

European circular construction alliance - adopting circular economy for internationalization and global competitiveness of European SMEs in building and construction

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Abstract

To reach ambitious goals of Europe 2020 Strategy, circular economy concepts need to be widely adopted. In terms of construction sector, which generates almost 10% of European GDP but on the other hand consumes enormous quantities of raw materials, other materials and energy, the idea of circular economy can be achieved by strategic, collaborative approach, in the whole value chain and cross-industrial cooperation. It is however a very challenging task because of the sector's complexity and its various players. To meet the challenge European Circular Construction Alliance (ECCA) was established on 12 January 2017, supported by the European Commission (COSME) and the European Cluster Collaboration platform. The main objective of ECCA, as an EU wide meta-cluster, is to establish a long term European Strategic Cluster Partnership (ESCP) supporting clusters and business network organizations, their SMEs and other cluster members collaborating for innovation, market-uptake, and marketing of competitive products, services and technologies in the field of circular construction and supports SMEs in global competition. To reach those goals the thematic areas around the construction and relevant sectors and industries (eco-innovative, ICT, waste management, energy sector, tourism etc.) have been identified. This will drive collaboration beyond the borders of the building and construction sector and initiate new cross-sectoral collaborative value proposition schemes, new business models, optionally leading to new industrial value chains. Keeping in mind resource efficiency as a key principle of the circular economy, and the re-use as the next one, ECCA is working on strategies and plans to support a cross border innovation project implementation, and search for synergies and best competences of SMEs and other innovation actors. European Lighthouse Circular Construction Solution (ELCCS) concept has been initiated as a basis for the development of globally competitive offers by different EU clusters and their members. The first ELCCS was presented at the 1st ECCA conference in Ljubljana, in January 2017.

Keywords: circular economy, construction, partnership, internationalization.

Circular Economy and Circular Construction

Within the European Circular Construction Alliance project (COS-CLUSTER-2014-3-03) the relevance of the circular economy concept in current and future activities has been assessed by means of via online surveys among number of EU construction clusters. The results clearly show that this approach cannot be avoided in all strategies decision of companies and other entities in the construction sector (Figure 1).

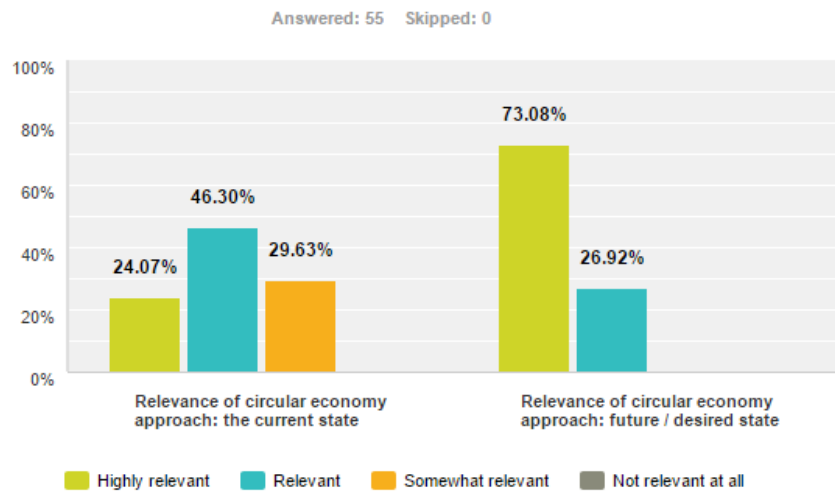


Figure 1. The relevance of circular economy approach in current and future activities

For the facilitation of the transition towards a circular economy only common initiatives, like European Circular Construction Alliance (ECCA), have all the potential to overcome barriers and diversity in the construction sector. Cooperation among the construction and relevant sectors and industries can lead to the adoption of the circular economy principles in the building life cycle through finding common areas of interest and collaborative work on innovative solutions. That is the reason why ECCA is open for different players which represent eco-innovations, ICT, waste management, energy sector, tourism etc. More than 50 cluster organizations from European countries as well as supporting members demonstrated interest to be involved in ECCA alliance.

