

LCM of construction waste towards circular economy of buildings: VALDEM project

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From resource prospective, building and construction sector is responsible for more than third of global resource consumption, including 12% of the fresh water use and its generation of solid waste is estimated to be 40% of the total waste volume. At European level, construction and demolition waste is the largest waste stream representing one third of all waste produced in EU. Therefore the resource efficiency and management is crucial in building construction.

A very significant part of the Construction and Demolition Waste (CDW) is not recycled today. Also a very limited part is used as a recycled content in the construction and building products and materials. This lack is mainly due to heterogeneity and dispersion of waste flows decreasing efficiency and economic viability of recycling. To address this issue, VALDEM project (funded by Interreg FWVL European Fund) aims to overcome barriers to increase up-cycling applications. The project focuses its activities in North of France, Flanders and Walloon regions (Belgium), and stands out from usual approaches by its cross-border view of circular economy.

VALDEM aims, on one hand, to optimize buildings end of life management by developing new deconstruction, sorting and recycling processes to produce uniform and accessible material flows. On the other hand, the project aims at increasing recycling and generating high quality secondary materials (concrete and other flows) to be used in future buildings within an up-cycling prospective. And finally it aims at validating the solutions from technical, scientific, economic and environmental point of view.

The Environmental assessment, based on LCA, consists of identifying hotspots and key aspects to prioritize the efforts of different economic actors. As a first step, an LCA meta-analysis is conducted to provide an environmental picture for different potential activities within the scope of the project. As a next step, a comparative LCA is conducted to assess the environmental benefits and impacts of different solutions proposed in the framework of the project in a decision making context, and to limit the impact transfer and to generate the maximum value for all the stakeholders. Finally, results will be transferred to main actors (recycling operators, buildings contractors, product manufacturers ...) in the three regions in order to consolidate future key aspects to eco-design a building in light of circular economy.

Key words: LCM, Building, End-of-Life, Construction and Demolition Waste, Circular economy