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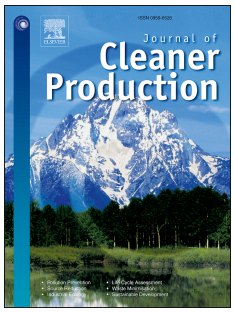

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Life Cycle Assessment of Steel in the Ship Recycling Industry in Bangladesh

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Abstract

The ship recycling industry in Bangladesh provides necessary scrap metal for domestic steel products, such as rebar for construction. These recycled products may represent a dramatic reduction in energy consumption and ecological footprint when compared to production from virgin iron ore. A life cycle assessment approach is used to evaluate energy use and emissions, from when the ships is transported from the originating country for dismantling of retired ships in Chittagong, to the end recyclers (rerolling mills and light engineering shops) in Dhaka. The secondary rebar produced from the scraps saves 16.5 GJ of primary energy per ton of rebar and 1965 kg of CO_{2eq} greenhouse gas emissions per ton of rebar when compared to primary rebar. This study compared different unit operations of steel scrap processing to assess their relative environmental impacts, including Global Warming Potential (GWP), resource use in terms of MJ primary energy, human health, and ecosystem quality. Although it is considered sustainable in terms of energy savings and greenhouse gas emissions reduction, ship recycling has other