
# D2.5 Validated Circular construction skills qualification framework

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# Validated Circular construction skills qualification framework

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# Revision and history chart

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# Executive summary

This report describes outcomes from focus group discussions with various stakeholders related to the construction industry, held by partners of the BUS-GoCircular project. The aim of the focus groups was to perform qualitative research on the topics of circular economy in national and EU context and to evaluate market applicability of the circular construction skills qualification framework, developed by the consortium in T2.1, T2.2 and T2.3. Information collected during the national and international workshops have been analysed and compiled here to represent an extract of all shared opinions, and to serve further as a guide for improving the framework and as a starting point for implementation on national scale.

Numerous possibilities for optimisation of the framework have been identified through guiding questions, detailed below, and outcomes are encouraging for future advancement. The work conducted so far by the project partners has been recognized as very promising and essential for the introduction of circular skills in the construction industry, in the context of national planning, and has received support by the participants.

The key features of the framework identified are related to its extensive coverage of topics on circularity and practical approach to its structure and organisation around ULOs, which allow flexibility in design for educational and training purposes. This is also where its usefulness has been outlined - as a base for initiating discussions and spreading awareness among stakeholders on circular economy in construction, and as enabling factors for creation of teaching materials and guidelines to support integration of circular practices within the industry and public sector. Several concepts for improvement in this direction have been proposed, regarding better representation of relationships between professions and individual elements described in the framework.

The results from this deliverable, described in detail below, will be used by the consortium during a round table discussion to evaluate current progress and strategically structure future tasks included in the BUS-GoCircular project.

# List of acronyms and abbreviations

**BIM:** Building Information Model / Management

**BUS:** Build Up Skills

**CRM:** Critical Raw Materials

**CPD:** Continuous Professional Development

**EAB:** External Advisory Board

**EoSL:** End of Service Life

**GPP:** Green Public Procurement

**KE:** Key Elements

**MGRFIE:** Multi-functional Green Roofs, Façades and Interior Elements

**ULO's:** Units of Learning Outcomes

**RES:** Renewable Energy Source

**WP:** Work Package

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# 1. Research methodology and agenda of the focus groups

Focus groups have been conducted in various formats such as online meetings, interviews, live conferences, and workshops. The number of participants differed between the focus groups. Essentially, for both national and international workshops the same agenda was followed to allow for an easier comparison.

At first, participants were invited to do a short introduction round in which they familiarised themselves with each others' roles and fields of operation. The selection of participants was left to the discretion of organising partners and no payment was received for participation by members, participation was voluntary.

A few topics were provided to initiate the meetings, beginning with the introduction of the BUS-GoCircular project, awareness raising of the website and published deliverables and the qualification framework, outlining its goals and planned next steps, involving information on the status of current national plans for integration of circularity in construction. The aim was to introduce stakeholders to the topic of circular economy and activities associated with its integration while setting the context for the following discussion. In some focus groups participants were asked to name two or three words which they associate with circular economy, thus already activating them for the follow-up questions.

A survey was prepared to collect impressions on the personal and professional experience of participants, based on three poll questions (discussed below) concerning the level of understanding of circular economy, identification of relevant stakeholders, and pathways for integration of circularity in the construction sector. The survey has been distributed in different formats- either online, on paper or as in the case of the Czech workshop- questions were used to identify and prioritise in groups key elements of circularity.

For the main part of the interviews, a discussion round was foreseen with the aim of receiving feedback on the proposed qualification framework, identifying missing points and to proposing alternative ways for its assimilation into the educational and training

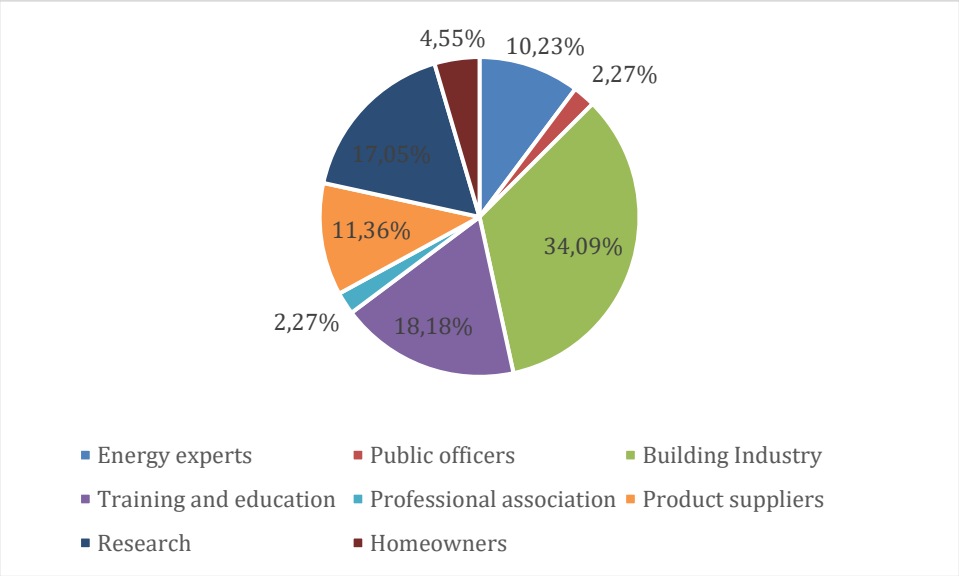
practice. Additional questions were suggested for a broader consideration of integration level and strategies of circular practices on a national level. Answers are given in free form and recorded for the purpose of qualitative analysis afterwards. Results are presented in the next points of the report.

