

Waterway Transportation – an Alternative Mode for Reducing the Urban Traffic Congestion (A Case Study of Colombo City Area)

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Abstract

The waterway transportation specifically as an inland transportation system has been providing many solutions for improving the functioning of urban logistics. (Taniguchi, Nemoto 2008) The following study was carried out to identify the feasibility of establishing a waterway passenger transportation system based on the Beira Lake and the canal system in the Colombo Municipal Council area (CMC). The CMC and the Western Province undergoes a huge development project which is Western Region Megapolis Master Plan which expects an increment up to 4.4 million passenger trips by 2035 which is 1.9 million in the present situation. (WRMMP, 2016) These rates would certainly increase the traffic congestion in the CMC area and would cause for more economical loss which is 32 billion rupees annually in the present due to the increased traffic congestion.

The study focuses on establishing an alternative transportation system to avoid the traffic congestion in the CMC area. Initially, using the GIS Thiessen polygon tool the study area was sub divided into zones based on the nodes of the road network. A Trip Generation – Attraction model was used to calculate the number of trips transferred through the zones based on the respective population and employments. Using the Gravity Model the number of trips were distributed among the zones considering the centroid as the trip origin and destine point. Secondly, it was identified that the trips included in the roads where the carrying capacity has been exceeded can be transferred through the waterway transportation system.

The study findings can be concluded that the Beira Lake and surrounding of 1 km buffer zone generates approximately 4 million trips of the length of 3.5 km which can be considered as prospective trips for the waterway transportation system. The study showed that the waterway transportation system is a well adoptable alternative mode to ease the traffic congestion in the CMC area.

Key Words: Waterway Transportation, Gravity Model, Alternative Transportation System

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