in the*

¹²

<https://cordis.europa.eu/project/id/894756#:~:text=The%20INSTRUCT%20project%20aims%20to,across%20lifecycle%20and%20supply%20chains.>

form of industry studies and academic publications) and primary sources of evidence. More specifically, these insights have helped shed light on: a. the state of awareness, access to information, and dissemination of knowledge for energy efficiency in the European Construction sector for the level of demand for skilled workforce in energy efficiency.

A variety of barriers were identified such as:

1. Lack of access to useful information, knowledge, and best practice guides for energy efficiency interventions.
2. Lack of demand for skilled workforce in energy efficiency.
3. Lack of availability, or inadequate, training programs (in terms of scope, quality, content, cost, etc.).
4. Lack of shared vision and values for energy efficiency across the supply chain.
5. Inadequate policy landscape, including lack of government incentives.

The INSTRUCT Report D4.4 *Demo 4 Energy skills recognition policy making* focuses on energy skills recognition in policy-making.

The INSTRUCT project responded to this challenge by acting at market level and providing an operational framework and set of services intended to (1) raise awareness of stakeholders in the construction value chain about environmental challenges, benefits of sustainable energy skills and need of skilled workers in energy efficiency in the construction sector, (2) increase the number of skilled building professionals and construction workers along the whole value chain and (3) pave the way to legislative changes by supporting public authorities and industrial stakeholders for the development of new legislative frameworks.

Developed in INSTRUCT project services included sustainable energy skills passports/registers for workers, new legislative frameworks or public procurement



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practices, initiatives for home and building owners, and new partnerships in the construction value chain.

The project team found that creating legislative recommendations related to skills recognition in policy making was crucial for promoting energy efficiency in the construction sector. By creating policies that recognize and promote the importance of these skills, policymakers can incentivize professionals to acquire them and thus drive the adoption of energy-efficient practices in the sector. Furthermore, by including requirements for energy efficiency in tendering processes, policymakers can encourage contractors and developers to prioritize energy-efficient practices in their projects. This can be achieved by introducing policy recommendations such as mandatory energy audits, standards for building insulation, and the use of renewable energy sources.

INSTRUCT Report D3.3. *New legislative frameworks* proposed a structured way for sorting legislative framework instruments into 5 groups:

1. Regulatory and normative instruments
2. Fiscal instruments
2. Program based instruments
3. Voluntary instruments, covering evaluative and negotiating instruments
4. Informative steering instruments, which are often used in connection with the three first groups.

The other aspect required was to enable the definition of the level of usage for a method.

Six levels of usage have been considered: (1) European, (2) National, (3) Regional, (4) Municipality, (5) City and (6) Client/Owner level. Often, a method belongs to only one group but can be used in many levels.

3.4. BUSLeague project approach and recommendations

3.4.1. Project objectives

The BusLeague project (*Dedicated to stimulate demand for sustainable energy skills in the construction sector*) aimed to address and control the challenges created by the rise in demand for energy-skilled and experienced workers for the building planning, operation and support value chain. The project developed and applied European recognition of energy skills in conjunction with improving training methods and techniques already demonstrated by EU and national initiatives such as BUILD UP Skills and Construction Skills. BUSLeague focused on a combination of mutual recognition of energy skills, awareness raising, capacity building and legislative changes.

3.4.2. Project outputs related to increased market demand for skills

In its report *D.3.2 Using Public Procurement to Incentivise Upskilling - Best Practice Guide*¹³ the project stated the relevance of Green Public Procurement and how it can stimulate the provision of more resource-efficient, less polluting goods, services and works within the marketplace.

By presenting successful six case studies the BUSLeague team put together some key recommendations for public bodies that may be interested in using public procurement to incentivise upskilling. These initial recommendations are quoted below:

- Public procurement can be used to incentivise energy efficiency upskilling both directly (e.g., through energy efficiency training clause

¹³ https://busleague.eu/wp-content/uploads/D3_2_user_friendly.pdf

and competency-based clauses) and indirectly (e.g., by introducing higher quality standards).

- New requirements must be developed in close cooperation with a broad range of stakeholders, including industry. Public bodies must be fully transparent about the process.
- Given the additional work associated with the introduction of additional requirements, energy-efficiency training clauses are typically used for ambitious projects (often going beyond minimum building regulations) over a certain size.
- Additional requirements should initially be piloted on some specific projects. However, overtime the same rules should apply to all projects in a region to ensure consistency
- High quality templates and guidance documents are critical and should be made available to public bodies willing to use public procurement to incentivise upskilling.
- Onsite training is usually well received by building professionals and trades working on a project. It also allows them to gain a better understanding of how their work connect with the work of other building professionals and construction workers.

In its report Deliverable 3.1: *Main barriers to incorporate “Energy efficiency/nZEB”* the project team analysed implementation of the training clause into Public Procurement.

The project analysed options to include training clauses in public procurement procedures and proposed a template for including the Training Clause in a public tender.

Based on the desk research, the following barriers to the incorporation of nZEB/energy efficiency training clauses and/or competency-based clauses into public procurement were identified by the project:



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- Lack of awareness
- Political and organisational challenges
- Lack of knowledge and skills
- Lack of tools
- Lack of cooperation & exchange of best practice
- Perceptual barriers

3.5. HP4ALL project approach and recommendations

3.5.1. Project objectives¹⁴

The EU-funded HP4All project aims to allow improvement of capacity and skills within the HP industry and secure the energy efficiency benefits that HP technology offers. The project brings together a wide range of actors from the supply and the demand sides to increase, develop and promote the desired skills for high-quality HP and to optimise HP installations within residential and non-residential buildings. It will develop a package of different instruments and resources, including an HP Competency Framework to facilitate mutual recognition of HP skills and, from an end-user perspective, an HP Knowledge Hub to deliver support, instructions and tools.