In all recorded interviews the aim to validate the qualification framework and its applicability has been followed through, regardless of the chosen format.

# 2. Participants' introduction

## 2.1. National focus groups

Stakeholders were selected strategically as part of the foreseen External Advisory Board (EAB- Czech Republic, Ireland, and the Netherlands), or as potential future collaborators on the NIP (Spain), as well as with representatives from universities and research centres (Bulgaria, Hungary, Spain) and other relevant structures such as trade unions and professional associations (Netherlands). Additionally, a variety of stakeholders from construction and architectural companies (Czech Republic, Bulgaria) have taken part in the interviews, along with producers of building materials and elements (Spain and Ireland). They have been accompanied by homeowners and public sector representatives (Hungary).

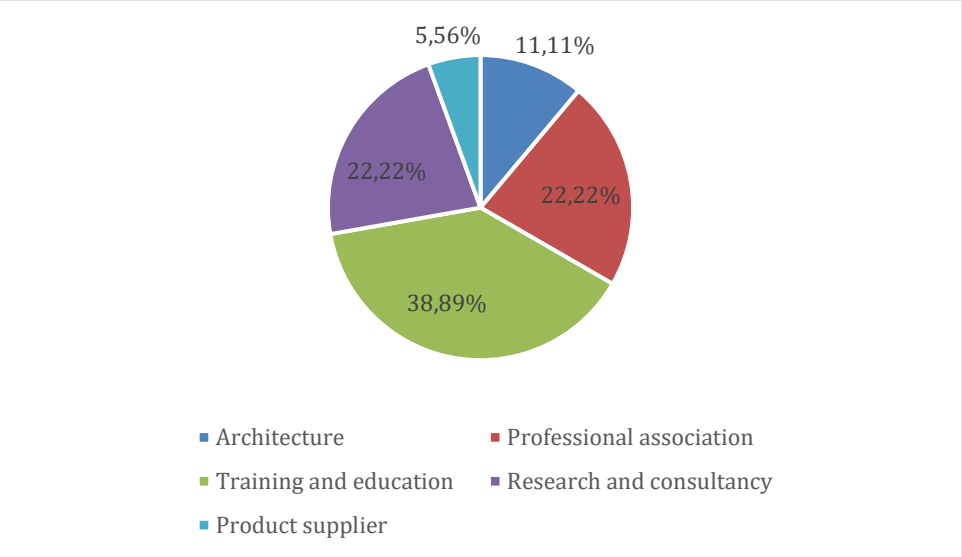



*Distribution of participants from all reporting countries according to their field of work*

## 2.2. International Focus Groups

Four international focus group discussions were organised with representatives from the European EAB, established in WP5 of the BUS-GoCircular project, and with various other entities, dealing with promotion of innovation in the construction sector across Europe. The workshops brought together members of professional associations representing SMEs, real estate agents and engineers in Europe, along with education and training institutions from France, Croatia, Italy, and Greece, as well as research and consultancy specialists acting in Poland, Portugal, Romania and in Europe. And one

participant from an European association popularising application of green roofs and facades.

