

Embodied energy for sustainability in construction and other production sectors. The EmCoin experience

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Abstract

In order to achieve the sustainability objectives of the UN Agenda 2030 and the climate neutrality objectives of the European Union 2050, in recent years in the building sector, design and construction efforts have been mainly aimed at containing consumption for heating and cooling and reducing dependence on fossil gases. In particular, the construction sector has paid increasing attention to the performance of the building envelope, both opaque and transparent, in search of solutions that allow the building to achieve high energy performance while consuming as little energy as possible during its useful life. However, the energy actually used in building processes and in all industrial processes includes a non-negligible share of "hidden" energy, the so-called grey or embodied energy, which corresponds to the overall quantity of non-renewable primary energy necessary for all the processes involved: from the extraction of the raw material to the production and processing processes up to disposal, including that necessary for transport and secondary processes. This paper aims to highlight the importance of calculating embodied energy for the purposes of a correct eco-balance and the overall sustainability of the building and reports on a recent research experience aimed at creating an application useful for this purpose, which can also be exported to the building sector.

Keywords

Embodied energy, building sector, sustainability, digital app.