

PRELIMINARY REPORT: MARKET ASSESSMENT OF CIRCULAR ECONOMY IN THE BUILT ENVIRONMENT IN GERMANY

The purpose of this market assessment is to understand of how German businesses are using the Circular Economy (CE) in the built environment. The aim being to gain valuable input on how to commercialise green building materials and waste reduction in the market. In addition, this report outlines the challenges and opportunities for Danish solution providers. The following findings and market insights can be useful for positioning in the German market.

FINDINGS

Circular Economy trends in Germany

Circularity is viewed in the German context as ‘the extreme of urban systems’ where flows of energy, water and waste are connected. It is a vision for a new way of doing things, a different kind of value flow important for the development and integration of systems for cities. Circular activities are generally growing in Germany with networks forming around CE, where especially architect are pushing the circular agenda. Furthermore, regulation on plastic from the EU along with political push and funding in Germany for circular projects have triggered new opportunities - especially within waste and recycling which has always been a tradition in Germany.

Examples of CE practices mentioned in the interviews:

- Using circularity to translate Cradle to Cradle (C2C) principles into the construction sector and building material market
- A roof-water farm on a circular water flow connected to food and plant production
- Using CE as an inspiration for bridging research and practise emphasising social sustainability in landscape architecture
- Promoting wood and other natural materials in construction
- Negotiation processes and governance for urban sustainable development of eco-systems and waste management
- Looking at production flows in urban areas and the spaces emerge from CE initiatives

Market opportunities in Germany

Circularity creates new flows and biproducts and hereby new business opportunities. The market availability of reused products in Germany are much better nowadays. Including painting, lightning, electrical sockets, glass separation walls, and prices are becoming sensible. The market demand is pushing companies to change to circularity, which amongst others have resulted in more companies looking to C2C certify their products. No database or platform for trade of reusable materials exists but is of high interest as German companies have difficulties finding good reused and recyclable material online.

Ideas for market innovation:

- Possibility to trace back materials – information on quality, origin, age etc.
- Create an overview of CE systems and material flows, with clear visualisations of actual segments of circularity

- Take advantage of the CE biproducts and new materials generated.
- Circularity demands cross disciplinary solutions of using less resources over time and build up new intelligence
- Create participatory processes in circular design and production

Challenges for the German construction sector

According to interviewees Germany is generally behind other countries as the construction sector has been slow to adapt CE as it is quite conservative. Awareness about the importance of circularity is missing and the building industry is watchful towards new innovations despite a building boom in cities. CE is firstly about a changing of mind set and have no single point solutions. A systemic transformation is needed, but the question is how to create a new industry that can support circularity. Shortening the life cycles of buildings and fabrications, or regrouping of the components could be key. At the moment real CE implementation is in the companies and in production lines, but not on a systemic level where the true potential of lies.

Implementation barriers identified:

- It is a problem that building new is cheaper than to reuse or recycle materials. If the CE systems are to success there must be provided more economic incentive
- There is a huge gap between the knowledge created in the universities and what is happening in the industry
- The construction sector is building with too much glass and concrete and not in wood
- The stakeholder landscape and coherence in clustering of actors is unclear
- Complicated and rigid political structures along with a powerful lobbying of the companies selling concrete products

Collecting information on circular economy solutions

Different CE projects and products have been mentioned to be inspirational by interviewees. The Ellen McArthur Foundation is first most an important source of business intelligence together with TU Delft in the Netherlands who are hosting free online webinars on CE. Specifically in the German context, the National Academy of Science and Engineering (Acatech), the Braungart institute and Ferrien, NGO promoting C2C thinking, are mentioned as key sources of information.

Inspiring examples also mentioned:

- The industrial symbiosis phenomenon like the one in Kalundborg in Denmark
- The trend of building with wood in cities as seen with skyscrapers in Singapore
- Product Service systems where e.g. furniture are provided as a service that includes maintenance and take back systems such as Tarkett Desso.
- Plastic project in Indonesia turning plastic waste into building components
- Software can be used to support the value chain for continuities. Interaction with users and using AI or sensors to collecting human data, can help to get the full overview of the systems and material flows.
- Micro logistic in cities e.g. bikes caring goods to support the circular agenda

DATA COLLECTION & SOURCES

The findings are based on four interviews with actors from the built environment in Germany working with sustainable urban planning, landscape architecture, circular economy research and engineering consultancy in the regions of Berlin, Baden-Württemberg and Stuttgart. The main findings from the interviews collected below grouped after the four main questions raised in the interviews. See attached appendix to read the full answers.

Other sources mentioned in the interviews:

<http://circular.berlin/> (a Climate-KIC collaboration)

<https://www.archdaily.com> (a blog format on CE)

<https://www.dezeen.com> (architecture and design magazine)

<http://www.symbiosis.dk/> (information on Kalundborg Symbiosis)

<https://dessotarkett.nl/> (information on Tarkett Desso)

<http://en.acatech.de/> (the National Academy of Science and Engineering)

<https://circle-lab.com/> (an online platform on circular economy)

[Online Circular Economy Course](#) (TU Delft MOOC)