3.5.2 Project outputs related to increased market demand for skills

Main recommendations coming out of the HP4ALL implementation are (D5.4 – *Legislation and Policy Recommendations*)¹⁵:

1. Carry out an intensive EU-wide marketing and awareness raising campaign to ensure social recognition and visibility of energy & building renovation professionals with increasing and more complex skills.
2. Adopt legal and market measures to improve labour conditions, avoiding temporality and fostering long lasting careers, gender balance,

¹⁴ <https://cordis.europa.eu/project/id/891775>

¹⁵ <https://hp4all.eu/wp-content/uploads/2023/01/Legislation-and-Policy-Recommendations.pdf>

attractiveness to youth and workers from other declining sectors, and integration of vulnerable collectives to labour market niches and talent pools.

3. Address an overarching EU scheme for the legal reinforcement of energy rehabilitation training & skills curricula, with Member states and Regions addressing the optimal implementation specialization scheme and roadmap.

4. Draw-up EU-wide minimum content guidelines for specialised training programmes contents, either formal or informal, to avoid gaps. Continuous training for upskilling workers that are already in the sector must be made compulsory alongside providing opportunities for people outside of the sector to re-skill and join the sector workforce.

5. Advance and favour more agile VET certification schemes that can be mutually recognised and repeated by other member states, with simplified procedures for application and certification all the while using common reference frameworks so that good quality of HP workers is ensured.

6. Reinforce sustainable energy skills in school curricula (Apprenticeships, Secondary Level Education and Primary Education) ensuring that the opportunities for employment in the sustainability, energy and climate sectors are clearly presented to the future generations.

7. Boost installation service quality assurance mechanisms 8. Introduce more strict manufacturing & installation solvency and implementation criteria in related public procurement, as well as more demanding quality/price ratio targets.

8. Promote energy advice and energy renovation project management as a job enrichment opportunity / new market niche / specialization itinerary, with appropriate financial support. One-Stop-Shops, clearinghouses and call centres can be used for this purpose, with appropriate and coordinated support from EU, national and regional funds,

and private investment. This service would include training and signposting to certified, trusted professionals as is currently the case in some Member States.

9. Reinforce and provide specific visibility and prioritisation to energy rehabilitation education and training schemes and packages

10. Put in place adequate coordination mechanisms (e.g., a Heat Pump Accelerator or an EU wide Public Private Partnership) to ensure complementarities and synergies at all administrative levels (EU, state, regional, local) and bringing in all stakeholders throughout the whole value chain, implementing fully or partially these recommendations depending on the context

HP4ALL recommendations package includes:¹⁶

01. Awareness raising, information & communication
02. Enhancement and improvement of labour and working conditions
03. EU Legal reinforcement of training & skills requirements
04. Gap-filling, fit-for-purpose VET training programmes
05. Advanced VET certification schemes
06. Sustainable energy skills in school curricula
07. Installation service quality assurance
08. More favourable public procurement specifications
09. Energy advice
10. Coordinated & reinforced funding
11. Coordination, collaboration, and scale of acceptance

¹⁶ <https://hp4all.eu/wp-content/uploads/2023/01/Legislation-and-Policy-Recommendations.pdf>

3.6. See the Skills project approach and recommendations

3.6.1. Project objectives¹⁷

The aim of the SeeTheSkills project is to act at market level to stimulate the demand for previously developed and new or upgraded energy skills, and thus help enable energy efficient (EE) construction of new and renovation of existing building stock

It will act through a novel 3V approach to tackle direct simulation of demand of energy skills. The 3V stands for Visibility, Validation, and Value. Visibility of skills will be enabled through the creation of an on-line repository, which will make skills visible, accessible and available on an interregional level. The skills will be Validated by being comparable across partner countries and by transferring and replicating training schemes between project partners.

The previous two steps will raise the Value of energy skills and thus the market demand, by expressing their benefit in achieving sustainability of construction.

3.6.2. Project outputs related to increased market demand for skills

In its report D2.1. *Interregional survey on the measures toward EE in different partner countries*¹⁸, the project explored the Status of demand for EE skills in

¹⁷ <https://cordis.europa.eu/project/id/956355>

¹⁸ https://seetheskills.eu/wp-content/uploads/2022/12/D2.1-Interregional_survey_on_energy_skills_SEEtheSkills_final_31.05.2022.pdf



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partner countries. They established that it is driven by a number of direct and indirect factors, some of them focused at individuals and others at companies. It is

the investment in the improvement of energy efficiency of the built environment which ultimately drives the need for companies who can actually perform such work and thus for the professionals who have/need the skills.

There are other mechanisms which attract investment, such as certification of buildings. Certification of projects is also offered, in some cases, to raise investor confidence, by certifying that they are investor ready

A very important mechanism was found to be the education of investors and creation of compelling offers for investors, which explain to them in an easy-to-understand way and applicable to their context.

Some general conclusions of the project are quoted below:

- The actions to provide the VISSIBILITY of skills are more than necessary, as identified in both the desk research and the survey results. This will serve to adequately concept the creation of the Integrated repository of skills
- The survey carried out within the project have identified the existing training schemes and also the skills gap, so this will be used to define the content and scope of the new training schemes to be developed within the project and that will be a part of BUS advisor App, to serve for the purpose of VALIDATION of skills
- The most important work in the next project phases would be focused on the VALUE of the skills and finding mechanisms to express the value and also to raise the demand for skills. This is very much expressed from the survey results

3.7. Conclusions

Despite their different background, mission, objectives and applied approaches, all the analyzed projects have come to basically similar findings and recommendations:

1. There is a lack of requests for competences in sustainable energy in procurement procedures and therefore an identified need for improvement of regulatory framework to increase demand for competences in procurement procedures;
2. There are barriers at both the demand and supply side of construction services, for introduction or increase of demands for sustainable energy competences;
3. However, there is also interest and therefrom potential to be harvested and organized at both market sides and groups of stakeholders;
4. The projects have developed recommendations, methods and templates for competence demand are basically intended for policy makers and public administration, since they have been found as the entity expected to introduce and lead reforms in procurements.
5. The measures to support market supply side have mostly been identified as financial assistance and VET programs and validation improvement;
6. All the analyzed projects developed own specific instruments and tools to facilitate market recognition and enhance demand for workforce qualified in sustainable energy (e.g. digital passport of skills, register of qualified workforce, Competence Quality Standard, etc.).