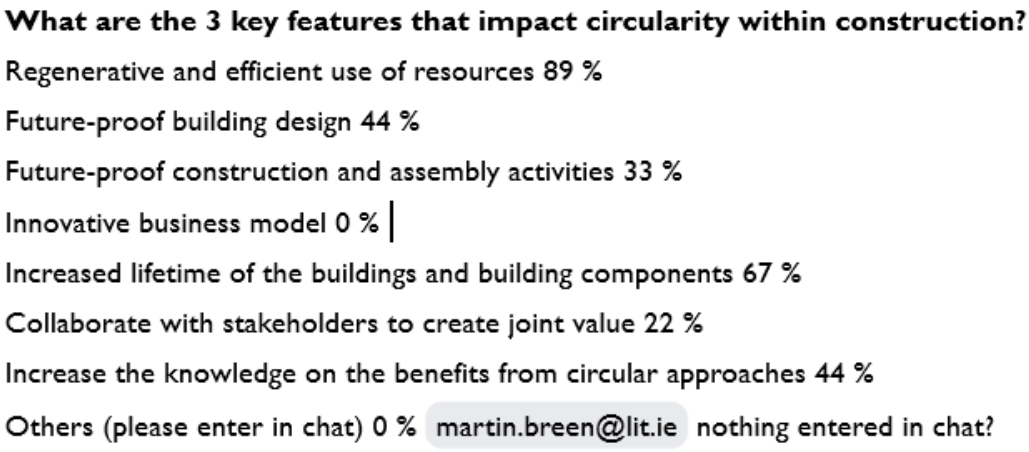


# 3. Poll results from national and international focus groups

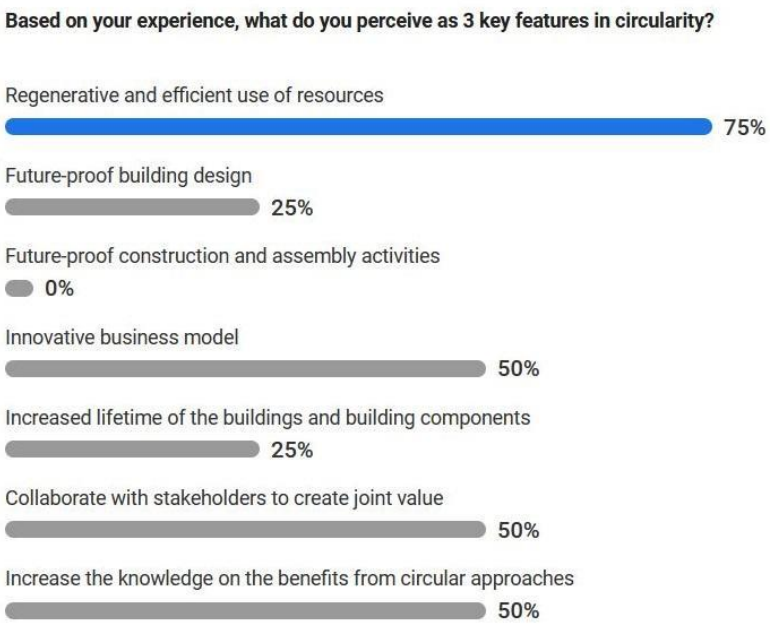
There has been strong agreement between all participants (from the national and international scene) on the question which are the main characteristics that impact circular economy in construction as they mostly refer to **regenerative and efficient use of resources**, related to **increased lifetime of buildings and their components, as well as future-proof design and interdisciplinary collaboration**, demonstrating comprehension of the core elements of circularity and understanding of the concept. However, and interesting enough, there has been little recognition in all conducted focus groups of the “Future- proof construction and assembly activities” as a key action to circularity. Perhaps because it is considered that through knowledge accumulation and awareness raising at first and in the design stage, will the construction process inevitably be affected.

On the second question from the poll, referring to critical actions for mainstreaming circularity in construction, all answers appear, distributed among professions and countries, and come to testify that **every action taken in direction for popularising circular economy in construction should be seen as crucial**. The answers to the third question, identifying main stakeholders to be informed on the benefits of circular economy and qualification framework, reveal that in most countries, the **main players are educational and training institutions, architectural and building offices, developers and contractors, product manufacturers, along with national and local authorities**. It can be said that this shows that both working and administrative

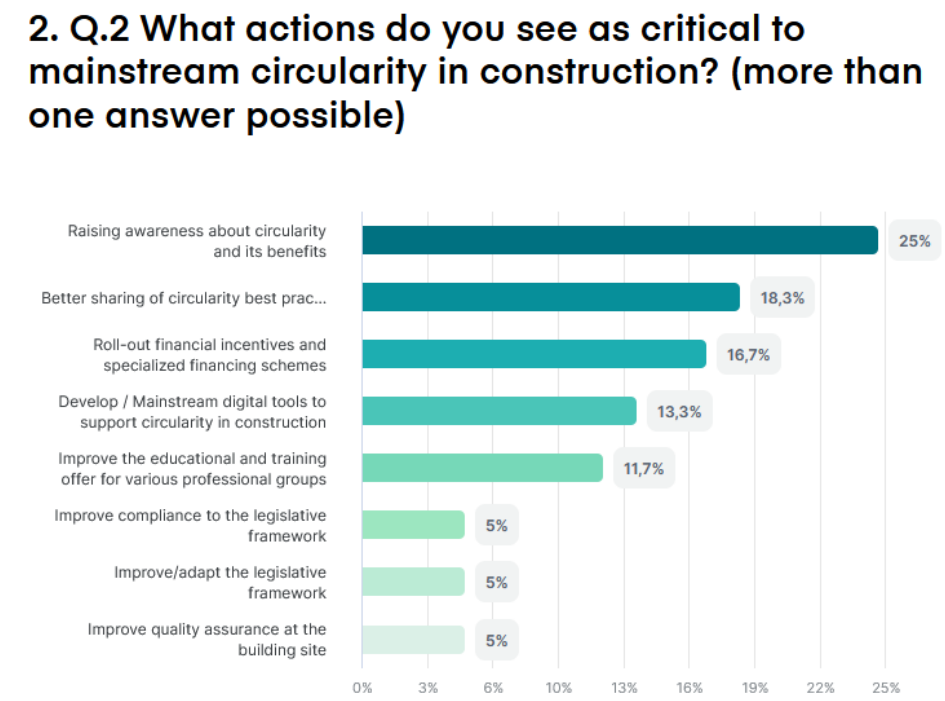
bodies should be involved in the process of integration of circular practices.



