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Review on quantifying the carbon footprint in a construction project in the supply chain management

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Global warming has been identified as a major threat for the existing climate. The construction industry emits a significant amount of Greenhouse gas (GHG) to the atmosphere which quantifies as the "carbon footprint" (CF) consisting of mainly CO_2 emission. The Supply chain management plays a vital role in the construction projects, which are involved in transportation and energy/fuel use,affecting GHG emission. The main objectives of this paper are to understand the existing methods in quantifying the carbon footprint, and their application in supply chain management in the construction industry. A systematic literature search was done with the key terms of carbon footprint, construction industry GHG emission and supply chain management. Three different methods in calculating CF in different sectors were analyzed to quantify the CF in the supply chain management in the construction industry.

The CO_2 emitting activities can be identified using Project Management Techniques, introducing Macro and Micro level indicators and operational and embodied emissions in the Total Life Cycle (TLC) CO_2 emission of the project. The DEFRA greenhouse gas conversion factors and the EIO-LCA model are used to calculate supply chain emissions of the above identified activities within the life cycle stages of the construction. During the literature survey, it was identified that there are lapses in quantifying the greenhouse gas emission in the human activities. Both activity data and DEFRA greenhouse gas conversion factors, can be used to calculate the total carbon dioxide content. The EIO-LCA model can also be used with the collected data.

To identify the activities in the industry, one of the above methods can be used. It is essential to prepare a list of data for Sri Lanka since the readily available data are only for Australia, USA and UK. Awareness programmes will help to reduce the energy and fuel consumption throughout the project lifecycle, which also can be used to prepare a database in calculating and minimizing the greenhouse effect.

Key words: Construction, Supply Chain, Carbon footprint.

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