

Carbon Footprint of Transportation Modes in Selangor

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Structured Abstract

Background: The carbon footprint is equivalent to greenhouse gas (GHG) emissions, particularly carbon dioxide (CO₂), and transportation is one of the major contributors. Malaysia ranks transportation as the third-highest contributor towards carbon dioxide emissions. This study aims to analyse the carbon footprints of transportation modes in Selangor, including Kajang, Cheras, Ampang, and Shah Alam. The problem statement examines the rise in environmental degradation and climate change, which continues to worsen despite efforts to reduce the carbon footprint through public awareness and technological advancement.

Methods: The approach is used for field data collection as well as app-based tracking through Fuelio. The data collected is then manually calculated using an adapted carbon footprint from published sources to obtain fuel consumption by type (FC) and carbon dioxide emissions (EM (CO₂)).

Results: Motorcycles generated about 1,303.85 of total CO₂ emissions, while cars generated about 7,931.59 of total CO₂ emissions. Data from the figure shows that the Toyota Innova 2.0 L 2011 has the highest carbon dioxide reading at 2664.09 EM (CO₂), while the lowest is for the Toyota Alphard 2016 at 79.04 EM (CO₂). There is a significant reduction in carbon emissions when technological advancements are implemented. The study also mentions factors that affect carbon footprints, including population density, education level, and transportation expenditures.

Conclusion: The study compares between model of motorcycle that has different engine power tend to release more carbon footprint such as Kawasaki ZX25R that has high distance travelled after refueling releases 259.97 EM (CO₂) compared to Yamaha PG-1(2024) that have comparably close distance travelled after refueling with Kawasaki ZX25R (2024) but only emits about 98.54 EM(CO₂) which shows that smaller motorcycle are fuel efficient and emits lower carbon dioxide emission. This also suggests that it has better fuel management and engine efficiency than older models, even though they use the same type of fuel. This supports the second objective of the study, which is to evaluate the role of technological advancement in reducing transportation emissions

Keywords: carbon footprint, greenhouse gases, fuel consumption, carbon dioxide, transportation modes

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