C+D – Close the Loop by Disclosing the Benefits of Buildings' Deconstruction and Materials Re-use

Summary

The aim of the C+D project is to develop a web-based platform with the same name for calculating the economic and environmental (2E) benefits associated with the process of deconstruction and re-use.

The construction sector was highlighted in the "Action plan for circular economy (CiEc) in Portugal" for its intensive use of primary resources and low level of circularity but was referred in the national agenda of Research and Innovation in CiEc for its great circularity potential. Traditional demolition is still the most common practice in Portugal, but it is well-known that selective demolition (or selective deconstruction or deconstruction) is a preferable approach. The latter maximizes the re-use of demolition waste and, when the re-use is not possible, at least high recycling rates are achieved, which is the second-best option according with the principle of the waste management hierarchy, since it provides resources saving and a reduction of the new construction cost. This option is also in line with the Axis 5 – Habitat of the National Research and Innovation Strategy for Smart Specialisation (RIS3): implementation of new methods of sustainable and efficient production, including the reduction of waste and of environmental impacts are defined as a priority.

End-of-life (EOL) environmental impacts are needed for Environmental Product Declarations (EPD, corresponding the EOL to C+D life cycle stages) and Product Environmental Footprint (PEF) development. But these environmental (and economic) advantages need to be calculated using a scientific-based method and disseminated to the actors that can influence the decisions during the service life of a building: from the design project, up to the EOL: the designers, promoters, contractors, demolition companies, recycling plants and public and private building owners. This will be made via the C+D platform, which will be comprehensive, upgradeable, and innovative, and via a Circularity indicator.

This platform (Figure 1) will be made available to the public in Portugal, Norway and other countries, in Portuguese and in English, along with a handbook in the same languages. The C+D thus contributes to achieving the Environment Programme's Output 1.5.

The dissemination of the project and results will be made by implementing the Communication Plan. Considering the target audience, and as a direct result of the C+D, it is expected a more frequent adoption of deconstruction. This is even more important for the medium and small construction and demolition companies that do not yet guarantee an adequate management of the Construction and Demolition Waste (CDW, or C+D waste), as referred in this Call text. Therefore, the C+D will also contribute to achieving the Environment Programme's Outcome 1.

C+D results will also create new business opportunities at the EOL stage of buildings and will contribute to the reduction of economic and social disparities between Portugal and countries in the European Economic Area with a higher rate of CDW re-use, which is one of the objectives of the EEA Financial Mechanism 2014-2021 (EEA FM). Since the partnership proposed includes institutions from a Donor State (Norway) and a Beneficiary State (Portugal), it is likely to strengthen bilateral relations between both countries, which is another objective of the EEA FM.

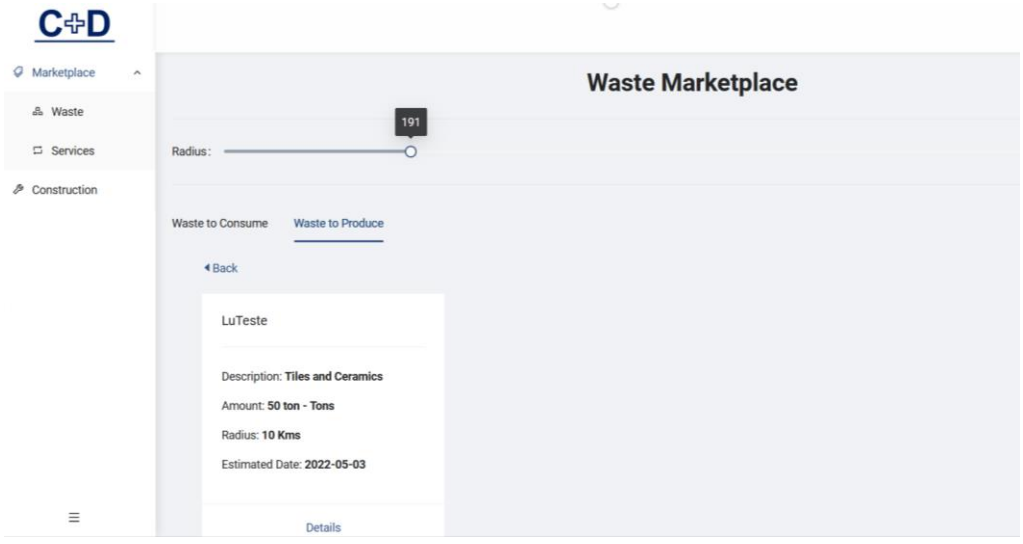

Figure 1. Printscreen of the C+D platform.

Project Reference

05/SGS#2

Leading Institution

IST – Instituto Superior Técnico (Portugal)

Partners

NORSUS – Norwegian Institute for Sustainability Research (Norway)

CERIS Principal Investigator

José Dinis Silvestre (jose.silvestre@tecnico.ulisboa.pt)

CERIS Research Team

Manuel Duarte Pinheiro, Vera Durão, Imtiaz Ahmed, Pedro Pedroso

Funding

EEA grants

Period

2020-2022

Total

49 903.00€

CERIS

40 723.00€

Project Website

cplusd-platform.pt/en