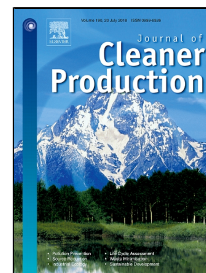


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A REVIEW ON AIR EMISSIONS ASSESSMENT: TRANSPORTATION

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ABSTRACT

The greenhouse gas emissions footprint and global warming potential are widely-used for environmental sustainability studies. However, environmental sustainability is far wider than carbon emissions and climate change. This review aims to highlight the importance of considering air pollutants in optimisation studies and evaluate the limitation of the current assessments for air emissions, particularly in relation to transportation. The source of air pollutants is firstly overviewed with special attention on non-stationary sources, freight and sea transportation. The type of measurement to obtain the emission data and the available optimisation models on transport mode choice selection were then summarised. The strengths and weakness' have been indicated. The identified gap includes greenhouse gas and air pollutants not being evaluated simultaneously and the interaction between the different pollutants are not being adequately considered. A better assessment framework and impact categories classification are consequently required. The summarised assessment model of transportation mode choice shows that the current viewpoint on low emissions, green or environmental sustainability options refers to carbon dioxide as a part of greenhouse gas. Attention towards a better emission assessment and management has been supported in this study through critical discussion. The next step of this work is to develop a methodology to measure greenhouse gas and air pollutants simultaneously by considering the synergistic effect and the discussed limitation. It is important for minimising the potential of footprint shifting and poor decision-making.

Keywords: Transportation, Greenhouse gas, Air Pollutants, Emissions Assessment, Transportation Mode Choice

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