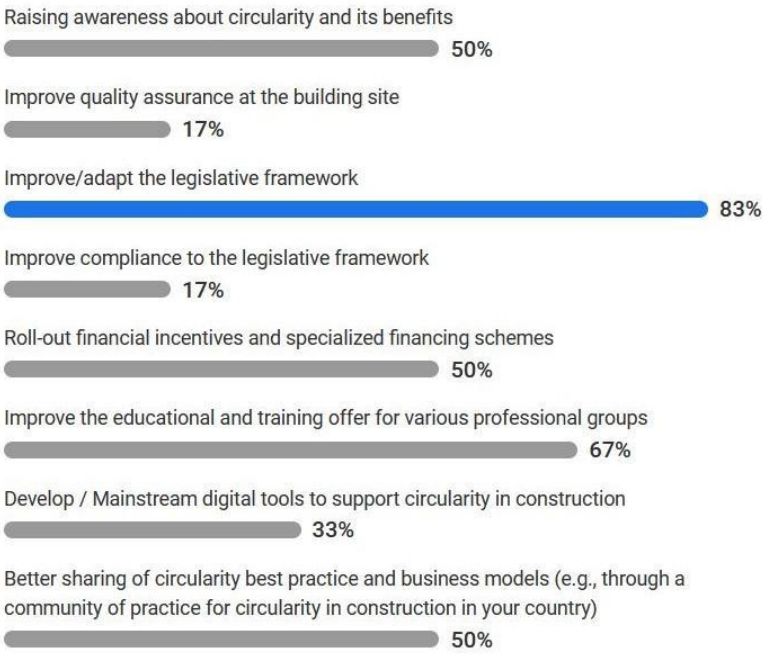

*Poll results in Ireland to the first question (various stakeholders)*




*Poll results from the second international Focus Group meeting (various stakeholders)*




*Poll results in Hungary to the second question (various stakeholders)*




*Poll results from the third international Focus Group meeting (various stakeholders)*

Q.3 In your opinion, which are the 5 most important stakeholders' groups which need to be aware of the benefits of circularity and therefore to communicate these benefits to? (more than one answer possible)

| | | | | | |
|---|---|---|---|---|---|
| *National educational authorities (ministries, agencies, etc.)* | | I | I | | |
| *National authorities responsible for climate targets and buildings regulation* | I | I | I | | |
| *Local authorities* | | I | I | I | |
| *Financial institutions* | I | | | | |
| *Educational and training institutions* | I | I | I | I | |
| *Building procurement offices* | I | | | | |
| *Product manufacturers and distributors* | | | | | |
| *Architecture / Building offices* | I | I | I | | |
| *Developers / contractors* | | I | | I | |
| *Homeowners* | | | | | |
| *Residents* | | | | | |
| *NGOs and civil society groups* | | | | | |
| *Media* | | | | | |
| *Others (please name)* | | | | | |

*Poll results in Spain to the third question (product suppliers)*

# 4. Applicability and exploitation pathways- national Focus Groups

## 4.1. Key features of the qualification framework, applicability

The presentation of the qualification framework has generated a broad discussion in all focus groups on its structure, contents, and applicability. Comments in the focus groups offer constructive and justified feedback, which suggests improvements to be made to the framework. The overall attitude is positive and welcoming of the development of the framework as a starting point for a discussion on national level and as an approach to introducing circular economy in construction on all levels, recognizing its importance and role as a guiding tool. **There is a general agreement that the framework contains extensive information on circular principles and offers a broad overview of necessary circular skills and knowledge related to individual professions.** However, the methods to integrate it still need to be refined. Some points are looked at in detail below.

### 4.1.1. What are the main advantages and disadvantages of the proposed approach and framework?

Most favoured among participants is the invention of the framework in the first place as **a comprehensive collection of skills and knowledge on circularity, which can be used in various ways**, and which is otherwise missing in the respective countries. Participants in Ireland value the detailed break-down of tasks, sub-tasks and ULOs in the framework, which supports a bottom- up approach for analysis and design of training content, as well as the categorisation of competences, which **can be used to compare and supplement existing training programmes and teaching materials**. Some sub-tasks are mentioned to favour interrelation between professions, which is valued positively, however, a clearer definition of cross-craft activities between disciplines should be included to support a better understanding of the described processes and consequently to allow for clearer communication.

