
**SEMINAR: SUSTAINABLE ACCESS
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TITLE: INDICATORS FOR THE RURAL TRANSPORT SECTOR

AUTHOR: Dr. B.P. Chandrasekhar, Director (Technical), National Rural Roads Development Agency, Ministry of Rural Development, India

1.0 Introduction.

Transportation is the basic infrastructure that supports overall development of a neighborhood, region, state or a country. It is needless to emphasize that the degree of development is well correlated with the degree of transport facilities both at macro or micro level. It is imperative that adequate care is required in planning and developing transport infrastructure duly keeping its likely impact on the society in respect of both economy and environment. Such an exercise requires the support of evidence based analysis of several indicators, which are expected to assist the decision makers with the diagnosis of the problem, quantification of solutions and evaluating the progress.

However, the basic problem in several countries is lack of reliable databases that leads to the development of Transport Indicators. Such Transport Indicators, when properly identified and assessed will help for bench marking and comparison of performance at intra- and inter- sectoral levels. Therefore, it calls for a systematic collection, collation and maintenance of accurate transport sector data at different levels for helping the decision makers in arriving at appropriate need based solutions in the transport sector.

2.0 Status of Transport Indicators data.

Traditionally, Transport Indicators are compiled in almost all the countries mostly concentrating on physical status and performance levels of the sector or sub sector. Evidence is available of this in several countries where the physical parameters of transport sector such as kilometrage of roads or railways, number of ports or airport, number of peoples and vehicles using the systems and several other associated parameters are regularly collected as a part of overall statistical data compilation. The organizations responsible for the above purpose mostly aim to satisfy by providing physical parameters, only briefly touching upon the performance factors. However, the data with special reference to the outcome and impact of the transport infrastructure is not explicitly brought out. This data may not be directly related to the transport sector. Transport is not an end in itself, but only a means and therefore the development that is facilitated is evident in other sectors. Those responsible for the transport sector, frequently fail to capture it.

While the transport related data at national and regional levels is normally being maintained, its extension to rural transport sector is far from satisfactory. While the Transport Indicator data at macro level and its likely impact is easy to collect and compile with the identified systems in place for such purpose, the rural transport sector suffers in this area because of secondary or tertiary importance it attracts from all concerned for planning and development of infrastructure in the rural areas. It is with this backdrop, that the need to identify appropriate Indicators with special reference to the rural transport sector are suggested in this paper.

3.0 Review on Transport Indicators.

Several efforts have been made to understand and develop Sectoral and Project Performance Indicators by National and International Organizations such as World Bank, AUSTROADS, Federal Highway Administration of USDOT, OECD Road Transport Research Programme etc. The efforts made in this direction gave rise to different sets of indicators at various levels. The Indicator developers grouped them as per their requirements and objectives as:

- Contextual Indicators.
- Risk Indicators
- Diagnostic Indicators
- Target Indicators.
- Development Impact Indicators.

From the above, one point is clear. The Transport Indicators are expected to cover a wide range of information on Physical status, Performance of the System or the Sub-system and outcome with impacts on the society and environment. It has been suggested that the measures and indicators will be different at different levels. However, the core measures at sub sector level have to provide a sound base for other type of indicators such as diagnostic and headline indicators.

At this juncture, it is necessary to question what is required in identifying and developing the Transport Indicators and in what way such indicators provide the inputs for the evaluation of the system or development of the transport sector itself. Several issues require examination, in order to provide clarity in the identification of Transport Indicators, in general and those for the rural transport sector in particular.

4.0 Issues in the identification and development of Transport Indicators.

Be it physical, performance or the assessment of outcome / output with respect to the transport sector, it is necessary to establish a direct relationship between the indicators and the objective. In an environment of multiple objectives, sometimes conflicting in nature, this becomes more critical. The adequacy of

data and identification of the sources are the issues that need consideration. Importantly, the issues related to institutional arrangements and capacity require the attention of all concerned. The fact that Transport Indicators are expected to support the decision making process, the objectives for that purpose need to be defined with adequate clarity, in order to avoid ambiguity and misinterpretation. The objectives could be the assessment of accessibility, service quality, operational efficiency, financial sustainability and / or environmental integrity and safety. Based on the scope delineated, with respect to each or all the objectives, the data needs are to be assessed, collected, collated, analyzed and stored for the benefit of all concerned. At this stage, it is relevant to further highlight the issues and requirements, with respect to the indicators and arrangements for data collection.

