UNIVERSITY OF CAMBRIDGE
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CONSTRUCTION ENGINEERING MASTERS DISSERTATION ABSTRACT

Embodied Water of Construction Materials – The Next Footprint to be Made?

How much water is embodied within construction products, and is the amount consumed in production an issue? Answers to questions such as these are important but not as well developed as studies into environmental indicators, such as embodied carbon. The objective of this paper is to investigate how the management of water consumption is undertaken within the construction industry. The study focuses on the production of a pre-cast concrete product and its supply chain of raw materials - cement, aggregates and ground granulated blast furnace slag. The method of measurement used is a Water Footprint Assessment for all parts of the process until the pre-cast concrete product leaves the factory gate. A risk assessment is undertaken against publically available information from the Environment Agency to ascertain if there are risks associated with the water consumption at the production facilities, at the time of the study. This is in keeping with the factors of location and time included within a Water Footprint Assessment. The results obtained report 160.5 litres of water per tonne are consumed in the production and supply chain of the pre-cast concrete product. Of the160.5 litres, 94 litres or 58% is consumed in the production of raw materials, with the remaining percentage of water added to the concrete mix at the pre-cast facility. The risk assessment shows that different parts of the supply chain have different levels of risk due to the availability and scarcity of water in the location of the production facility. The exploratory study also reports back on the level of water footprint studies currently being undertaken in construction and the drivers for the future.

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