While the broad content of the framework offers flexibility in design and a great overview of needed skills, participants in the focus groups in the Czech Republic state that it appears to contain complex and extensive information which could not be presented at once and should be summarised. Additionally, **a possibility for prioritisation of tasks and subtasks would be necessary to enable progressive integration of the concept into existing learning and training processes** as seen by a focus group in Spain. At the same time, it is suggested by participants in Ireland that some of the very basic explanations of circular economy are missed out and should be included. In other words, users of **the framework should be able to answer the question "What is a circular economy?"** and to be able to relate it to the building process. One shared notion by a heat pump expert in Ireland is that the skill level in the qualification framework **does not reflect the actual level held currently on the construction market and is rather advanced for the understanding of most stakeholders**. An impression is created that there is no clear relation between the presented ULO's to existing EQF levels and a question arises whether it has been intended so. Related concerns to those topics express the opinion that **if the framework is not targeted appropriately, it could generate even wider skill gaps and therefore it should be adapted to serve all participants in the construction process equally**; in that sense, the topic of digitalisation is mentioned.

The inclusion of international experience in the creation of the framework is found to be reassuring, as it covers all levels of the construction industry across Europe. As this is a positive thing, it is mentioned in the report from Ireland that the terminology used in the qualification framework should also remain at European level, with less expert language, which would allow appropriate tailoring within the industry for improved communication of the benefits of using the framework.

### 4.1.2. Are there any missing elements you would like to see further addressed?

At most, the reported discussions revolved around financial issues, which prevent uncomplicated implementation circularity in construction. It is therefore suggested that there is more included in the framework on the topic of **monetisation of circular skills in practice and how they affect long-term finances**. Proposals by stakeholders in a focus group in Hungary refer to the **inclusion of more cross-craft cooperation topics**

(in Spain participants considered the involvement of “environmentalists, lawyers, economists, etc”), that reveal adequate business and cooperation models, points relevant to tasks 4, 8 and 9 in the general framework. This further relates to the need for the introduction of financial models and tendering requirements into the section with financial benefits in circular economy, to illustrate potential savings from applying certain circular methods. An important addition would be **including a ULO on life cycle costing tools**, as it has been suggested that a more practical approach is needed within the qualification framework by participants in a focus group in Spain. This would add another dimension to the framework, which focuses on direct applicability, related to the ULO’s and would potentially make it more attractive to users.

In addition to this point is the **introduction of Life Cycle Analysis method and tool**s (Hungary and the Netherlands) to the framework and procurement strategies, as well as the development of certification procedures for quality assurance documentation of reused materials, suggested by participants in Hungary. Respectively topics such as waste management and pre-demolition audits could be referred to in Task 5 in the framework.

There have been other proposals for improvement of the framework related to its structure such as **the introduction of a “Why” column to the ULO’s** (*the Netherlands*), to support broader awareness and to communicate why certain activities should be undertaken to achieve circular (positive) impact. Furthermore, it would help to create some sort of hierarchy within the organisation of tasks and sub-tasks (referring to a not clearly defined relationship between the three core elements and the five enabling elements), which would assist easier filtering and prioritisation of ULOs. The inclusion of this feature would on the other hand also allow for navigation between professions and their related disciplines.

### 4.1.3. What are the main pathways for utilisation of the qualification framework in the educational and training practice?

To choose the right pathway for applying the qualification framework on circular skills in construction, it has been pointed out that **it is important to first identify the target group correctly**, by answering the question “Who is the framework’s client?” (*the Netherlands*). Approaching the topic this way would ensure a proper formulation and presentation of the framework to the selected audience. Most importantly, it is necessary to consider existing knowledge, raise awareness and explain why it is important to build sustainably.

For active construction professionals, appropriate channels are continuing professional development programmes (CPDs), workplace training, certification programmes and other similar **formats, which deal with upskilling and improving qualifications among practitioners**. In that sense, it is recommended that key elements of the framework are introduced to current practice and existing training, which deal with energy efficiency and sustainable design, in addition to project development and city planning processes. **An example would be the training for sustainable roof advisors**, being developed by a trainer and participant in the focus group from the Netherlands. He shares that the framework could be helpful to design the course as currently **there is a lot of information on green and yellow roofs, however,** as another participant highlighted, **very little attention is given to the materials of which they are made**. It is noted that such initiatives usually stem from requirements in the current legislation on professional qualifications and building regulations, or from market demand for specific skills, which are all lagging at the moment in most reporting countries. It has also been suggested that engaging proactively in conversations and directly with stakeholders could identify more paths for interaction and engagement, which on the other hand would increase awareness.

An unequivocal conclusion is that through higher (vocational) education and post-graduate courses, **there is a great opportunity to include sub-tasks from the qualification framework into existing subjects, specifically in engineering programmes.** For that reason, increasing knowledge capacity among academic teachers on topics of circularity is a necessary step in expanding the network of informed individuals.

