



The use of indicators to meet users need: The performance indicators in transport sector

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Abstract

In a world that is becoming increasingly complex and interconnected, the indicators are an essential resource for users of statistical data, among others, policy makers and the general public. Providing support in making decisions and comparisons of policies and programs, countries and regions based on evidence, indicators contribute to a better perception of the changing socio-economic reality, the objective measure of performance, greater transparency and accountability. Today, indicators are a powerful means of communication of information, and also a guide to achieve the desired objectives.

In this context, the production of relevant and reliable indicators to measure performance in a given sector is crucial for the definition of a strategy and the implementation of an enlightened policy in this area, which is critical to the overall performance of the national economy. In the transport sector, these indicators are needed, in particular, to assess the relative effectiveness of different modes of transport in specific situations.

Keywords: Indicators; users; performance; transport.

1. Introduction

In general, statistics in particular indicators help to make decisions based on evidence to assess the success of a given policy in achieving its desired objectives. In addition, the indicators allow comparisons over time and between programs, policies, countries, regions, social groups and sectors. Also, the indicators help to increase transparency in the development and evaluation of policy and decision makers who are more accountable to citizens. The indicators also provide a powerful means of communication of information.

2. The indicators and its use

An indicator is a tool that provides information simplifying reality. By doing this, an indicator can help reveal trends and simplify complex phenomena. In addition, a statistical indicator is a composite measure, linked to a key issue or phenomenon, from a series of observed facts. For this, the right indicators must be real, target-oriented, independent, measurable and verifiable.

Unlike the statistical and accounting data from which they are derived, indicators are used for specific purposes. The indicators can be used to reveal relative positions or show positive or negative change. The specific purpose of an indicator is determined by its context and the issues it seeks to address. The use of indicators helps to discover many phenomena in the social sciences, the environment, the economy, business and project management and the links between them. Also, they provided a basis for influence and control these phenomena.

There are different ways to classify indicators. In strictly functional point of view, indicators can be used to describe a situation or trend (descriptive indicators) or provide an assessment of progress toward established goals (performance indicators). For this, a large number of policies, strategies and initiatives uses performance indicators, descriptive indicators or a mixture of both.

Table 1: Use of indicators for description or measurement of performance¹

Indicator	Description	Example
<i>Descriptive (or contextual or situational) indicator</i>	The indicator describes a situation or trend; it provides further explanation of a phenomenon. It reflects the situation as it is, without reference to how the situation should be	<i>Average number of persons per household</i> — used in the context of sustainable development, this indicator is helpful for understanding consumption patterns in various sectors (e.g. electricity, land, transport and waste).
<i>Performance (or normative) indicator</i>	The indicator allows statements to be made describing the situation as better or worse than previously. It shows progress, or the lack of it, towards established objectives and targets or a desired end-state	<i>Greenhouse gas emissions</i> — in view of agreed reduction targets, this is a widely used indicator of performance.

It is noteworthy that, depending on the context, the same data can be used both as a descriptive and a performance indicator. For this reason, it is always important to clarify the framework in which a indicator is used. This framework plays an important role in structuring sets of indicators. In the next section, we'll see an example of a framework and related indicators.

3. Usage of the performance indicators in transport sector

The evolution of different economic, financial, social, regulatory and other contexts makes the study of performance a current issue. Measuring performance in a given field is required. But most important is to understand what to measure and how.

In policy, the definition of an indicator is often closely linked to the concept of performance. National and international authorities use all the indicators in the planning, monitoring and evaluation of their policies.

This observation leads us directly to focus on performance measurement indicators and the importance of their use in many areas and sectors, including the transport sector. In this sector, policy makers need this type of indicators to compare the performance of different transport modes and networks to make enlightened economic and political decisions, to monitor and evaluate the performance and impact of transport on the economy and society.

In this regard, in the framework of the Euro-Mediterranean cooperation project of Statistics (MEDSTAT²), an initial list of indicators appropriate to the situation of the transport system in the Mediterranean region was established. These indicators constituted a dashboard easy to use, by providing a synthetic overview of the performance aspects of transport in the region. Also, these indicators were used to assess the impact of the measures or specific policies in each mode of transport in each country.

3.1. Methods

The MEDSTAT project enabled the launch of a strategic reflection on the performance of systems and transport activities. This reflection has identified an extensive list of performance indicators for transport. Indeed, a set of more than 100 economic, technical and environmental performance

¹ Eurostat (2014).

² MEDSTAT was set up to strengthen statistical capacity in the southern Mediterranean countries (Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, Palestinian Authority, Syria and Tunisia) to produce and disseminate harmonized and comparable data.

indicators were defined. This list was a common basis for the development of a limited set of indicators across the region.

While trying to produce measurable performance indicators at the level of southern Mediterranean countries³, two conditions have been considered. The first is that indicators should be common to different countries and transport modes to allow cross-country and modal international comparisons. The second is that these indicators should be representative of the different dimensions of performance identified, but, again, be limited so as to have a manageable set of indicators available in most partner countries.

Thus, three categories of performance indicators were considered:

➤ **The Economic Performance Indicators**

Economic performance can be seen in the light of the multitude of actors in transport systems and their objectives and related challenges. Specific economic performance indicators can be associated with these stakeholders and objectives. Alongside these elements of economic performance, which are directly related to specific actors in the transport system, global and systemic aspects of performance must also be taken into account in this analysis. These relate in particular demographics of the sector and the effectiveness of competition.

