

Evaluation of Railway Network and Service Performance Based on Transportation Sustainability in DKI Jakarta

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Abstract : DKI Jakarta is Indonesia's capital city with the 10th highest congestion rate in the world based on the 2019 traffic index. Other than that based on World Air Quality Report in 2019 showed DKI Jakarta's air pollutant concentrate 49.4 μg and the 5th highest air pollutant in the world. In the urban city nowadays, the mobility rate is high enough and the efficiency for sustainability assessment in transport infrastructure development is needed. This efficiency is the important key for sustainable infrastructure development. DKI Jakarta is nowadays in the process of constructing the railway infrastructure to support the transportation system. The problems appearing are the railway infrastructure networks and the service in DKI Jakarta already planned based on sustainability factors or not. Therefore, the aim of this research is to make the evaluation of railways infrastructure networks performance and services in DKI Jakarta regards on the railway sustainability key factors. Further, this evaluation will be used to make the railway sustainability assessment framework and to offer some of the alternative solutions to improve railway transportation sustainability in DKI Jakarta. Firstly a very detailed literature review of papers that have focused on railway sustainability factors and their improvements of railway sustainability, published in the scientific journal in the period 2011 until 2021. Regarding the sustainability factors from the literature review, further, it is used to assess the current condition of railway infrastructure in DKI Jakarta. The evaluation will be using a Likert rate questionnaire and directed to the transportation railway expert and the passenger. Furthermore, the mapping and evaluation rate based on the sustainability factors will be compared to the effect factors using the Analytical Hierarchical Process (AHP). This research offers the network's performance and service rate impact on the sustainability aspect and the passenger willingness for using the rail public transportation in DKI Jakarta.

Keywords : transportation sustainability, railway transportation, sustainability, DKI Jakarta

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