## 4.2. What are the main challenges for the implementation of circular skills in the construction sector?

Strict and outdated legislation and related bureaucracy have been pointed out as the main challenges to overcome in national plans for the implementation of circular skills in the construction sector. An example is the aspect of “reuse” in circular economy in construction, related to the **use of reclaimed materials and elements into the building process**, for which no stable procedures have been established yet to certify their constructive quality. A reference to this point is made to the **laws and regulations, guiding demolition and disposal of construction demolition waste (CDW) in landfills**. Additionally, to this point, there are also technical questions concerning the collection and sorting of disassembled materials, which should be further worked out.

There is very low interest in circular solutions from the investors’ side since they usually focus on immediate profitability as opposed to long-term goals. Additionally, it was pointed out that **traditional methods are cheaper and involve less risk** (focus group, Czech Republic). The disregard for innovation is supported by a lack of awareness and appreciation of the benefits of circular buildings. Respectively there appears no motivation to apply new building methods unless they are economically more viable. As a result, a similar mindset and culture are shared by construction companies, architects, and engineers for which circular practices would still mean great effort and risk in an already very competitive industry.

Further observations made by participants from Bulgaria and Hungary, following this line of thought, reveal that missing content on circularity in educational and training practices worsens the situation. Generally, it seems **construction workers**, as discussed during the workshop in the Czech Republic, **do not want to waste time on learning** but rather just do their job as they know it, and meet the deadlines. **At university level**, circumstances are also complicated, as it is **a complex and slow process to modify curricula to incorporate new competences** and, in some cases, even state funding is missing for that. Consequently, the skills gap is widened even for young and new professionals.

**The greatest difficulty of all is seen in the financial aspect of sustainable building and the fact that there has been limited support by the public sector in developing means and tools to provide financial incentives for the integration of circular solutions into buildings**.

Those statements call attention to the fact that there are no specific national strategies worked out on the integration of the circular economy in construction.

## 4.3. Outstanding practices for implementing circularity skills or dedicated training in construction?

Many practical solutions have been offered to deal with the barriers of implementing circularity, mentioned in the previous point.

In line with the introduction of training and education on circular skills in construction, it has been suggested that more practical activities and examples are included in the training courses to provoke transformative action among stakeholders. An instance would be discovering and sharing more real and successful examples that illustrate a positive business case for circular buildings. As a participant from Spain points out **"Real success stories are the best way to promote any initiative…"**. This could be combined with research and workshops, visits to sites and projects, and **encouraging cooperation between businesses and educational institutions**. Students and young professionals could benefit from the creation of internship positions, which would encourage them to pursue development in this new and prospective field of circular economy at the same time contributing to a sustainable built environment.

As a result, new and alternative practices could evolve from this interaction, directly impacting existing and future sustainable management and certification processes. In addition, acquiring knowledge and skills in business case development or waste management, or the creation of material passports could stimulate interest in new and exciting activities related to the circular economy and thus could expand the network of ambassadors throughout the sector. Introducing certification programmes in circularity has the potential to further bolster professional attitude and dedication to the topic. Even

if certification is not the only solution, it has the potential to lead to the **creation of new job opportunities and activities, which could further stimulate the development of circular methodology and standards for the construction industry.**

In parallel, on a national level, regulations could be adapted by creating reforms in waste treatment such as increasing taxes for landfill and incineration, which would lead to **re-evaluation of the process of demolition and manipulation of construction waste**. This would incentivise construction companies and investors to rethink their established models, design, and procurement practices. In addition, **increasing tax on extraction of natural aggregates and use of hazardous materials**, could cause another transformation towards use of secondary, renewable, and naturally resistant materials and elements in the building process. A **database of architectural offices and other companies which apply circular principles** would be very helpful for the identification of circular knowledge capacity and it could potentially initiate a spinoff of start-up companies, specialising and innovating on circularity. **Marketplaces and material depots for reclaimed building materials** could be added to this database to complement the circular process of construction. Here, an example is given with a tool developed in the Netherlands for making decisions about use of secondary materials "Beslisboom hergebruikte bouwonderdelen" (*Decision tree for reused building materials)* and "Digitaal stelsel gebouwde omgeving" (*Digital system - built environment)*, underlining the role of digital platforms as circular economy library.

Similar activities, initiated by local and regional authorities, have potential to create conditions for thriving of circular practices, increase demand for skilled workers and promote circular economy to the general public, setting an example for the private sector. Elaboration in this direction would be to **use guidelines on circular construction in public procurement and compliance regulations**, set target values for the local area and create methodology for the whole value chain, to be followed and implemented further as requirements by private investors. Ultimately, to designate facilities for storage, maintenance and repair of reclaimed materials and allocate resources for the management.

There have been many more suggestions made by participants, mainly focusing on the role of local administration, as it is a key player and enabler of transformation.

# 5. Applicability and exploitation pathways- international European Focus groups

## 5.1. Key features of the qualification framework

Like in the national focus group discussions, the introduction of the qualification framework to stakeholders from other European countries and organisations, has been received with a positive attitude, triggering interest and invitation for cooperation with other international projects and platforms working towards raising knowledge and skills of stakeholders in construction. The participation of international organisations with a wider view of the current development of the construction market in Europe, has once again brought recognition of the framework as a valuable tool, that with the right communication strategy could enable a positive change towards circularity in construction. Aspects and possibilities for integration of the qualification framework discussed during the workshops are detailed below.