The analysis confirmed that some of the findings from other projects are similar to those of the ARISE team's (using surveys as a basis). However, ARISE specific findings, resulting in some of the recommendations, listed in Chapter 4, will hopefully serve as a complementary element in a comprehensive European set of measures towards increased market demand of skills.

4. ARISE recommendations for stimulating and supportive measures for market demand of sustainable energy skills

4.1. Introductory notes

This Chapter includes recommendations developed by ARISE project team, for supportive and stimulating measures intended to increase market demand for sustainable energy and digital skills. They have been developed to be if use for policy makers, public administration in charge of policy and legislation for procurement procedures, public and private investors, but also foresee active engagement of industry at all levels – individuals (professionals), companies and associations.

The recommendations were developed on the basis of:

- Survey findings on country specific practices, barriers and interests (Survey 1, ARISE Deliverable 7.4.),
- Opinions and suggestions for improvement, collected by the Survey 2, among the stakeholders in partner countries (ARISE D7.4)
- Analysis of findings and recommendations produced by previous and current projects in this field.

4.2. General approach recommended by the project

Approach

General approach recommended by this project, for including the competence in sustainable energy in procurement requirements, is a combination of four groups of measures that are expected to include all market stakeholders. Measures are to be applied by the top – down method, initiated and led by policy makers and public administration, which is expected to induce the push – pull momentum (market demand – market supply driver nexus), and result in the full engagement of the sector. The following groups of measures are recommended:

- I) Policy measures
- II) Regulatory measures
- III) Financial measures
- IV) Educational measures

Method

The recommended general principle of implementation of reforms in procurement procedures and practices, towards an increased market demand of skills consists of the following phases:

- A. Preparation
- B. Piloting and demonstration
- C. Improvement
- D. Replication and upscaling
- E. Wide adoption

The following sequence of implementation of activities is recommended:

1. Increase awareness and capacities at the market demand side, public administration in the first place, but also of private sector of investors and owners;
2. Prepare an action plan for introducing or improving regulatory changes for public procurement procedures;
3. Upgrade national qualification frameworks with new sustainable energy and digital skills;
4. Establish a system of validation of new / improved competences;
5. Organize logistics for carrying out reforms:
 - Financial support and stimulating measures (budget, funding, implementing organizations),
 - Training programs portfolio,
 - Include upskilling in continuous professional development requirements, progress and recording
6. Develop regulatory changes to include competence clause in procurement procedures;
7. Prepare a template of tender documents with a competence clause; apply the competence clause for the complete work team;
8. Pilot and demonstrate a representative type of a project in public procurement (e.g., public residential buildings with social apartments, common use buildings – schools, malls, etc.), preferably including all phases of a building project and competences of the complete work team of the contractor;
9. Improve the piloted procurement pattern, on the basis of feedback from demonstration

10. Replicate and upscale the procurement pattern in other building projects (other types and sizes of buildings)

It has to be noted that procurement, as a term used in this Report, means all and any phase of a building project – planning, design, construction, operation, maintenance and renovation or demolition of buildings.

4.3. Recommendations for specific measures

In compliance with the general approach, method and sequence described in the previous subchapter, the specific stimulating and supportive measures suggested by this project are categorized in four groups:

1. Policy measures, aimed at raising awareness on benefits and improving capacity of public administration and private investors, to include and implement competence requirement in procurement procedures This was identified as one of the main barriers, in the surveys conducted by the project, as well as by analyses carried out by other projects and initiatives. These measures should be designed and implemented in a dialogue and discussion with industry, with experts in regulatory and policy frameworks included as advisors.
2. Regulatory measures, aimed at introducing amendments in regulatory frameworks, at national level, to include specific competence requirements for sustainable energy and digital skills, in tender documents for procurement procedures. This set of measures complements the previous one and like the previous set, should be subject of a co - design with the industry and sector representatives.

3. Financial measures acting as:

a) supporting measures for a more effective transition towards advanced procurement procedures to be applied in all building projects. Therefore, some of them can be considered as a temporary solution, while establishing of compulsory competence clause.

b) Apart from that, financial measures can be applied to stimulate and accelerate requirements for skills in private procurement of building projects

4. Professional education measures are an enabling tool to complete the actions towards the increased market demand. They contain set of measures for trainings, recognition, validation and certification, to stimulate and motivate the services supply side.

Overview of specific recommended measures, along with suggested institutions in charge of their implementation and the method on implementation, is given in the Table 1 below.

Table 1: List of recommended stimulating and supporting measures, suggested institutions in charge and methods of implementation

Group 1: Policy measures: Raising awareness, interest and capacity at the demand side			
No	Recommended measure	Institutions in charge of implementation	Method of implementation
1.1	Start communication campaigns for public administration, in charge of policy making, for: raising their awareness and interest and informing on benefits for introducing procurement procedures with the competence clause	National institutions in charge of regulatory framework and of economy affairs	Workshops, panel discussions, trainings, media campaign, expert lectures Dialogue with industry
1.2	Organize training campaigns for public administration, in charge of public procurement, for: improvement of their competences for preparing, launching and conducting procurement procedures with competence clause	National institutions in charge of regulatory framework and of economy affairs; public administration in policy making sectors, as well as in procurement departments of public utilities	Trainings, on national, regional and local (municipality) level; Public communication, discussion and round tables with industry
1.3	Establish communication channels and platforms for exchange of experience and good practices among countries/regions	Government or regional authorities, supported by EU Initiatives; EU funded projects for skills development	Outputs of projects in form of communication environment international platforms
1.4	Include private investors and building owners in the campaign towards improved procurement procedures	Professional associations, chambers of SMEs, industry clusters	Same as for 1.1 and 1.2
1.5.	Establish and make publicly available a register / a data base /of professionals and workers, as well as companies, with acquired competences for sustainable energy skills	Professional associations in the sector (of architects, engineers, blue collars)	Use lists of members of professional associations, with relevant qualifications
1.6.	Include national and international financial institutions, to provide funding or loans for reforms in policy and practice of procurement	Government institutions in charge of economy and finance	Showcase good examples from other countries; capitalize from the outputs of EC funded projects in the field (such as ARISE); use currently available programs and funds

