

A GIS Based Tool to Estimate Transport Demand Associated with Land Use Changes Expected at an Expressway Interchange Township Development

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The first ever expressway in Sri Lanka has already been declared open at the end of 2012 and authorities are planning for township developments at three of the expressway interchanges closer to the City of Colombo. A number of different land use and transport infrastructure proposals have been put forward but there is no tool to evaluate the effectiveness of transportation infrastructure proposals or to identify the traffic impacts due to land use developments. Models available for intercity travel demand cannot be used for this macro and micro level planning and not having sufficient traffic and travel related information is another serious issue faced by the planners.

The objective of this paper is to present a tool developed based on GIS to facilitate the travel demand estimation within the township development area. This tool make use of the outputs of an intercity demand model (TransPlan) and distribute the trip ends within the study area using land use and local area transport network using GIS tools. This tool is based on Arc GIS software and Visual Basic has been used for different tool developments.

Demographic information available on smallest level administrative divisions (Grama Niladhari Divisions) and traffic counts carried out at strategic locations are used for the traffic flow distributions. GIS tools developed to find out link and node independent paths, trip generations and trip attractions based on land use information are used to evaluate different alternatives. This tool is transferable to any geographic area and can be customize depending on the level of data availability. A case study representing one of the townships (Kottawa, at the end of Sothern Expressway) is presented to demonstrate the application of this tool.

Key words: Traffic Demand Estimation, Land Use Planning, GIS Applications, Models

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