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WASTE MANAGEMENT IN CIVIL ENGINEERING: A DYNAMIC FRAMEWORK

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Abstract

The recycling and later use of construction and demolition waste (C&D waste) as construction materials present a strategic inconvenience for many stakeholders involved in the sustainable construction. In some countries, the recycling percentage of C&D waste is around 80% of the C&D generated. However, in other countries this percentage is much lower. This complexity requires a better understanding of the recycling dynamic. In the specific case of Spain, the National Integrated Waste Management Plan (PNIR 2008-2015) suggests a number of goals for recycling and recovery of building materials that are difficult to meet without laying down policies intended to stimulate the companies´ behaviour of consumption of recycled C&D waste. This paper presents a conceptual framework within which the issue of recycling can be raised from a multidisciplinary approach, taking into account the technical conditioning factors as well as the socioeconomic aspects that might influence the behaviour of companies and the government. On the basis of a systemic problem approach, a dynamic simulation model was designed to evaluate the consequences of incentives policies by promoting the use of recycled aggregates. Actions aimed at increasing the use of C&D waste materials in construction, by providing economic incentives to the industry, are proposed as a short-term policy to balance the achievement of goals for sustainable construction in the future. This conceptual framework possesses a transferable potential that might be applied to other countries involved in the same dynamic.

Key words: demolition waste, strategic management, sustainable construction, system dynamics

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