Based on this analysis, a set of economic performance indicators have been proposed in order to measure different aspects of economic performance identified above:

Table 2: the economic performance indicators

Performance aspects	Examples of indicators
The growth in business	The Production (or Turnover) growth rate of transport companies. The growth rate of the value added.
Profitability and competitiveness	The Gross operating surplus The price index of transport services
Production efficiency	The evolution of intermediate consumption of the sector.
Productivity	The apparent labor productivity
The demand for transport services	The share of transport costs in the total household consumption. The share of transportation costs in total intermediate consumption.
Investments	Investments in infrastructure. Investments in equipment
Competition and the demographics of the area	The concentration ratio. The distribution of firms by size classes. Demography of enterprises.

➤ **The technical performance indicators**

The objective of the development of technical performance indicators is to measure the effectiveness of different modes of transport in specific contexts, to assess the consistency of infrastructure, networks and equipment with the development of intermodal transport and to evaluate the organization, logistics and performance of the transport chain.

³ Except of Syria.

Table 3: the technical performance indicators

Factors / performance aspects	Examples of indicators
Infrastructure	Length of transport network.
Equipment Age	The average age of the fleet
Load capacity	Average load capacity. The fleet of light vehicles.
Fill rate	The percentage of empty return vehicles. The average number of days of storage of empty containers. The average occupancy rate of vehicles.
Total travel time	The time required to perform a kilometer. The total duration of transport. The percentage of arrivals less than an hour / 30 minutes late.
The territorial coverage	Density of traffic of tonne-kilometers / passenger-kilometers by infrastructure kilometer. Ratio tonne-kilometers per tonne of goods transported. Ratio tons carried per capita.
Volume of Transport	Volume of Transport (Passengers and Freight).
The intermodal transport	Modal split by volume (tonnes-kilometers) or values, imports and exports according to the transport characteristics, and distance in particular. The distribution of traffic volumes (tonne-kilometers) or values associated with each mode of transport. The modal split in volumes (tonne-kilometers) or values, output intermodal platforms.
Investment	Investments on intermodal platforms, or transshipment platforms. Investments in logistics areas or storage.

➤ **The environmental performance indicators**

What is clear is that transportation activities have much impact on the environment: non-renewable resource consumption, emissions of greenhouse gases, air pollution, noise, including the consumption land. Hence, a need to assess the pressure on the environment, but also the vulnerability and dependence of the transport sector on the supply of fossil energy.

The indicators are designed to measure the environmental performance of transport activities are as follows:

Table 4: the environmental performance indicators

Performance aspects	Examples of indicators
Development of transport and GHG emissions	CO ² emissions and fine particles per passenger-km and tonne-km
Emprise infrastructure	Infrastructure density
Mobility	Passenger mobility Freight mobility

3.2. Results

Based on this list of 100 indicators, a final short list of performance indicators in transport has been finalized and approved by the Mediterranean countries. It includes a generic list, which is applicable to



all modes of transport, and a specific list for each of the four modes covered in this exercise (road, rail, sea and air).

After, a production of these indicators was performed in each country. This was done using the same concepts, definitions, classifications and standards as those used at European and international levels.

Also, a regional publication on the analysis of economic, technical and environmental performance of transport in the southern Mediterranean countries has been developed and published to different users at regional and national levels. This publication was developed on the basis of national summary reports analyzing the economic, technical and environmental performance of transport in each of these countries.

The results of this exercise were so helpful and beneficial for the main users of transport statistics in each country and at the regional level. These are mainly the departments and agencies of transportation, other national institutions and also regional and international organizations involved in this sector.

3.3. Difficulties

The production of indicators often poses difficulties in terms of:

- Choice of indicators meeting the needs and expectations of users.
- Collection of relevant data with sufficient accuracy and reasonable efforts, so as not to put all the resources in data capture.
- Lack of indicators that measure all aspects of performance, especially social performance.
- Some data required to produce these indicators are sometimes confidential due to privatization.
- Inadequate these indicators, which does not allow users to compare the complex dimensions effectively.
- Insufficient synthetic indicators products.

Finally, since the indicators are often used to simplify complex phenomena, it is important to select representative indicators, a process which is, to some extent, not easy to implement.

4. Plans for the future, towards to composite indicators

Firstly, to produce satisfactory indicators increased needs of the primary users, some measures are necessary. This is in particular the following:

- Importance of set user priorities.
- Need for regular updating of the indicators.
- Enlargement of the current list of transport performance indicators.
- Production of transport indicators that can be measured following aspects of social performance: employment, occupational health and safety (traffic accidents) and others.

In addition, the indicators should be few, relevant and designed according to the needs of identified key stakeholders. For this, it is desirable to produce synthetic or composite indicators in the field of transport.

In this respect, the composite indicator should ideally measure multidimensional concepts that cannot be captured by a single indicator. Thus, it often seems easier for the public to interpret composite indicators to identify common trends in many separate indicators, and they have also proved useful in



assessing the performance of countries. These results can invite users, including policy makers, to draw analytical or simplistic policy conclusions. In fact, the composite indicators should be considered as a way to initiate discussion and stimulate public interest.

5. Conclusions

The development of these indicators is essential to the spread of a culture of evaluation in terms of transport policy and to strengthen dialogue and cooperation between producers and users of transport statistics. The development of environmental performance indicators should include creating a real basis of indicators for clean transport, sustainable and should do, based on close cooperation with the energy statistics sector.

To be effective, these indicators should be developed for synthetic sense and a specific need. They should reduce the number of steps required to complete a phenomenon and simplify the communication process. In addition, they must be based on data available or accessible at low cost and be updated regularly. In addition, due to their vocation, the performance indicators should be based primarily on observed data and not on the synthesized results. Finally, they must be substantially less data available and easily accessible.

In a general context, the use of indicators as an information medium of communication contributes to democratic governance today's society by encouraging the public to follow the different aspects of public life in general, and also a critical look at the actions of policy makers.

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