European Circular Construction Alliance - adopting Circular Economy for internationalization and global competitiveness of European SMEs in Building and Construction

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Przemysław Dana/ sEaNERGIA
Vladimir Gumilar / SGG
ECCA in brief

- EU programme COSME 2014
- Call: COS-CLUSTER 2014-3-03
- Duration: 24 months, start 1.01.2016
- Partners:
  - Construction cluster of Slovenia
  - sEaNERGIA Baltic Cluster, Poland
  - Sustainable Building Cluster, Spain
- ECCA establishment: 12.01.2017
What is Circular Construction?

- Application of Circular Economy principle in building and construction sector
- along the life-cycle of buildings, from the extraction of building materials, design, production, construction, operation/maintenance and retrofitting to the demolition and recycling of materials
European Circular Construction Alliance

- a voluntary, open alliance
- of complementary clusters and supporting organizations (meta cluster)
- interested for inter- cluster, cross boarder and cross sectoral collaboration
- adopting circular economy
- for internationalization and global competitiveness of European SMEs
- in building and construction.
ECCA objectives

• Intensify cluster and business network collaboration across borders and sectoral boundaries
• Promote European Strategic Cluster Partnerships to lead international cluster cooperation in new areas
• Support SMEs in global competition and internationalization
• Help SMEs to contribute to the emergence of new value chains and take a leading position globally
• Develop a roadmap for implementation with a long-term cooperation agenda to foster the sustainability of the partnership
ECCA activities and services

- identification of circular construction innovation, market opportunities, and interested partners
- initiating and coordinating of inter cluster collaboration implementing circular construction towards technology transfer and market uptake in EU and third countries
- elaboration of joint ‘European’ strategic vision and internationalisation plan
- joint worldwide promotion, joint branding,
- coordination of cooperation with clusters and SMEs from EU and third countries interested in circular construction
- attracting domestic and foreign direct investments.
Relevance of the circular economy concept

Answered: 55   Skipped: 0

- Relevance of circular economy approach: the current state
  - Highly relevant: 24.07%
  - Relevant: 46.30%
  - Somewhat relevant: 29.63%
- Relevance of circular economy approach: future / desired state
  - Highly relevant: 73.08%
  - Relevant: 26.92%
European Lighthouse Circular Construction Solutions
(ELCCS)
Circular construction thematic groups / and topics

- **Raw materials extraction, production and supply of products, components, remanufacturing**: green, innovative extraction of raw materials, Eco-remediation of queries, lean engineering, innovative production practices, Industry 4.0 (Smart factory), durability of products and components, wood based and hybrid wood products, bio-based, biodegradable materials, change / replacement of non-sustainable materials, off-site production, prefabrication for disassembly, re-use and remanufacturing, light weight products development, smart (self-adaptive) materials and components such as bio-adaptive facades, strengthening of standard construction materials, use recycled materials and reusing existing materials, use waste inner loop as a fuel in production processes.

- **Building design and urban planning**: integrated eco/sustainable design of new and retrofitted buildings (sustainable urban planning – compact use of land, local renewables, design for light weight, ease of maintenance, and selective deconstruction, optimizing and re-using existing buildings and infrastructure, flexibility, multi usage and adaptability of building spaces, new business models development replacing ownership with leasing, renting, sharing.

- **Smart building, Smart cities**: production and supply smart building components HVAC and other equipment, implementation of building automation, smart building components and real time monitoring tools, smart home appliances, integrated with BMS/building automation, water supply and management, including rain water management, interoperability/inter-linkage of energy and utilities between district and building level, smart mobility and parking.

- **Construction**: smart on-site and off-site processes, use of ICT tools to support the coordinator of contractors and other actors, effective supervision and quality control procedures, new green supply and distribution channels and inbound logistics, smart transport, logistics and mobility services, smart and sustainable sharing/renting of construction machinery and equipment, separating concrete with plasma, 3D printing technology, robotics and automated construction technologies.

- **Use, operation, maintenance, retrofitting**: sharing vs ownership use models, green e.g. circular practices of building owners related to use and operation activities such as delivering space for living or working as a service, infusing life and new functionality (innovative design, remanufacturing) into unattractive buildings and avoiding demolition, innovative green refurbishment methods and tools, smart, automated maintenance, performance monitoring system, resource efficient retrofitting an existing buildings into a nearly zero energy ones.

- **Demolition and CDW management**: replacement of demolition with dismantling, selective deconstruction, and re-use even on site, CDW management, including recycling and reusing of energy intensive and unsustainable materials, CDW market development, local /on-site CDW use, new recycling techniques for concrete (recovery of high-value fractions), resource efficient separation and collection systems.

- **Horizontal areas**: BIM (Building Information Modelling) systems aimed at virtualization of building components and processes in whole construction value chain, Internet of things (IOT) implementation at Smart building, Smart city, new business models development, including new methods of investment financing, new standardization practices that popularize material efficiency and circularity in the construction sector.
European Lighthouse Circular Construction Solutions (ELCCS)

1. **EUROPEAN**: know-how originally developed in EU, actors/partners coming from different EU clusters, cross border collaboration initiated

2. **LIGHTHOUSE**: Important, wide, radical contribution to business (construction) ecosystem changes and improvements along value chain, in innovation process, closure of material loops, enlightening changes, change of mind-sets, high implementation feasibility, replicability, adaptability for different markets, profound, long term impact...

3. **CIRCULAR**: High and measurable contribution to implementation of circular economy principle, for example in terms of **RESOLVE framework**,

4. **CONSTRUCTION**: Value provision (key one) is about delivering buildings, infrastructure, use, operation of it, not closed to construction sector (collaboration with other sectors) - if needed: integrations of solutions/technologies/experiences from different sectors, closure of the materials loop, downstream/upstream (across sectors)

5. **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, new **value chain integration**, new **business model** development
ELCCS Feasibility criteria

1. High TRL (Technology Readiness Level) of key technologies, processes methodologies, particular/individual circular solutions embedded in ELCCS
2. High economical viability, replicability, demonstrated for example with pilot project
3. Critical mass of actors (clusters, companies) with competences, interest for implementation in value chain
4. High / clear interest for implementation / existing competences of partners / actors / green (circular) investors, decision maker aware of CE, believers...
5. Existing market, market can be developed (by means of new technical regulation for example)
6. High level of interest for internationalization,
7. Identified drivers and supporting mechanism (gateway clusters)
First initiatives of ELCCSs

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
3. WOOD based building sustainability: advanced wood and composite products, prefabricated houses
4. IKT supported building material and components database, digitalization solutions, including IOT/BIM integration
5. Bioclimatic house, use of local, natural materials, and/or by products of agro industry
ECCA 2nd International Conference

„Circular Economy – a global challenge for the construction industry”

5 December 2017
Hotel Baltic Plaza
Plażowa 1 St.
Kołobrzeg, Poland

The conference is free of charge

More information on: http://circularconstruction.eu/
Thank you for your attention!

Przemysław Dana
ECCA project
p.dana@seanergia.pl