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Strategic Interventions for Improving Transportation in Kandy City

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1. Introduction

Kandy is located in a mountainous terrain 116 km away from Colombo in the Central Province of Sri Lanka. It is recognised as the second-busiest city of the country with a population density of around 2,500 persons per sq.km. A sacred site for the global Buddhist community due to the situation of the Temple of Tooth, Kandy was declared a world heritage site by UNESCO in 1988. The Kandy Municipal Area (KMA) is about 12 sq. km and bounded by the Mahaweli River on three sides and by mountains to the South. The core area of KMA, its Central Business District (CBD), is around 3 sq.km, and serves as a regional centre for culture, commerce, tourism, administration and transport. This area attracts a large number of vehicles and passengers daily, resulting in average speeds of between 4 kmph to 15 kmph on busier roads. Such low speeds in the transportation network leads to lower economic productivity in the city, and to negative social and environmental externalities.

Based on the findings and recommendations in Kandy City Transport Study [1] and Kandy Transport Improvement Program [2], this paper summarises the transport issues identified and their consequences in the above context, and proposes mitigatory measures through a rational decision making methodology.

2. Methodology

Figure 1 graphically illustrates the methodology adopted for this study, which followed several sequential and simultaneous steps. Firstly, it involved data collection, analysis and interpretation to understand the issues in relation to transport infrastructure and land-use. As the second step, the same data were used to predict the current and future transport demand and required infrastructure to facilitate such anticipated demand. Thirdly, the design limitations due to geography, land use and heritage value were identified. Fourthly, a new transport demand

management plan was developed to address the issues identified, while also taking into consideration the design limitations. A physical infrastructure development plan was also prepared as a simultaneous fifth step to support the transport demand management plan. These two plans were thereafter merged to evolve an Integrated Development Plan covering the overall land-use, traffic management and physical infrastructure changes. Finally, the economic viability of the recommended solutions is tested for validity.