2	Group 2: Regulatory measures: Introduction and improvement of competence requirements in public and private procurement procedures		
No	Recommended measures	Institutions in charge of implementation	Method of implementation
2.1	Prepare an action plan to introduce requirements for competences in procurement procedures, in a way that will provide continuous eligibility and competitiveness of companies, in particular SMEs	National institutions in charge of regulatory framework in the field of economy, construction, and energy	Based on experience and recommendations of European projects and initiatives, followed by public consultations with industry and experts
2.2	Prepare amendments of regulatory framework and legal acts, to support legally the procurement demand for skilled workforce	National or regional institutions in charge of regulatory framework for public procurement	Based on experience and best practices showcased by European projects followed by public consultations with industry and experts
2.3	Prepare a template of tender documents with an included competence clause in tender requirements, within the technical capacity section of the bid	National institutions in charge of public procurement	Pilot projects of public buildings
2.4	Introduce, for building projects with specific size or / and purpose) mandatory upskilling programs for work teams of companies winning the bid, with training price included in the total bid price	Public investors, private investors, owners of projects of specific importance for the country	Pilot projects, share of good practices, replication and upscaling
2.5	Introduce labelling of buildings designed and constructed by workforce having competences, as a motivation and marketing effective for a wider social community	National authorities in charge of construction and energy efficiency of buildings	A campaign including a number of pilot SMEs as well as public and private investors
2.6	Provide benefits (e.g., privileged construction permits) for private investors who hire workforce with qualifications in sustainable energy	National / regional authorities in charge of construction permits	A campaign including private investors

3	Group 3: Financial measures: Stimulating and supportive measures for the services supply side		
No	Recommended measures	Institutions in charge of implementation	Method of implementation
3.1	Financial stimulus for training and upskilling, especially for SMEs: Free / beneficial price training programs for SMEs, up to basic / medium level of competences	National authorities in charge of economy affairs and vocational education	Gradually, through specific projects A campaign including a number of pilot SMEs
3.2	Free tool for assessment of skills maturity level of workforce and companies	Professional associations of companies (chambers, clusters) in coordination with national agencies for VET	A campaign including a number of pilot SMEs or employed professionals
3.3	Subventions for employment of skilled workforce (lowered labor taxes)	National authorities in charge of economy affairs	A campaign including a number of pilot SMEs
3.4	Decrease of VAT and other business taxes, for services completed by companies with workforce with competences in sustainable energy skills	National authorities in charge of economy affairs	A campaign including a number of pilot SMEs
3.5	Include financial institutions, funds, banks, investment institutions for green funding, to provide grants and favorable loans for buildings, particularly renovation projects, performed by qualified workforce for sustainable energy	Government agencies in charge of finance	Pilot series of building projects funding

4. Group 4: Professional education measures: Upskilling and improvement of competences			
No	Recommended measures	Institutions in charge of implementation	Method of implementation
4.1	Initiate development of generic competences as a part (annex) of European directives in the field of sustainable energy (following the example of RES installers (annex IV of EPBD)	European Commission, Member states	Amendment of current Directives
4.2	Improve / upgrade national QF with competences for sustainable energy and digital skills	National authorities in charge of NQF and VET	Develop national roadmaps of skills
4.3	Prepare or make available training programs in the subject field.	National authorities in charge of NQF and VET; Professional associations`	Use outputs of previous and current projects
4.4	Include CPD points in sustainable energy skills enhanced by BIM (Include them in the programs of national professional bodies and associations in charge	National authorities in charge of NQF and VET; Professional associations`	Start a trial program of implementation of CPD points for sustainable energy and digital skills federated competences; monitor and improve within a two years period.
4.5	Adopt / apply systems for international recognition of completeness and for digital passports of skills	National authorities in charge of NQF and VET; Professional associations of employees in the construction sector.	Initiate Memorandum of Understanding and Collaboration among national associations of professionals in the construction sector in European countries.

4.4. Description of recommendations for specific measures

A more detailed description of recommended stimulating and supporting measures is given below

4.4.1. Policy measures: Raising awareness, interest and capacity at the demand side

- 4.4.1.1. Start communication campaigns for public administration, in charge of policy making, for: raising their awareness and interest and informing them on benefits for introducing procurement procedures with the competence clause

The objective of the recommendation is to raise awareness of the public administration expected to start and lead the reforms in procurement, through communication campaign organized by public authorities in charge of policy making in the construction sector. The focus of the communication campaigns would be on emphasizing benefits of including qualified workforce in sustainable energy, in procurement procedures of building projects. The main message is that benefits are multiple, tangible and of relevance, for all stakeholders included in buildings design, construction and usage.

National and international experts in regulatory and policy, can be engaged in the campaigns to advice and follow the process. International experience and best practices should be shared and outputs of projects as is ARISE in such campaign should be used.



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The campaign would include dialogue with industry in all categories of company sizes and fields of operations (design, construction, maintenance).

In the final steps of the campaign, methods of including competence clause would be explained (progressing from “why” to “how to”). The award criteria of bids for building projects usually include financial and technical part. The competence clause is advised to be a part of the technical part, in which bidders show their technical capacity to perform the works. The competence criteria to be used in calls for tender should be in compliance with legislation, technical codes and standards in force, feasible for validation by an accredited organization and achievable by the companies, especially SMEs.

Funding for such campaigns would be provided in a coordinated way at EU, state, and regional level.

4.4.1.2. Organize training campaigns for public administration, in charge of public procurement, for: improvement of their competences for conducting procurement procedures with competence clause

This recommendation is inspired by the responses and suggestions received through the surveys (Chapter 2), and was also identified through analyses of other projects in the field (Chapter 3).

The objective of the recommendation is to initiate organization of training programs for public administration employed in government, regional and municipality bodies, as well as for public investors (employed in public enterprises – utilities). The program of improving capacities would be open for representatives of companies that apply for procurement calls issued by public investors. The program would be applicable, attractive and available for



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private investors as well.

Green public procurement (GPP) guidelines and tools are recommended to be used in the training program, more precisely, part thereof related to sustainable energy (energy efficiency and renewable sources) application in buildings.