To assure ECCA dynamics and openness, it was decided that ECCA for the time frame of the project remains a voluntary network of clusters interested in circular economy in construction, and the ECCA partnership agreement is a written statement of this interest (like ESCP-4i charter⁴).

Moreover, as internationalization is one of the main aim of ECCA, the alliance focuses on technologies with higher level of maturity, at least at TRL5 (technology validated in relevant environment) in order to enable industrial development with partners in third countries, and for higher TRLs technology transfer and commercialization on third markets.

European lighthouse circular construction solutions

Keeping in mind the resource efficiency as a key principle of the circular economy, and the re-use as the next one, ECCA is currently working on strategies and plans to support a cross border innovation project implementation, and search for synergies and best competences of SMEs and other innovation actors.

A desk research on critical success factors for an EU meta-cluster development has been conducted. The outcomes indicate that clear vision and mission, engaged clusters and especially their members (SMEs), cross cluster collaboration and cross sector collaboration are the critical success factors for the ECCA partnership. Complementarities in terms of visions, competences and technologies between partners need to be created and used for further ECCA project implementation. It was clear that ECCA strategy needs to define more

⁴European Strategic Cluster Partnerships – Going International (ESCP-4i) Charter

focused initiatives, where critical success factors will be met. A concept of so called European Lighthouse Circular Construction Solution (ELCCS) has been initiated. European Lighthouse Circular Construction solutions are to fulfil the following criteria:

- **EUROPEAN:** know-how originally developed in the EU, by actors/ partners coming from different EU clusters, as a results of cross border collaboration R&D projects and/or business collaboration. They should integrate and demonstrate European competences which are connected to realization of European policies, such as climate change, eco-innovation, waste management, social policies, protection of the environment etc.
- **LIGHTHOUSE:** The solutions have to be of high importance for the clients and markets. They should bring some important impacts, for example: contribute to business (construction) ecosystem changes and improvements along value chain, realization of innovation process dynamics, leading to closures of material loops, enlightening serious changes in the industry, leading to change of mind-sets of business actors, changes of business models, should demonstrate high implementation feasibility, replicability, adaptability for different markets, and have profound, long term impact.
- **CIRCULAR:** High and measurable contribution to the implementation of circular economy principle, for example in terms of RESOLVE framework⁵.
- **CONSTRUCTION:** key value provision is about delivering buildings, infrastructure, use, and operation of it. But these solutions are not only within the construction sector. A collaboration with other sectors is expected when needed:
- **SOLUTION:** Group of (cluster) of complementary technologies, processes, method, tools, developed competences of the actors, established framework conditions intentionally and systematically integrated and implemented to deliver result or solve a problem in a novel way, leading to new value chain integration, and/or new business model development.

The first outline of ECCA ELCCS was discussed within the workshop at the 1stECCA conference (see <http://circularconstruction.eu>). The following solutions were initiated:

1. **NZEB,** Smart building/district, modular& flexible design, replicability for different climatic zone, BIM integration, e-mobility integration.
2. **CDW management,** on site-recycling &use of recycled materials.
3. **Wood based building sustainability:** advanced wood and composite products, prefabricated houses, wood based retrofitting.
4. **IKT supported building material and components database,** digitalization solutions, including IOT/BIM integration.
5. **Bioclimatic house,** nature based design, use of local/natural/renewable materials, and/or by-products of agriculture.

This work will continue, and will be closely linked to upcoming activities among ECCA partners – survey about in-depth circular construction markets study. Interested ECCA partners and other organisation are invited to contribute to initiated solutions as well as prepare new ones.

⁵ The framework takes the core principles of circularity and applies them to six actions: Regenerate, Share, Optimise, Loop, Virtualise, and Exchange;
https://www.mckinsey.de/files/growth_within_report_circular_economy_in_europe.pdf, page 4.

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