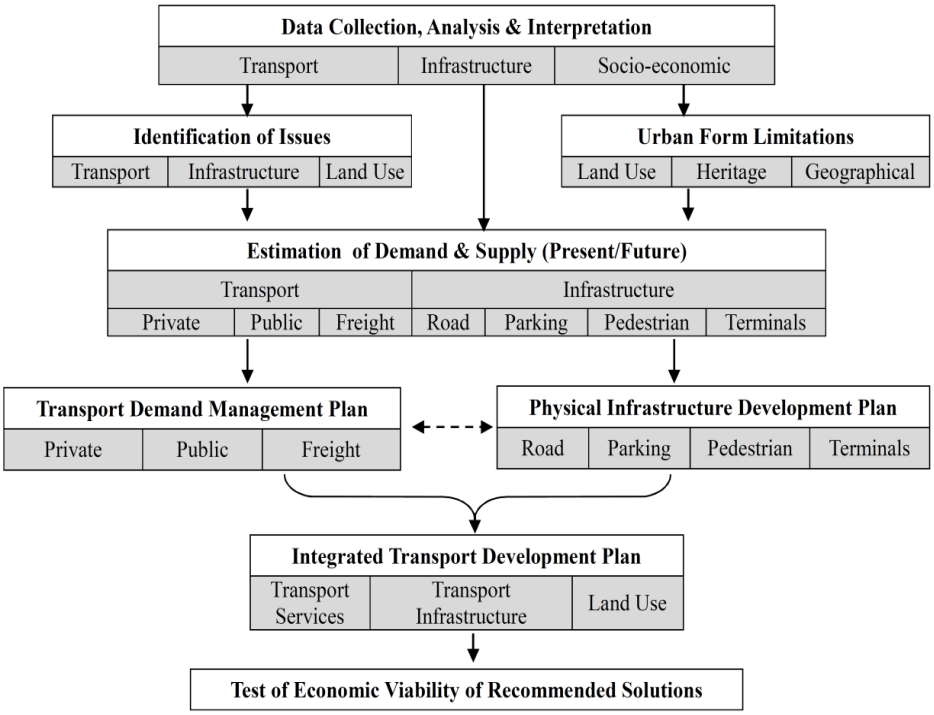

Figure 1: Methodology of the Study

3. Data Collection

Results of field surveys conducted in 2010 for the Kandy Urban Transport Study [1] were used to identify transport-related issues, their severities and limitations in proposing recommendations. These field surveys enabled the authors to establish travel demand and its characteristics for all types of transport including private vehicles, public buses, para-transits, goods transport, railway and pedestrians. In addition, several surveys were conducted to assess the physical capacity of transport infrastructure. The findings of these surveys were further strengthened and updated with the result of another set of surveys conducted in 2013 for Kandy Transport Improvement Program [2]. Key findings of the data analysis are summarised in section below.

4. Data Analysis

Traffic counts conducted at each of the entry points to the KMA and CBD areas indicate that there are a total of 318,000 passengers entering the KMA in 56,000 vehicles on a daily basis. Private vehicles make up 79% of the vehicle flow but carry only 32% of the passengers. On the other hand, route buses make up 9% of Average Daily Traffic (ADT), but carry 64% of passengers across the KMA cordon. This is equivalent to 5,100 buses and 214,000 passenger trips arriving at the 3 bus terminals located within the CBD. In addition to roadway traffic, rail also carries about 3,000 passengers to the city every day: just 1% of the total number arriving. Apart from the passengers coming from the outside, residents within the city make around 200,000 intra city trips. While overall traffic speeds within the KMA are observed at 17 to 26 kmph, while the speeds on busier roads with heavy bus flows are below this average, recording between 4 and 15 kmph.

Origin –Destination surveys conducted for private vehicles and freight vehicles revealed that about 16.3% of private vehicles, (i.e about 28,000 vehicles) and 37.6% of goods vehicles, (i.e about 5,000) engage in thoroughfare and have no business inside KMA. Similarly interviews conducted with bus passengers at these terminals indicate that 95% of their trips are home-based. Around 32% of them arrive to the CBD for work, 21% for schooling and the balance for shopping, business and recreational purposes. Further nearly 40% of bus passengers arrive for bus to bus transfers at Kandy terminals.

5. Identified Issues

The findings of data analysis and stakeholder consultations concluded that the main root causes for inefficient transport system in Kandy consist of limited road infrastructure, conflicting land use, poor orientation of bus routing, terminal and stops, inadequate by-pass roads for KMA and CBD, inappropriate traffic circulation and parking demand management measures, underutilisation of the railway network, and lack of management of para-transit modes such as school vans and three wheelers. Inefficiency of transport system has also led to increase in social and environmental issues such as air, water and noise pollution.

6. Conclusions and Recommendations

Kandy City should be a traffic restrained area given its cultural context as a Heritage City, its population density, as well as its geographical and environmental setting. In seeking a sustainable traffic management solution, these two studies have identified several strategic interventions. Among those interventions, reallocating land-use inside the city and setting up three satellite cities at Peradeniya/Gatambe, Katugastota and Tennekumbura are key long-term recommendations to eliminate

unnecessary vehicle movements inside the city. Furthermore, improving the capacity of by-pass roads, especially providing East-West by-pass tunnel, is proposed as a long term solution to take away significant portion of current through traffic. Re-routing bus services, integration of bus terminals and railway station, introduction of new railway commuter services are recommended as medium-term interventions to facilitate through-trips while reducing pedestrian movements in the city core. Capacity improvement of main city entry corridors and intersections, regulation of school transport services, promoting off-street parking while regulating on-street parking through a pricing policy and improving pedestrian facilities are identified as short-term solutions to increase network speed with immediate effect.

References

1. University of Moratuwa. (2011) Kandy City Transport Study. Road Development Authority, Colombo.
2. Kumarage, A.S. (2014) Kandy Transport Improvement Program. Strategic Cities Development Program (SCDP), Ministry of Defense and Urban Development, Sri Lanka, Colombo.

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