The aim of the courses would be to provide knowledge how to set, describe and evaluate the requirements for sustainable energy skills, competences and qualifications of workforce, within tender documents.

This recommendation complements the previous one (1.1.) and, likewise, it should be implemented in communication and dialogue with industry. Expert assistance and experience from other countries would be of great help.

The competence clause would be a part of technical capacity proof of the bidder, along with professional CVs of the team members.

Training courses can be organized by agencies in charge of VET. Form and content of the courses would be subject of agreement among stakeholders, from both demand and supply side.

4.4.1.3. Establish communication channels and platforms for exchange of experience and good practices among countries/regions

This recommendation, inspired by responses of Survey 2, aims at establishing a long term international environment for communication and collaboration among professionals and organizations, to share knowledge, findings, results, experience and good practices in competence requirements included in public



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procurement. The actors involved would include: public administration, public investors, private investors, VET providers, companies, professional association of employees in construction sector, chambers and clusters.

The platform and communication channels would enable share and comparison of national specifics in implementation of procurement requirements (case studies, examples of executed procurements, etc.), as well as lessons learnt and innovative practices. Communication can be established and maintain as a long-term output by EU funded projects and initiatives. That could also include establishing work groups of similar professional profiles, and organization of forums, panel discussions, workshops, presentations as well as publishing the outputs thereof.

4.4.1.4. Include private investors and building owners in the campaigns for advanced procurement

This recommendation is intended to include actively the largest part of the building sector owners and investors, and to motivate them to engage and hire workforce with validated skills and competences in sustainable energy. Considering the large share of private sector in the building stock, it is important to enable their active involvement and implementation of the advanced procurement procedures in their investment projects.

Engagement should be voluntary, through campaign organized by chambers. For SMEs, the engagement can be coupled with other recommended measures – financial stimulation for SME acting as private investors and owners, described in the part of financial measures.

4.4.1.5. Establish and make publicly available a register of professionals and workers, as well as companies, with acquired competences for sustainable energy skills

This recommendation was inspired from the Survey 1, as an example of good practice identified in some of the partner countries. A register / data base, formed and filled in (maintained) by professional associations and business chambers (for companies), that is visible and available for investors and employers, has been proved as a motivating and stimulating measure to request validated competences in procurement of construction services, as well as in employment announcements.

4.4.1.6. Include national and international financial institutions, to provide funding or loans for reforms in policy and practice of procurement

National and international financing institutions (e.g., EBRD, WBIF) often provide grants and favorable loans, for government agencies and for companies, intended for improvement of energy efficiency of buildings. This offer of financial sources (in form of investments, loans and grants) can be upgraded with additional stimulus if sustainable energy competences of the workforce are required in procurement.

4.4.2 Regulatory measures: Introduction and improvement of competence requirements in public and private procurement procedures

- 4.4.2.1. Prepare an action plan to introduce requirements for competences in procurement procedures, in a way that will provide continuous eligibility and competitiveness of companies, in particular SMEs

The intention of this recommendation is to facilitate a systemic solution for carrying out reform in public procurement procedures, through development of national action plans, with assigned roles, actors, responsibilities, activities, targets, time schedule, financing and risks. The action plan should be subject of wide public consultation among public and private sector, investors and contractors, including experts in legal matters as well as vocational education and professional development institutions.

- 4.4.2.2. Prepare amendments of regulatory framework and legal acts, to support legally the procurement demand for skilled workforce

Based on and in continuation with the previous recommended activity, the objective of this recommendation is to initiate development of precise technical specifications and fair evaluation system, for requirement of competences in sustainable energy. The specification should be developed taking in consideration: type of procurement (phases of buildings' life cycle), type and size of the building project. They should include the complete team competences and be appropriately weighted in the bid evaluation phase. To apply this recommendation, preconditions described in form of

recommendations in Section 1, should be completed. Implementation should involve experts and industry representatives and consider their input.

The specifications for competence requirements should be clear, focused, elaborated in compliance with relevant standards and technical codes in force, as well as with national qualifications and occupational standards and achievable for most of the bidders (one of the conclusions from the Survey).

The competences for various fields of sustainable energy (e.g., energy efficiency, renewable sources), should be treated separately, and addressed clearly and in a focused way. in the procurement procedures.

The legal aspect of including the competence clause would be prepared in compliance with and capitalizing on EU Public Procurement Directives provisions on green procurement and environmental certifications, as well as in compliance with national regulations in force.

4.4.2.3. Prepare a template of tender documents with an included competence clause in tender requirements, within the technical capacity section of the bid

In line with the method of implementation proposed by this project, a main stage of introducing reforms in the public procurement is piloting and demonstrating the procurement procedures with included requirement for competences in sustainable energy.

For that purpose, a template and demo version of tender documents, including: specification, weighting and evaluation criteria, of consistent competences of all team members, should be prepared, in full compliance

The template should include all recommended elements: full team competences (a multidisciplinary approach), weighting factors of competence, certificate or other method of competence validation, not discrimination in competitiveness. For the template development, legal experts should be engaged and communication and consensus with wide community of stakeholders should be achieved.

The pilot version should preferably be applied and tested in projects with various phases of the building life cycle (design, construction, operation, renovation).

- 4.4.2.4. Introduce, for building projects with specific size or / and purpose, mandatory upskilling programs for work teams of companies winning the bid, with training price included in the total bid price

This recommendation was inspired by examples of good practices in some of the partner countries (e.g. North Macedonia), as well as the procurement policy in some counties out of European borders, where, for project of specific size or importance, the Contractor is required to organize and carry out training of the complete work team, and to validate thereby the competences stipulated in the tender documents, with the price being included in the bid.

Projects of specific size, purpose and importance require higher attention on quality of works, than projects of regular size and type. Therefore, carrying out works by competent workforce is of utmost importance. An interesting fact is that some of such procurements have been initiated and carried out by

4.4.2.5. Introduce labelling of buildings designed and constructed by workforce having competences, as a motivation and marketing effective for wider social community

The aim of this recommendation is to attract interest of a wide community and a number of target groups (investors, construction companies, manufacturers, owners), by facilitating as a form of free marketing, acknowledgement and appreciation of their contribution in creating carbon neutral built environment This is an attractive measure reaching a wide group of stakeholders, and has an impact of a motivating and inspiring action. It doesn't require a special financial background to be applied.

