

Evaluating Environmental Impact of End-of-Life Cycle Cases for Brick Walls and Aerated Autoclave Concrete Walls

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Abstract : Construction and demolition waste is one of the rising concerns globally due to the amount of waste generated annually, the area taken up by landfills, and the adverse environmental impacts that follow. One of the primary causes of the rise in construction and demolition waste is a lack of facilities and knowledge for incorporating recycled materials into new construction. Bricks are a conventional material that has been used for construction for centuries, and Autoclave Aerated Concrete (AAC) blocks are a new emergent material in the market. This study evaluates the impact brick walls, and AAC block walls have on the environment using the tool One Click LCA, considering three End of Life (EoL) scenarios: the materials are landfilled, recycled, and reused in a new building. The final objective of the study is to evaluate the environmental impact caused by these two different walls on the environmental factors such as Global Warming Potential (GWP), Acidification Potential (AP), Eutrophication Potential (EP), Ozone Depletion Potential (ODP), and Photochemical Ozone Creation Potential (POCP). The findings revealed that the GWP caused by landfilling is 16 times higher in bricks and 22 times higher in AAC blocks when compared to the reuse of materials. The study recommends the effective use of AAC blocks in construction and reuse of the same to reduce the overall emissions to the environment.

Keywords : construction and demolition waste, environmental impact, life cycle impact assessment, material recycling

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