FORMULATION OF SCENARIO ON THE URBAN TRANSPORTATION SYSTEM POLICY IN SURABAYA BASED ON THE EVALUATION OF ECONOMICS AND ENVIRONMENT IMPACTS: A DYNAMIC SYSTEM APPROACH

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Abstract

A yearly increase in the total number of motor-driven vehicles has produced the impact on both economic and environmental aspects. Within the environmental aspect, air pollution is becoming a major problem that must be considered. In this regard, the transportation sector contributes around 85% to the overall air pollution. On the other hand, a yearly increase in the total number of motor-driven vehicles has a direct impact on both the local government income and the motor-driven vehicles tax earnings that can be afforded by the local government; where around 25.3% over the whole local government income was obtained from these two sectors. These conflicting conditions indicated that the expenses of the local government income obtained from the transportation sector have been insufficiently allocated to support programs that are related to the environmental issues. Therefore, a formulation of scenario on the city transportation system policy is needed to evaluate its impacts on both the local government income and environment aspects.

In this research, a dynamic system approach was applied to model the urban transportation system of Surabaya. Using this approach, interrelationships between variables that are related to both the urban transportation and environment aspects can be
derived. In this research, three scenario were formulated; i.e., a transfer of mass transportation moda, giving incentive to the environmentally friendly motodriven vehicles, and improving the fiscal policy. Among these three scenarios, experimental results showed that the first two scenarios produced the most significant impacts on both local government income and environment aspects.

Keywords: Urban Transportation Systems, Economy, Environment, Government Policy, Dynamic System