4.4.2.6. Provide benefits (e.g., privileged construction permits) for private investors who hire workforce with qualifications in sustainable energy

The aim of this recommendation is to stimulate public and private investors to announce procurement notices and sign contracts with companies that employ workforce (at all key work positions required in the building project) having certifications for sustainable energy skills. The measure encompassed by this recommendation enables simpler and faster administrative procedures for construction permits. They are entitled to get priority (in time schedule) when authorities decide on construction permits. Implementation of this regulatory measure doesn't require additional funding. Depending on national framework, a specific clause in regulatory acts on procurement, may be needed for the purposes of this recommendation.

4.4.3. Financial measures: Stimulating and supportive measures for the services supply side

4.4.3.1. Financial stimulus for training and upskilling, especially for SMEs

This recommendation focuses on financial stimulus as a supporting measure for construction sector SMEs to carry out training of employees and provide competences in sustainable energy. The measure can be implemented in several ways: as grants, or co -financed loans, beneficial price of training programs for SMEs to acquire basic / medium level of competences, etc. As a source of financing, government or regional funds can be used, EU financed grants, funds governed by chambers and clusters. Additionally, the SMEs should collaborate with national agencies in charge of EU funded projects that will facilitate their participation in free trials which are usually carried out as a part of Erasmus + and Horizon Europe funded projects.

As a part of this recommendation, SMEs owners and managers should be encouraged to award individual initiatives of employees to improve competences in sustainable energy skills.

4.4.3.2 Free tool for assessment of skills maturity level of workforce and accompanied suggested upskilling program, for companies and individuals;

The intention is to recommend introducing a free tool for professionals employed in all stages and job positions, for self - assessment of knowledge and skills in sustainable energy, in their field of operation. The tool could be



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combined with suggested pathway of improvement of competences and appropriate selection of leaning programs.

4.4.3.3. Subventions for employment of skilled workforce (lowered labor taxes)

The intention of this recommendation is to point out a stimulating measure that has been used and tested in many countries, for many initiatives for motivation of industry. The measure is very effective and motivating, for both the employer and employees. Funding for support of this measure can be provided by state or regional funds and agencies in charge of economy, intended for development of the construction sector.

4.4.3.4. Labelling of buildings designed and constructed by workforce having required competences

This recommendation presents a measure acting as a free marketing of benefit for many stakeholders – building investors, owners, contractors, state agencies in charge of energy efficiency of buildings. Additionally, it includes in assessment and evaluation a wider community of citizens and has an educational connotation as well. It doesn't require special financing support to be carried out.

4.4.3.5. Decrease of VAT and other labor taxes, for services completed by workforce with competences in sustainable energy skills

The recommendation is of a similar nature as 3.4 It is a stimulating measure that can be carried out by support of government agencies and funds.

4.4.3.5. Include financial institutions, funds, banks, investment institutions for green funding, to provide grants and favorable loans for buildings, particularly renovation projects, performed by qualified workforce for sustainable energy

National and international financing institutions (banks, funds) promote and support sustainability. Funding of actions for improvement of procurement procedures towards engagement of competence – validated workforce, would be in compliance with their business and marketing policy, Along with providing funding and favorable loans for investors performing energy efficiency improvement (e.g. deep renovation, RES installation) banks can provide additional sources in the same loan / grant line, for training and upskilling of workforce engaged in building, renovation and RES contracts. The recommendation is in compliance and amends the recommendation 1.6

4.4.4. Professional education measures: Upskilling and improvement of competences

4.4.4.1. Initiate development of generic competences as a part (annex) of European directives in the field of sustainable energy (following the example of RES installers, Annex IV of EPBD)

The intent of the recommendation is to establish a common basis for competences for sustainable energy that would have multiple impacts: 1) a generic basis for national downscale, 2) a status of recommendation for member states and associated countries, 3) a basis for harmonization and international compliance. A good example is the Annex IV of the European Directive on Energy performance of buildings, in which competences of installers of renewable

energy sources of several types are prescribed and taken in consideration when developing national qualifications in the field (it was described in the ARISE report D7.1: *Guidelines to align ARISE learning outcomes with national frameworks*) and used as a tool for demonstration of alignment of AIRSE Competence framework with national qualifications.

This recommendation would contribute to alignment, comparability and transferability leading to transnational recognition, of various qualification schemes, developed either on a national level, or by EU funded projects in the field, or by international organizations for industrial standards.

To implement the recommendation, it would be necessary to communicate with policy-makers in targeted countries, with a pan - European coordination provided.

4.4.4.2. Improve / upgrade national QF with competences for sustainable energy and digital skills; align them with EU Directives

The progress of technologies in energy efficiency and BIM is with a high gradient and rapid and requires continuous upskilling of construction sector employees, as well as of the public administration and investors. To enable recognition of skills in public procurement, one of the pre – conditions is to correlate the new competences with the existing national qualification frameworks and to establish a method for upgrading of the existing competences with advanced skills required, not only by technology progress, but also by high targets for energy efficiency and carbon neutralization of buildings. This recommendation is addressed to state or regional authorities in charge of national qualifications and occupational standards and is expected to be carried out in conjunction with the recommendations 4.3 and 4.5.

4.4.4.3. Prepare and make available training programs in the subject field.

To carry out reforms in qualifications and enable their continuous progress, it is necessary to provide logistics in a form of a pool of appropriate training programs and accredited VET providers. This recommendation is addressed to national agencies in charge of continuous professional development, in collaboration and consultation with representatives of professional association and chambers of companies in the sector,

4.4.4.4. Include CPD points in sustainable energy skills enhanced by BIM (Include them in the programs of national professional bodies and associations in charge of continuous professional development in construction sector

The intent of the recommendation is to emphasize the importance and role of continuous professional development in the process of reforming and improving the procurement system towards recognition and demand for sustainable energy skills. The good example of practice in countries included in the Survey 1 was taken as an inspiration, as well as received responses in the Survey 2, where industry representatives expressed interest for professional development trainings and system of validation of achieved competences.