4.1. Issues related to Identification of Indicators.

- *The decision to measure the indicators of the physical infrastructure of the sub-system.*

The performance of any sub-system depends on the physical infrastructure provided to perform. Therefore, when the performance is to be measured, it becomes necessary to develop a set of indicators that brings out the physical extent of infrastructure either in terms of lengths or numbers that influence the system performance.

- *To understand whether the indicator helps in planning or comparison of operational issues of the sub-system.*

It is necessary to understand whether the identified indicator on performance will lead to planning or operation of the sub-system. For example, if the road length in the rural environment is measured in a designated administrative boundary and is compared with other units of administration, such an indicator may lead to planning for balanced growth, with respect to an established benchmark.

- *To verify whether the indicator is linked to the demand or supply.*

It is important to identify the indicators that are linked to both transport demand and supply. Unfortunately, the experience on the Transport Indicators, as of now, is that only supply dependent indicators are mainly projected and there is a marked absence of the demand oriented indicators, particularly at rural sectoral level. An indicator, therefore, requires to be verified with respect to its linkage to either demand or supply, so as to identify shortcomings, if any, and further identify suitable indicators either for demand or supply for comprehensive coverage.

- *The issue related to uniformity of the identified performance indicators over different sub-sectors.*

When the performance of different sub-sectors is to be compared, the indicator should be such that the scope for that indicator is uniform over all the sub-sectors compared.

- *To decide whether the identified indicator can bring out the impact of transportation on the society either directly or indirectly.*

As previously stated, while the physical and performance based indicators are normally collected, the impact and outcome indicators could not be seen explicitly under Transport Indicators. However, it is pertinent to note that the ultimate performance of any sub-sector should reflect in its impact on the society. For example, by providing accessibility to basic needs, the number of people provided with access can easily be measured and indicated, but the real outcome indicator due to the availability of the access is reflected in increased mobility for school enrollment or the drop in the number of infant deaths due to the accessibility to the health facilities. Therefore, such appropriate impact indicators require identification and development.

- *To decide on the identification of a combined indicator that reflects the transport services on the society.*

The Performance Indicators, mostly are given with respect to each mode like buses, non-motorized vehicles, Intermediate Public Transport (IPT), personalized transport etc. If it is possible to develop an integrated transport index as a Performance Indicator of rural transport, it would be particularly desirable and could directly be used for benchmarking. This issue, perhaps, requires an elaborate and in depth study and analysis to determine whether it could be possible to arrive at a combined indicator that reflects the performance of rural transport sector, as a whole.

4.2 The issues in Institutional Arrangements.

It may be easy to identify the indicator, but the real problem is to establish the institutional arrangements for the data collection and generation of indicators. The database for Rural Transport Indicators is substantial and requires systematic data collection with arrangements for compilation, analysis and storage. It is not out of place to indicate here that the efforts required for the above are enormous and warrant the commitment of large scale resources for institutionalized data collection and its management. Therefore it is necessary to understand the issues in the Institutional arrangements which are summarized below:

- ☞ Do all sub-sectors have identified institutional arrangement for performance data collection so as to get compatible data over all sub-sectors?
- ☞ Are the institutions equipped adequately for the above purpose?
- ☞ Are the arrangements adequate for storage and analysis of the indicator data?
- ☞ Is there an established relationship among the Sub Sectors for sharing the information for the common cause?
- ☞ Is there a public policy that involves academics and R&D organizations for the analysis of the indicators in order to achieve added value and better utility?
- ☞ Is it possible for the indicator data to be made available on a public platform, ensuring access to all for promoting transparency?

