

RP2007

INTEGRATED CARBON METRICS: MULTI-SCALE LIFE CYCLE TRACKING OF CARBON

Problem

One third of global greenhouse gas emissions are emitted from the building sector. While more work has been done on decreasing direct emissions from the operation of buildings, embodied emissions of construction materials and processes receive little consideration, even though they constitute a significant additional proportion of emissions. Estimating embodied emissions is complicated, and there are uncertainties as there is yet to be developed a universally accepted methodology.

Solution

The Integrated Carbon Metrics (ICM) project comprehensively quantifies greenhouse gas emissions related to the built environment in Australia. The fundamental component of the project is a comprehensive and economy-wide database of embodied carbon flows for every sector in the economy, including building materials manufacturing.

This study will enhance the current practice of Life Cycle Assessment (LCA) by adapting an economy-wide top-down framework, integrated with bottom-up process specific detail and data from Material Flow Analysis (MFA); producing a method and results with greater integrity, specifically for Australia.



Figure 1: Integrated Carbon Metrics (ICM) Project

A new economy-wide life cycle approach for embodied carbon data in the built environment.

Benefits

The results of this study will feed into the ICM Tool, which will be able to:

- (i) Show the carbon outputs of industrial sectors in great detail,
- (ii) Track carbon along the production and supply chains of materials and products, and
- (iii) Map (total) carbon flows spatially across Australia.

The results from the ICM Tool will provide:

- (i) Valuable information to the decision makers in the construction industry, as well as policy makers in designing strategies to meet carbon emission reduction targets,
- (ii) A comprehensive database which will help construction industry, architects and planners in their decision making process for sustainable planning strategies,
- (iii) Aid for local and regional governments who are responsible for new precinct developments; and
- (iv) Contribution to carbon reduction in the Australian built environment.

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