According to the analysis in WP2 and WP7, the system of CPD for professionals is usually governed by professional associations of architects and engineers. Several European platforms facilitate communication and collaboration among national associations, which enables share of good practice and experience leading towards further improvement.

Related to the QF developed in ARISE, recommendation is specifically directed towards including training programs for sustainable energy and BIM in the



awakening | relevant | innovative | scalable | equitable

approved programs of national CPD system operators.

4.4.4.5. Develop, adopt and apply systems for international recognition of competences

The objective of the recommendation is to include tools for international recognition of skills, such as digital passports of skills, block chain-based learning platforms, system of competences and comparison matrices for national alignment, verification of prior learning, etc.) This is expected to have a stimulating impact on the professional development of individuals, raise of competitiveness of organizations and increased market demand for skills.

Contributions of the projects in the field, such as ARISE, are of importance, considering the enabling tools developed for international recognition and transferability of competences.

The systems would enable contracting authorities' preparation of clear and precise requirements for competences in procurement procedures, as well as fair, transparent and exact system of evaluation of bids.

By having a common or comparable system of competences and their validation and recognition, per professional profiles and phases in buildings' life cycle, it would be feasible to align requirements related to professional's competences at European level and to provide market mobility, international employability and competitiveness, which in a larger perspective, would improve attractiveness of the sector and address the lack of labor and interest of young people.

4.5. Guidance on how to start – piloting, demonstration, replication and upscaling

The main barriers identified through surveys and analyses are currently insufficient legal framework and complex procedures for their amendment, any amendments in the direction of mandatory tender requirements for competences, should not jeopardize the competitiveness of companies, particularly the SMEs and their eligibility to participate in public procurement. Therefore, when introducing such new competence requirements, policy makers and public administration should provide available sources and fair and equal ground for all bidders, in form of financial support and availability of training programs and competence validation, in the first place.

The general workflow for inclusion of competences in tender procedures consists of the following steps:

1. Prepare specification of competences required for professional profiles included in the subject of procurement– (refer to ARISE QF, an example thereof is given in Table 2), using correlation with national qualifications and occupational standards
2. Describe the competence requirement in tender documents – correlate / quote as the reference National framework and occupational standard.
3. Include competences of all professional profiles in the team (key team members) in the specification required by the tender.
4. Appoint weight of quality for proven competences and include that as points in the technical part of the tender (in addition to professional CV of key team members)

5. Establish system for verification of the requested competences (e.g. formal education, VET certification, CPD points, international recognition – bSI, etc.).

Where demands for competences in sustainable energy and digital skills are not present in procurement procedures; one of the ways to start without collision with legal requirements can be to pilot a public procurement project with a demo tender procedure with included requirements for sustainable energy skills. For that purpose, government green funding or similar European funds can be used. Effects and feedback from the showcased procurement would provide guidance for further improvement and upscaling of the process.

4.6. Suggested form of specification of competence requirement to be applied in tender documents

ARISE qualification framework contains competencies required for professional profiles across the AEC sector throughout the building life cycle and as such can be used in various phases of procurement procedures.

An example of specification of competences for several professional profiles, in accordance with ARISE qualification framework, is given in the Tables 2 and 3 below

Table 2: Specification of competences in accordance with ARISE Framework of specialisms, tasks, subtasks, ULOs and targeted professions (Source: Deliverable D3.3)

Enrich specialisms with tasks and subtasks							
ID1	Specialism	ID2	Task	ID3	Subtask	ULO Nr.	Profession
BB-1	BIM Basics	BB-1.1	Understand BIM Basics	BB-1.1.1	Understand BIM Fundamentals	1,	AR, PM, BO,
				BB-1.1.2	Understand BIM Terms & Definitions	2,	AR, PM, BO,
				BB-1.1.3	Understand BIM maturity levels	3,	AR, PM, BO,
		BB-1.2	Understand BIM and Energy Efficiency	BB-1.2.1	Understand BIM and Energy Efficiency	4,	AR, PM, BO,
BA-1	BIM Management	BA-1.1	Implement BIM strategy			5,5a,5b,6,	AR, PM, BO,
				BA-1.1.1	Devise BIM-strategy	5,5a,5b,6,	AR, PM, BO,
				BA-1.1.2	Manage organisational BIM-guidelines	6,	AR, PM, BO,
				BA-1.1.3	Secure acquired BIM-knowledge	69,	AR, PM, BO,
		BA-1.2	Build stakeholder network	BA-1.1.4	Develop project strategies for different groups a/o areas*	70,	AR, PM, BO,
				BA-1.2.1	Advise clients and other stakeholders on BIM-method	71,	AR, PM, BO,
				BA-1.2.2	Identify stakeholders' needs and objectives*	6a,	AR, PM, BO,
		BA-1.3	Implement intra organisational BIM-training	BA-1.2.3	Integrate needs and objectives of stakeholders in organisational processes	72,	AR, PM, BO,
						73,	AR, PM, BO,
		BA-1.4	Energy Efficiency for BIM Management			74,	AR, PM, BO,
				BA-1.3.1	Develop training programme	7,7a,	AR, PM, BO,
				BA-1.3.2	Facilitate intra organisational BIM-training	7,7a,7b,	AR, PM, BO,
				BA-1.4.1	Analyse organisational EE capabilities in relation to information requirements	4,	AR, PM, BO,
				BA-1.4.2	Devise BEM-strategy	8,	AR, PM, BO,
				8,9,	AR, PM, BO,		

Table 3. Specification of competences in accordance with ARISE ULOs (Source: Deliverable D3.3)

ARISE Qualification Framework - ULOs					
ULO Nr.	Competence	Skills	Knowledge	Skill Level	EQF Level
1,	Understanding of BIM implementation	Discussing the key requirements to enable a successful BIM implementation	Minimal knowledge of: -Fundamentals of BIM implementation -Key technology requirements for BIM implementation	1	4
1a,	Proposing a BIM implementation strategy	Proposing (basic solutions) a BIM implementation strategy for an organisation	Basic knowledge of: -Fundamentals of BIM implementation -Key technology requirements for BIM implementation - Making basic proposals for BIM implementation strategy	2	5/6
1b,	Performing the implementation of BIM in an organisation	Investigating the BIM maturity for an organisation, proposing solutions in the form of BIM implementation and explaining this to wider teams.	Medium Knowledge: -Fundamentals of BIM implementation -Key technology requirements for BIM implementation - Making basic proposals for BIM implementation strategy - BIM at an organisation level - How to manage and perform BIM implementation and communicating to the organisation	3	5/6

Specification of competences, as per ARISE qualification framework, suggested to be used in procurement procedures, should assign ULOs to all professional profiles who will be engaged in the work team of the bidding project.