With a clear understanding of the above issues, the nature and detail of the indicator is to be decided and arrangements need to be put in place for scientific collection of the data and its further processing and management.

5.0. Indicators recommended for Rural Transport Sector.

Having understood the role, requirements and issues in identifying Transport Indicators, the following major heads are suggested for the development of Rural Transport Indicators. These areas cover all the three aspects of Transport Indicators, i.e. those that reflect the physical infrastructure, the performance of sub-systems and finally the much needed impact indicators that give the outcome of providing Rural Transport Infrastructure.

- ✓ **Physical parameters** of the system like length, type, managerial responsibility that reflect the supply side.
- ✓ **Performance indicators** such as cost, energy consumption, output, investment ratios, utilization, occupancy ratios etc.
- ✓ **Public transport performance indicators** like system utilization, waiting times, dead kilometerage, ingress times etc.
- ✓ **Demand indicators** like estimated travel, modal splits, trip length frequency by modes.
- ✓ **Impact indicators** like accessibility, connectivity, mobility indices.
- ✓ **Societal impact indicators** like employment generation, access to basic amenities of health and education etc.

These indicators are further analyzed, with respect to the content and the likely collaborators and are presented in **Table 1**.

Table 1. – Suggested Indicators for the Rural Transport Sector.

SI.No	Indicator	Content	Collaborators
1	Network	Physical Length, Length by type, Length by Ownership, Surfaced, Unsurfaced, Condition etc.	Public Works Departments at National, Provincial, and District Level.
2	Traffic	Growth, Frequency, Private, Public, Motorized Vehicles, Light Commercial Vehicles, Heavy Goods Vehicles and Non Motorized Vehicles	Transport Department, Public Sector Transport Operators.
3	Passenger Travel Patterns	Frequency, Purpose, Cost, Time, Passenger - Kms by Mode	Public Transport Operators, Public Works Department
4	Freight Travel Patterns	Frequency, Purpose, Cost, Time, Tonne - Kms by Commodity Type.	Organized Freight Operators, Marginal Freight Operators.
5	Public Transport Indicators	Number of Seat - Kms Provided, Seat -Kms Used, Fare Structure, Trip Frequency, Earnings Per Km, Cost Per Km, Occupancy Ratio etc..	Public Transport Undertakers
6	Accidents	Vehicle Type, Persons Involved, Fatality, Grievous Injury, Minor Injuries, Property Damage.	Traffic Police
7	Revenue Indicator	Registration and Other Taxes	Transport, Excise Departments
8	Financial Indicators	Capital Investment for New Construction, Upgrading, Renewal, Routine Maintenance.	Public Works Department at different levels.
9	Coverage Indicators	Habitations/ Population Connected, Unconnected, Access to Schools, Dispensaries and other services	District Administration and commune administrative units.
10	Outcome Indicators	Growth of Incomes, Employment, Increased enrollment in schools in rural areas, Reduction in Child Mortality, Reduction in Maternal Mortality (in tune with MDGs) including productions and productivity	District Administration

In a nutshell, sets of indicators are summarized with respect to the data availability and the efforts required for compiling the same and are presented in **Table 2**.

Table 2: Indicators vis a vis the efforts

Sl.No	Category	Indicators
1	Indicators that can be obtained readily	Network, Public Transport Indicators, Financial Parameters
2	Indicators that require only streamlining of formats and orientation	Traffic, Accidents, Revenue, Coverage Indicators.
3	Indicators that require elaborate Planning and organization of surveys for Primary data collection and higher degree of Analysis	Passenger and Freight Travel Patterns, Outcome Indicators in all the sectors that are influenced by Rural Transport.

5.0 Conclusions

Transport Indicator data is essential for supporting decision making in planning and development of Rural Transport Infrastructure that has cognizable impact on society. The identification of critical indicators, the sources of information and proper institutional arrangements are all important to derive the benefits of the indicator data.

A system of Rural Transport Indicators is suggested, along with the scope and the associated organizations. It is hoped that the deliberations at this Technical Meeting will lead to refinements to the suggested indicators, in order to adopt them globally.
