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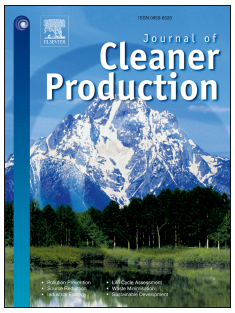

Environmental Impacts, Life Cycle Assessment and Potential Improvement Measures for Cement Production: A Literature Review

Daniel Andrés Salas, Angel Diego Ramirez, Carlos Raúl Rodríguez, Daniel Marx Petroche, Andrea Jael Boero, Jorge Duque-Rivera

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Environmental Impacts, Life Cycle Assessment and Potential Improvement Measures for Cement Production: A Literature Review

Daniel Andrés Salas[a], Angel Diego Ramirez[a,*], Carlos Raúl Rodríguez[b], Daniel Marx Petroche[b], Andrea Jael Boero[a], Jorge Duque-Rivera[a]

[a] Escuela Superior Politécnica del Litoral, ESPOL, Facultad de Ingeniería en Mecánica y Ciencias de la Producción, Campus Gustavo Galindo, Km 30.5 Vía Perimetral, P.O. Box 09-01-5863, Guayaquil, Ecuador

[b] Escuela Superior Politécnica del Litoral, ESPOL, Facultad de Ingeniería en Ciencias de la Tierra, Campus Gustavo Galindo, Km 30.5 Vía Perimetral, P.O. Box 09-01-5863, Guayaquil, Ecuador

*Corresponding author: e-mail: aramire@espol.edu.ec, Telephone: +593(0)42269351, Fax: +593(0)42852804

Abstract

Cement constitutes one of the primary building materials. As cement manufacturing involves the use of large amounts of raw materials and energy, an issue that arises is the necessity to assess its environmental impact and analyze in which way the industry should proceed concerning best practices. Life Cycle Assessment (LCA) has frequently been used in case studies around the globe as an environmental impact assessing tool. The present literature review serves for: (i) describing the environmental impacts, (ii) clarifying the methodological approaches in LCA, and (iii) identifying the main alternatives to improve the environmental performance of cement production. Several available studies on the environmental performance of manufacture and use of cement products were reviewed. These studies identified improvement of energy efficiency, the use of alternative fuels, clinker substitution, and carbon capture and storage (CCS) as the main solutions for mitigating environmental impacts caused by cement production. The first three options have been thoroughly analyzed, applied, and have shown improvement through the years. CCS has a high improvement potential; however, it presents technical and economic barriers to its implementation.

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