Dynamic vehicle emissions reduction with technical and behavioral approach

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Abstrak

This paper describes the case study of Semanggi intersection in Jakarta, a dynamic model of emission reduction in the land transportation sector. The urban transportation system is a complex system with multiple variables, feedback loops, and is influenced by social, economic and environmental factors. The proposed model consists of two submodels: Vehicle Fleet and Emission Calculation. The model runs in Powersim Studio software using data from the Indonesia Japan Economic Partnership Agreement, and the Traffic Management Centre of the Indonesian National Police. The test was conducted by developing two scenarios: Business As Usual and Intention. The estimated results to be obtained using the first scenario in 2021 should be 1,113,398 units, while the second scenario is estimated to produce 850,733 units. We hypothesize that the Intentional Approach will have a more significant impact than the Technical Approach, which requires more investment. The Intentional Approach is designed to improve the intention of private car users to switch to public transportation. The Technical Approach to the emission measurement of every vehicle in a certain area is the data of vehicle emission which are usually taken to determine the current condition. This research will no doubt have a positive impact on emission reduction in Jakarta.