The potential of ARISE qualification framework to be aligned to national qualifications, is presented and described in ARISE report D7.1.

For example, if the bidding project is a design service, for which execution the following professions are required:

- an architect,
- a structural civil engineer,
- an electrical engineer
- a mechanical engineer
- a technician,

then specification of competences will be a compilation of ULOs of all the above profiles, along with their prescribed maturity level.

The tender documents would contain a requirement for the work team of the bidder to have competences for sustainable energy and BIM, in accordance with the tender specifications, proven by a certificate provided by a formal education or a certified VET institution.

The competence requirement would be included in the technical part of the tender documents, along with the regular requirements (formal education and acquired qualification, professional experience, reference projects, etc.). The competence requirement would have to be assigned appropriate weight (points) to be subject of evaluation score.

This is similar to the Train4Sustain approach for minimum required competences. In case of specific building projects (e.g. buildings for common use, large building complexes, etc.), columns for specific requirements for competences and method of their validation' would be required to be filled in by the bidder.

Table 4: Suggested form of specification of sustainable energy and digital competences in procurement of design services, as per ARISE framework

Professional profile in the bidder's team	Required Competences	Associated ULOs (ID number)	Level of proficiency	Link to national qualification	Certification body	Date of acquired certificate	Special requirements for competences
Project Coordinator							
Architect Designer							
Energy expert							
Structural civil engineer							
Hydro civil engineer (plumbing, sewage)							
Electrical Engineer (power supply, electric installations)							
Electrical Engineer (SCADA)							
Mechanical Engineer (HVAC)							
Technician (all profiles)							

A systemic approach would provide the best results; therefore, as a pre - condition, the following is suggested:

1. Required competences and level of maturity for all professional profiles should be developed and adopted in consultation with all stakeholders, from the services demand and supply side, at national level;
2. A sample of form of requirements should be developed in compliance with national regulations, technical codes and standards in force, taking in consideration the specifics of procurement regulatory framework

5. Conclusions

1. In addition to efforts of a number of projects and initiatives, resulting in developed competences and supporting training content and methods, there is a need for policy and regulatory reforms and improvements to stimulate and increase demand for upgraded competences.
2. Responses of stakeholders, who took part in the project surveys and analysis, helped design the recommendations for changes for national and international policies for increased demand of green and digital skills in construction sector
3. Most of recommended stimulating and supportive measures are to be taken, started and led by public administration.
4. However, some of the recommended measures are attractive and beneficial for private investors as well
5. Changes in procurement procedures should be introduced gradually, through demonstration on specific pilot projects, to ensure continuous competitiveness for industry, in particular SMEs and sufficient time and logistics to pass the transition phase. In further steps, these should be replicated and upscaled, along with improvement that may be necessary as per feedback of implementation.
6. Share of best practices across countries and international collaboration in that field can accelerate development and introduction of measures for market demand of competences.
7. Questionnaires and analyses carried out by ARISE team showed willingness and readiness at the construction services supply side, to be part of the processes for increasing skills demand in procurements, once the barriers of administrative and financial nature are overcome.

8. This report provides guidelines to be of use for public and private investors, on how to include competence requirements in their tendering and employing procedures. The guidelines can be further improved and adjusted to national specifics, as well as for specifics of building projects, to find full implementation in national sectors.

6. References

- 1) Instruct (<https://instructproject.eu/>), Reports D2.4 *Requirements for new instruments for skills recognition in the construction industry*¹⁹; D4.4. *Energy skills recognition policy making*²⁰; D3.3 *New legislative frameworks*²¹
- 2) Train4sustain (<https://train4sustain.eu/>), Report *D4.3 Development of policy recommendations and a guideline for fostering requirements on sustainable energy skills in GPP*²²,
- 3) Bus League (<https://busleague.eu/>), Report D.3.2 *Using Public Procurement to Incentivise Upskilling - Best Practice Guide*²³; Deliverable 3.1: *Main barriers to incorporate “Energy efficiency/nZEB” training clause into Public Procurement*²⁴
- 4) HP4ALL (<https://hp4all.eu/>), report D5.4 – *Legislation and Policy Recommendations*²⁵
- 5) See the Skills (<https://seetheskills.eu/>), D2.1. *interregional survey on the measures toward EE in different partner countries.*²⁶
- 6) ARISE D7.4: *Overview of best practices for market recognition of skills*
- 7) ARISE D7.1: *Guidelines to align ARISE learning outcomes with national qualification frameworks*
- 8) ARISE D3.3.: *Qualification framework of sustainable energy skills incl,BIM*

¹⁹ Requirements for new instruments for skills recognition in the construction industry

²⁰ https://instructproject.eu/wp-content/uploads/2023/03/Demo-4-Energy-skills-recognition-policy-making_v1.0_final-pdf-1.pdf

²¹ <https://instructproject.eu/wp-content/uploads/2023/03/D3.3-New-legislative-frameworks.pdf>

²² <https://cordis.europa.eu/project/id/894514/results>

²³ D.3.2 *Using Public Procurement to Incentivise Upskilling - Best Practice Guide*

²⁴ https://busleague.eu/wp-content/uploads/D3_1_full_version.pdf

²⁵ <https://hp4all.eu/wp-content/uploads/2023/01/Legislation-and-Policy-Recommendations.pdf>

²⁶ https://seetheskills.eu/wp-content/uploads/2022/12/D2.1-Interregional_survey_on_energy_skills_SEEtheSkills_final_31.05.2022.pdf