### 5.1.1. What are the main advantages and disadvantages of the proposed framework and approach?

Through the shared feelings of excitement around the presentation of the framework, a genuine notion of appreciation for the concept was revealed. Training providers reveal that currently public administration and construction companies are struggling with identifying the right strategy to adapt to ever more stringent European legislation while the framework targets exactly this issue by **offering a step -by- step approach into determining skill gaps in sustainable construction and training needs respectively**. This makes the framework valuable not only as an informative tool, but also renders it **appropriate to developing strategies and roadmaps** for bringing knowledge, satisfying qualification needs and introducing new practices. The interdisciplinary approach used to develop the framework induces conditions for collaboration between various stakeholders in the construction industry, thus promoting it as an **enabler of circularity across the whole value chain,** while allowing for a simultaneous learning process.

The potential for wider application is acknowledged as by training so as by university and consultancy representatives in the workshops, who recognize the capacity of the

qualification framework as enhancement to their current training and advisory packages. This statement is confirmed by members of professional associations dealing with upskilling of the construction workforce and municipal counsellors, who see the **individual tasks and subtasks of the framework combined into modules to address specific needs and/or to complement existing skills and knowledge on sustainable construction**. The open-source format of the framework suggests cross-sector applicability and cooperation with other projects aiming to stimulate integration of the circular economy among construction stakeholders.

All the above has been discussed in parallel to the notion that the **construction market across Europe has not yet reached the level at which the need of transformation to a circular economy is fully acknowledged**. To this statement, the qualification framework is currently seen as too advanced for its recipients. In combination, a training specialist in green roofs and facades points to the fact that even if the framework is taught in his courses, there is little opportunity to apply it since **there are very little to no available circular materials that could be used in green roofs and facades at the moment**. Nevertheless, considering the profile of most of the participating organisations in the discussions (see chapter 3), the recognition of the framework as a unique approach to introducing circularity in construction, has proven its conception even more credible.

### 5.1.2. Are there any missing elements you would like to see further addressed?

While the framework offers a guide to a considerable collection of knowledge on circularity in construction, it has been perceived to miss out on the basic definitions of circular economy. Reason for this remark is derived from the claim that potential users might not even fully understand yet the guiding principles of the concept and would need the foundation before they dive into detail. In addition to that statement, there is the feeling among some of the participants that **there is a need for a more concise description of how the framework could be applied** to serve the ones who are not used to this way of structuring information.

Another suggestion is that it would be interesting **to approach potential targeted users of the framework such as universities to better understand their needs and problems to introduce new subjects to existing curriculum**.

### 5.1.3. What are the main pathways for utilisation of the qualification framework in the educational and training practice?

As it has already been noted that the circular movement in construction is making slow progress by adapting to the current situation. Therefore, increasing knowledge on the topic has the potential to stimulate its progress to another level. **University representatives recognize the possibility to include selected topics from circular economy into taught subjects in engineering, concerning knowledge and choice of materials, waste management and construction principles.** An increase in the number of offered courses and subjects teaching circular principles could eventually lead to a specialisation and rise of experts in circular economy in construction. This on the other hand could lead to **cross bridging of the qualification framework for circular skills in construction with other existing qualification frameworks to a new recognized profession in national education standards.**

In that sense, participants from training institutions point to the qualification framework and its flexibility to incorporate principles of circularity in already existing subjects and training courses concerning energy efficiency and sustainable and effective use of resources in buildings. This concerns not only an increase in the number of people in the construction value chain that have knowledge of circular economy and the skills to apply it, but it also refers to the ability to transfer this competence to relevant stakeholders. **As one training provider notes, it would be interesting to know how circular economy principles could be taught directly on the building site, eliminating the need for expensive and time- consuming trainings**. This also proposes the idea that real life examples and practice have great impact on innovation, immediately visible results and learning capabilities.

## 5.2. What are the main challenges for implementation of circular skills in the construction sector?

Beginning with the fact that the circular economy (in present times) is still something new and unrecognised among the general public, being the main user of its benefits, leads to an uninterested and underdeveloped construction market in that sense. So, **lack of**

**general awareness and acknowledgement of the advantages of circular economy is seen as one disadvantage to its wider acceptance and application**. Additionally, and what has become a common observation in almost all discussions regarding this question, is that the legislative body and power plays a decisive role in initiating and promoting application of innovative and sustainable practices in the construction market. In that sense the **lack of political power (national and/or local) to set higher standards and offer financial incentives to motivate and support the development of circular practices is seen as a challenge to missing deman**d for such services. And even if the ruling institutions are not ready to stimulate change now, then in the near future prospective engineers and construction specialists will inevitably face strict requirements for energy- saving and problems regarding diminishing construction resources, making universities an essential player in adequately preparing the future workforce, beginning now. However, even when this concept has been shared by most participants, they have all admitted that **change to the current education system is extremely hard.** While all these necessary prerequisites for introducing circularity to the sector are seen as very important, there are the issues regarding **lack of available circular or sustainable materials and products or developed guidelines on deconstruction and demolition to support the transition to circular economy**.

