

Life Cycle Assessment of the Australian Building Material Requirement - Identifying Potential for Reducing Impacts.

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In December 2005 the Australian Government commissioned a project to undertake a Life Cycle Assessment (LCA) of the Australian building industry including an assessment of the environmental impacts in the materials component of commercial and residential buildings. The project used detailed building industry statistics combined with population driven model of the physical economy, the Australian Stock and Flows Model, to generate the total material requirement for building industry over the next 50 years.

This building materials requirement was then assessed using life cycle assessment to derive the total environmental loads of the built environment over time accounting for change in technologies in the material production system and the underlying economy. The resulting model is being used to test the effectiveness of both voluntary and regulatory strategies to address the environmental impacts of materials production

The LCA including indicators for global warming, resource use, photochemical smog, land use, water use, priority pollutants, nutrient emissions and solid waste.

This paper presents the modeling approach used in this study, preliminary results from the LCA model including overall impacts levels and trends, physical limits to building material usages and the benefits of different strategies tested. These strategies include efficient utilization of materials, recycling and reuse at end of life, extending building life and changes in building demand.

The paper also reviews the strengths and weaknesses in the methodology and recommendations for continuing this work.