

Circular construction and demolition waste? Barriers and opportunities for creating circular business models in the EU C&DW sector

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Abstract

The main goal of this paper is to identify barriers and opportunities for creating the circular business models in the EU C&DW sector. Having in mind this fact, author of the paper describes market, social, governance and regulatory failures which may limit opportunities for achieving market success in the EU C&DW sector. The presentation will take into account current economic situation of the sector which is under the pressure of both global economic challenges and the EU policy aiming at popularization of the circular economy approach. As a result, different recommendations that may determine the final shape of the business models will be identified, including key resources that have to be used for successful commercialization of the different circular C&DW solutions.

Keywords: Circular construction, C&DW sector, market barriers and opportunities, recycling and recovering.

Introduction

Circular construction adopts the principles of circular economy along the life-cycle of buildings, from the extraction of building materials to the demolition and recycling processes. Many of these materials can be recycled, reused or recovered for energy or other purposes. In spite of the potential for recovery, rates differ between less than 10% to over 90% across the EU (Leiden-Delft-Erasmus Centre for Sustainability 2016). Nevertheless, that rate can be improved by implementing increasingly better regulations and creating new closed value chains which would be based on many innovative technologies (such as solutions created within the frame of the HISER project which is funded by the European Commission).

Companies are continually working to improve resource management, but they are held back by a range of market barriers which limit the opportunities for development of the circular economy approach on EU level. The following article summarize challenges which are met by all stakeholders involved in creating green value chain in the C&DW sector, including market, social, governance and regulatory failures. The text also identifies the most important opportunities which would allow the stakeholders to overcome the barriers presented below.

The most important barriers

As it was mentioned above, the most important barriers can be divided into several groups, among which market failures (economic problems), governance and regulatory barriers, social issues and organizational problems can be found.

Market failures

In the case of the first group – market failures – the barriers are often related to low costs of alternatives to recycling. Landfill gate prices are too low, so construction companies are not interested in reducing negative impact of the sector on natural environment. Moreover, primary aggregates are very cheap and widely available. It is also worth noting that the European construction sector is seen as fragmented, which means that it is difficult to coordinate activities taken by many C&DW actors (Zou, Hardy, Yang 2015).

Apart from issues mentioned above, literature also describes barriers which are encountered particularly by small and medium enterprises (SMEs). In some cases SMEs suffer from the lack of the financial resources to establish and manage a recycling scheme (Rizos 2015). As a result, many companies do not tend to invest in innovative recycling and recovery infrastructure, which leads to the lock-in of existing technologies.

Aside from the direct financial costs, there are also indirect ‘hidden’ costs such as the time and human resources that businesses need to devote to make environmental improvements. Moreover, many stakeholders often “rely on external consultants to meet their obligations; this in turn entails an extra cost, which might be significant for very small enterprises” (Rizos 2015).

Governance and regulatory failures

The lack of government support and encouragement (through the provision of funding opportunities, training, effective taxation policy, import duty, etc.) is widely recognized as a significant barrier in the uptake of environmental investments. As Rizos emphasizes, “Such barriers tend to persist in a context where prices do not reflect the real costs of resource use to society” (Rizos 2015).

European and national regulations often still limit opportunities for the use of construction and demolition waste as sub-products (Zou, Hardy, Yang 2015). First of all, current regulations are characterized by lack of clarity on several concepts of EU legislation such as producer responsibility, quality of separate collection and definitions of recycling, re-use and recovery (Rizos 2015). Weaknesses in policy coherence (e.g. bioenergy and waste policies) and lack of harmonized standards can also be identified, as standardisation bodies and environmental agencies are not involved in creating regulations which would support implementation of the circular approach in the EU economy (European Commission 2014).

Another obstacle is the fact that the transition of SMEs to green business practices usually incurs administrative burdens stemming from environmental legislation. Moreover, most tools for environmental management (such as the European Eco-Management and Audit Scheme - EMAS) are produced for larger companies, without taking into account the specificities of the SME sector (Rizos 2015).

Organizational issues

The circular approach requires exchange of information about nearby industries and their inputs and outputs, but it is often difficult or costly to obtain. One of the most important problems is the lack of enablers to improve cross-cycle and cross-sector performance due inter alia to non-alignment of power and incentives for transformation between actors within and across value chains (European Commission 2014).

Another important barrier is related to the different budget and management structures between jurisdictions preventing cooperation in certain areas. For example, each city develops its own transport flows system, which leads to confusion among shippers and

transporters. Thus, inconvenience of location of recycling facilities or need to take materials to many different places is often visible (Zou, Hardy, Yang 2015).

Experts also emphasize that the circular approach faces barriers caused by the lack of practice and infrastructure for the segregating of biological from technical nutrients and phasing out toxic materials. Moreover, “many waste are not separated at source, which limits opportunities for recovering and recycling valuable building materials” (Van Eijk 2015).

Social failures

Companies may lack the information, confidence and non-economic capacity to move to circular economy solutions due to the barriers which are caused by social behaviours, low technical skills, insufficient knowledge of stakeholders and unavailability of accurate information for parties involved in construction activities and waste management. These factors, “together with existing infrastructure, business models and technology, keep economies ‘locked-in’ to the linear model” (Rizos 2015). Many construction enterprises are also characterized by “conservative nature (skeptical concerning innovations), which also means that construction and demolition material is not considered as a potential resource” (Zou, Hardy, Yang 2015).

The lack of knowledge about the benefits of the circular economy has been identified as one of the barriers to the implementation of circular economy practices especially among SMEs and end-users (Rizos 2015).

On the other hand, many companies do not have the technical capacity to identify, assess and implement more advanced technical options. Another problem is the lack of education on the drivers of circular economy and insufficient dissemination about best practices. As a result, many stakeholders, such as individual citizens and enterprises, often do not know what can be recycled or what recycling opportunities exist within the region (Rizos 2015). The consumers also do not have “comprehensive information on origins and perishability of products (such as composition of the raw materials they use), which reduce confidence in the green solutions created within the EU construction sector” (European Commission 2014).

Conclusions – How to turn barriers into opportunities?

Bearing in mind all barriers described above and taking into account economic condition of the EU C&DW sector, it can be assumed that the shape of business models aimed at implementing the circular solutions in the sector should be based on detailed analysis of several trends, among which the following issues can be found:

- changes in legislative solutions implemented by local and national governments in EU countries, including requirements and incentives aimed at popularization of the innovative, green technologies and circular practices (especially reduction of landfill disposal and initial investment costs),
- medium-term economic condition of the EU C&DW sector which is still under the pressure of global economic challenges that may significantly influence the future opportunities for commercialization of green and circular innovations,
- global organization of work, especially shifts of industrial production to other geographical regions,
- rate of technology adoption among EU C&DW companies (Frost & Sullivan 2012),
- the transition from ownership to usage and performance-based payment models (European Commission 2014).

The analysis of these trends would allow all stakeholders interested in popularization of the circular construction solutions to turn the most important barriers into opportunities and to

create business strategies which will lead to successful popularization and commercialization of green value chains in the EU C&DW sector. It is very important, as the circular approach still meet many challenges and its future seems to be uncertain, especially in the context of human habits, unstable EU economy condition and insufficient support of many governmental institutions which are responsible for popularizing green solutions in the EU countries.

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