Impact on Greenhouse Gas Mitigation using Traditional Concrete and Partial Replacement by Copper Slag of Fine Aggregate

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ABSTRACT

Concrete is the building material commonly used in today's world. It is used by all forms of building processes. The researchers are developing new techniques in the construction field due to the demand and high level of concrete materials. Fine aggregate (sand), coarse aggregate, cement and water are found in normal concrete. River sand is a common type of fine aggregate used in concrete production. River sand replacements have been implemented due to increased costs and large-scale degradation of sources. Materials with identical physical and chemical sand properties may be viewed as an alternative to the sand of the river. As a partial substitute for sand, copper slag is used. Copper slag is an industrial by product abundantly available near copper processing industries. Copper slag, formed during the smelting and refining phase of copper ore, is a waste material. In order to implement strategies for the resection of energy usage and its environmental impacts to make them sustainable, buildings consume vast quantities of energy that are needed to be evaluated in the life cycle perspective. It was found that the expense of the construction could be minimized by better planning and design. In this study, the fine aggregate is replaced with various copper slag percentages (20 percent, 30 percent, and 60 percent) and tests such as compressive and breaking tensile strength tests are used to study hardened concrete properties. In this study, carbon emissions using the process of life cycle evaluation in both conventional and copper slag concrete.

Keywords*: Life Cycle Assessment (LCA), Life Cycle Inventory (LCI)*