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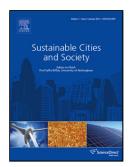
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An integrated life cycle assessment of different façade systems for a typical residential

building in Ghana

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Highlights

• A framework incorporating BIM, Life Cycle Assessment (LCA) and Life Cycle Cost (LCC) is

designed.

• The environmental and economic performance of three new façades are compared with the

conventional façade for residential buildings in Ghana.

• The different life cycle stages are evaluated to provide valuable insights for designers.

• Various life cycle scenarios are identified to improve the performance of all four façades.

ABSTRACT

This study performs a comparative environmental and economic assessment of four

different façade systems for low-cost residential buildings in Ghana. A framework is designed

to incorporate BIM, Life Cycle Assessment (LCA) and Life Cycle Cost (LCC) to perform a

holistic comparison of a Shotcrete Insulated Composite Façade (Shotcrete ICF), Galvanised

Steel Insulated Composite façade (G. Steel ICF) and Stabilised Earth Block Façade (SEBF)

against the conventional Concrete Block and Mortar Façade (CBMF). BIM models are

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