## 5.3. Outstanding practices for implementing circularity skills or dedicated training in construction?

Participants have revealed that even though the subject of circular economy is still new, there are already structures and events organised around the topic in Europe with a practical approach to it. Such are **conferences on materials and products** used in construction in Greece, along with doing exercises and demonstrations with young people at schools there. Such activities and events bring attention to the importance of **involvement of younger generation construction specialists to circular innovation through engagement and sensitization**. Another point to that is the inclusion of students into pilot projects testing circular principles in the built environment.

Participants share information of existing cluster formations across Europe, acting as accelerators to green transition for SMEs and core stakeholders by providing access to information, testing of innovative solutions and business ideas in a circular economy. **Clusters are seen as effective tools to create efficient platforms for change and collaboration.** On a national and city scale level, there are hubs for circularity, bringing

local start-ups and innovative businesses together under mentoring and assistance programmes to support growth and development of entrepreneurs in a circular economy.

# 6. Roundtables

As part of the validation task, consortium partners gathered in a round table discussion to review impressions and recommendations generated in the focus group workshops and based on them to consider and propose improvements to targeted tasks and deliverables in the BUS-GoCircular project. At the roundtable discussion at least one participant from each partner organisation took part. Summary of the results from the national and international focus group meetings were presented by the task leader and followed by questions to identify necessary actions. Conclusions about the necessary improvements and the outcomes of the discussion, taking into account the scope of the project, are presented below in detail.

To deal with the issue of perceived complexity of the framework, along with the use of expert language and advanced level of information it contains, the consortium would undertake the following actions:

1. **Writing of an article summarising the qualification framework in a concise and clear format to allow for easier navigation through it [WP2, WP4]**
2. **Writing an explanation of how the framework could be used in a step-by-step process for raising qualifications in a consistent manner, along with how the framework works in relation to EQF-levels [WP2]**
3. **Creating a list of basic definitions related to circular economy [WP2, WP3 and WP4]**
4. **Communication strategy of the framework to different stakeholders [WP3 and WP7]**

To address some of the missing points of the qualification framework:

1. **Analyzing available tools related to application of circular economy in construction projects and including an article describing them [WP4]**
2. **Addition of sub-tasks to quality assurance activities for Tasks 1 to 5 in the qualification framework [WP2 and WP3]**
3. **Reaching out to targeted potential users such as universities to better understand the need and problems of introducing new subjects to existing curriculum [WP4]**

In order to incorporate some or most of the observations and recommendations by the national and international participants regarding challenges to introducing circular economy practices:

1. **Consideration to deliverables in WP4**
2. **Shared best practices and examples of successful pathways for integrating circular economy into construction are an asset to:**
3. **National Implementation Plans, with consideration of the replication and exploitation strategies (national and EU) [WP5 and WP6]**

# 7. Conclusion

The analysis of the conducted interviews shows a promising development and possibilities for application of the circular construction interventions and skills qualification frameworks developed in T2.1 and T2.3 of the BUS-GoCircular project respectively. **Comments by participants from all focus groups indicate opportunities for future collaboration and proactive engagement into the integration of circular skills into the construction industry.** Many of the topics described in the qualification framework are new to the building sector in most countries, still, they are found to be very interesting and necessary to drive sustainable change accordingly. One of the key characteristics of the framework, identified by the participants, is its extensive collection of knowledge on circular economy and its comprehensive format. In that sense, a desired feature of the framework would be the ability to easily filter, organise and summarise its content for improved management of the information. Based on this, suggestions are made by interviewees to include descriptions of the transformative relationships between the key and enabling elements that underpin the framework. Or in other words, what could be the effect of applying one task to another. An example would be: how could rethinking the business model (Task 4 of the general framework) influence the prioritisation of regenerative resources (Task 1 of the general framework). Once users can navigate through the framework easily, they could devise many possible ways for connecting its contents to existing and future courses on sustainable buildings.

In general, the application of circular principles in construction is valued positively by the participants in the focus groups. During the discussions they identified barriers for its implementation in the financial and legislative aspects of the building process. At the same time, there have been enough positive examples and ideas to illustrate a logical approach for successful introduction to existing practices and for alternative use to innovative building design.

**The overall approach to collect qualitative information from various stakeholders across Europe in the form of Focus Group discussions, has proven to be a valuable and constructive way to validate the qualification framework.**

Results from the compiled interviews are exciting and promising for the future work of the consortium in BUS-GoCircular and give way to improvements and ideas regarding national plans, exploitation strategies and dissemination strategies, part of the working packages 5, 6 and 7 of the project.

More information about the project

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## Colophon