



11th Transportation Planning and Implementation Methodologies for Developing Countries,  
TPMDC 2014, 10-12 December 2014, Mumbai, India

## Integrated and Sustainable Service Level Benchmarking of Urban Bus System

Pradeep Chaitanya Jasti<sup>a\*</sup>, Prof. V.Vinayaka Ram<sup>b</sup>

<sup>a</sup>Research Scholar, Dept of Civil Engineering, BITS Pilani, Hyderabad Campus & Asst. General Manager (Civil), MMRCL, Projects Division,  
3<sup>rd</sup> floor, MMRCL Building, Plot # R13, E-Block, BKC, Bandra East, Mumbai – 400 051  
<sup>b</sup>Associate Professor, Dept of Civil Engineering, BITS Pilani, Hyderabad Campus, Shameerpet, Hyderabad – 500 078

---

### Abstract

Modal Shares of Public Transports are declining in many developing cities in India. Deteriorating quality of Public Transport has forced many commuters to shift from Public Transport to Personal modes. This shift has translated into ever increasing traffic congestion, air and noise pollution, Green House Gas (GHG) emissions, reduction and deterioration of public spaces and urban form, social exclusion and many other negative externalities. In order to overcome all such negative externalities, one must concentrate on laying an appropriate platform for developing sustainable cities which can balance the environmental, social and economic objectives. Sustainable transport planning refers to transport policy analysis and planning practices that support sustainable development. A critical component of sustainable transport planning is the development of a comprehensive evaluation program that evaluates the transport system performance based on an appropriate set of environmental, economic, financial and social indicators. Current study aims at development of such indicator groups which are appropriate for evaluation of intra city urban bus transport system, keeping in view the broader objective of sustainable development. Currently a unique attempt is being made to develop such evaluation process, which is suitable and mature enough to carry out a tailor made evaluation of intra city urban bus transport system with sustainability as a key node, complementing which an attempt has been made in developing an Indicator based framework to understand and evaluate the public transportation system by developing 8 Performance Indicators with 30 evaluators following which a weight based ranking system is adapted to rank the Urban Bus System as a whole.

© 2016 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Peer-review under responsibility of the Department of Civil Engineering, Indian Institute of Technology Bombay

*Keywords:* Benchmarking of Sustainability, Performance Evaluation, Bus System, Public Transportation, Sustainable Benchmarking

---

\*Corresponding Author. Mob: +91-9029977879; Tel: +91 22 2638 4612  
E-Mail address: [jastipradeep@gmail.com](mailto:jastipradeep@gmail.com)

## 1. Introduction

The urban transport systems have an enormous impact on the way people travel. However, increased urbanization, population growth, urban expansion, dispersal of amenities and activities have increased the demand and dependence on motorized transportation. Consequently, urban transportation problems like congestion, accidents, environmental degradation and urban sprawl have increased. Sustainable transportation development plans are thus replacing the conventional approach of building more roads to alleviate congestion along with an integrated-mass-transport system, which is affordable, space and resource efficient, and minimizes environmental impacts and transport nuisances. As a consequence, encouraging and improving public transport system in developing countries like India has got wider attention and has become an important strategy for sustainable transportation development. Prior to Sustainable Planning, a detailed evaluation of the Public Transportation System with the help of Performance Indicators & Evaluators is to be developed. A performance indicator is a measure, usually quantitative, which reveals information about certain characteristics of a service, sometimes the measure is a ratio of two other measures. In a system as complex as Urban Bus Transport, one could probably devise hundreds of measures to assess performance. However, experience has shown that in many situations a relatively small number of measures can be used effectively. Also development of framework with a moderate number of indicators representing all the necessary aspects of the system can always be developed and adopted to the Indian Cities.

### Nomenclature

A	Performance Indicator (PI): Specific factors that are measured to indicate progress towards goals. It further consists specific evaluators under each performance indicator.
B	Evaluator: An element which need to be evaluated with specific formulation/criteria.
C	Quality of Service (QOS): Performance rating of an evaluator based on the result achieved from a formulation/criteria on a scale of 1 to 4, with 1 being inferior and 4 being superior in performance.
D	Indicator Quality of Service (IQOS): Rating of a PI, calculated by taking the weighted average of QOSs' achieved under the respective PI. Weights are assigned to each evaluator prior to benchmarking.
E	Overall Quality of Service (OQOS): Performance rating of a whole bus system of a city, calculated by taking the weighted average of IQOSs' of all the PI groups. Weights are assigned to each PI group prior to benchmarking.

## 2. Need & Objective

As there are many techniques available in focusing the regular service level benchmarking of Public Transportation System, one such system need to be developed where it focuses on the integrated evaluation of social, environmental & financial sustainability of the system along with the conventional benchmarking and can be readily applicable to all the tier I & II cities in India with a standard framework. This framework would help ULB's understand the need for assessing Sustainable Urban Transportation Planning and Public Transport Operators and identify lacunae in their services to bridge the gap between demand & supply. As assessing any system and planning is involved with heavy consultancy costs, current research also focus on making it economically viable for all the ULB's, enabling them to perform it In-House with the readily available format on Input – Output basis and can timely update the same.

## 3. Literature Review

The process of benchmarking is in initial stages in India. So, the Benchmarking process suggested by MoUD has been reviewed thoroughly and identified the drawbacks of it. As the current study focuses on integrating the Sustainability aspect with the conventional Benchmarking of Urban Bus System, a thorough review on the general practices adopted by European and Western nations in Evaluation of Urban Transport Sustainability has also been carried out and summary of the comparative statement is as shown below in Table 1.

Download English Version:

<https://daneshyari.com/en/article/5125583>

Download Persian Version:

<https://daneshyari.com/article/5125583>

[Daneshyari.com](https://daneshyari.com)