



VIRTUAL WORKSHOP-FORUM ON TRANSPORT INDICATORS

Latin America IFRTD, July 2-27, 2007

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A Virtual Workshop-Forum on Transport Indicators was held from the 2nd to the 20th of July, 2007. It took place through the ifrtdal@dgroups.org a virtual discussion group of the Latin American members of the IFRTD -IFRTDAL- which was created in 2001.

BACKGROUND

To have a virtual workshop-forum building on the conclusions and recommendations that enthusiastic participants made at the end of the Latin America Transport Indicators workshop. This workshop took place in Tarapoto, Perú, in March 2007, and the recommendations and report can be found through (www.ifrtd.gn.apc.org/spanish/proj/Taller%20Indicadores%20de%20Transporte%20Informe.doc) or (<http://www.worldbank.org/transport/transportresults/program/peru-03-07/peru-final-report-s.pdf>). To benefit a wider audience it was decided to share the results of the workshop to continue adding different perspectives to the topic through participation of members, colleagues and friends of the IFRTDAL.

Conclusions and recommendations from the workshop in Tarapoto were used to develop the overall objectives of the virtual workshop-forum.

OBJECTIVES

- Share the results of the workshop Transport Sector Performance Indicators held in Tarapoto and continue adding voices/opinions/ideas to the subject through participation of members, colleagues and friends of the IFRTDAL
- Identify and strengthen thematic issues for discussion around transport indicators according to the interest of members.
- Standardise the language, concepts and criteria on transport indicators in the region.
- Facilitate exchanging experiences, information and knowledge on specific themes related to transport indicators.
- Identify needs in the region related to processes of construction, analysis and dissemination of transport indicators.
- Joint construction and identification of data sources for the construction of transport indicators relevant for the region.
- Joint construction of a set of indicators that could be useful for working on rural and urban transport and that could be relevant and applicable in the region.

GENERAL THEMATIC ISSUES

- General and conceptual issues on the construction, analysis and evaluation of indicators.
- Rural transport indicators
- Urban transport indicators

METHODOLOGY

The ifrtd website was updated and additional documents and links on transport indicators were uploaded. The week previous to the Forum's start members were invited to visit these pages and read the documents.

An anonymous online survey was shared at the very beginning of the virtual discussion. Its aim was to have an in-depth overview of preferences and perceptions on transport indicators. The survey results were shared through the ifrtdal.

Facilitators were contracted –from the member base- to facilitate the whole process. Every week, a thought-provoking paper was shared through the egroup, to introduce the subject and trigger responses and debate. General conclusions would be drawn from the different topics and a Synthesis prepared for each topic which was also shared through the ifrtdal and web.

WEEK 1: July 2-6, 2007

Thematic issue: Conceptual and general aspects on the construction, analysis and evaluation of indicators.

Introductory document, later enriched with discussions: [Conceptos básicos indicadores](#).doc (available only in Spanish on IFRTD website in Spanish under Proyectos y actividades)

Responsible for survey and Facilitator: Deysi Yasmín Rodríguez A.

Web master survey support: Camilo Losada Burbano

Link for survey: <http://www.tmsa.poderweb.com/sur/index.php?sid=2>

WEEK 2: July 9-13, 2007

Thematic issue: Rural Transport Indicators

Introductory document: [Segunda semana Doc motivador](#).doc (available only in Spanish on IFRTD website in Spanish under Proyectos y actividades)

Facilitator: María Gutiérrez

WEEK 3: July 16-20, 2007

Theme: Urban Transport Indicators

Introductory document: [Tercera semana Doc motivador](#).doc (available only in Spanish on IFRTD website in Spanish under Proyectos y actividades)

Facilitator: Andrea Gutiérrez

HIGHLIGHTS OF THE VIRTUAL WORKSHOP-FORUM

During three weeks, 24 participants from eight Latin American countries generated 140 messages to exchange their views, debate and propose new ideas and work on transport indicators. It would be certainly ambitious to try to synthesise such a rich discussion. In addition, new thoughts/ideas were brought in at their own pace and were not necessarily constrained by a fixed calendar.

ABOUT THE SURVEY

The results of the survey were useful for many purposes. An important highlight is that about 50 per cent of those who filled the survey were from the public sector, allowing us to conclude that transport indicators are perceived as important for those working in the government. NGOs, universities and the private sector have an even distribution of perceived interest. Of the people who responded over half work primarily in rural areas and are mainly interested in working in rural, inter-provincial and inter-municipal levels. People expressed an interest in discussing identification of specific challenges for the formulation and analysis of indicators and a methodology for evaluation and analysis of indicators. Correlating answers, it shows that 50 per cent of those who work for the public sector, universities and NGOs use indicators for planning, whereas 100 per cent of the private sector uses it. 17 per cent of those who work for the transport sector use indicators as a tool for decision making and the other 33 per cent use them for monitoring and quality control.

With respect to challenges on the formulation, evaluation and analysis of indicators, 77 per cent say that there are gaps in information, challenges in having agreed standards and thresholds for the

evaluation of indicators. Sixty-two per cent consider that there is not enough reliable information sources and 46 per cent consider that information is not that accessible for calculating indicators.

A long list of challenges for the formulation, evaluation and analysis of indicators was compiled, details of which can be found on the document [resultados encuesta](#) (available only in Spanish from ifrtd web site in Spanish under Proyectos y actividades). Interesting to see that the main sources of information for calculating transport indicators is found in the public sector, ministries and statistics offices. NGOs, universities and private sector provide very little information compared to that of the public sector. This is due mainly to transport information in the private sector is considered as confidential and/or strategic. With respect to indicators to which they have access, just over half are clear and easy to interpret and understand; and less than half have value thresholds and are relevant to measure the current transport situation.

Thematic areas of interest and information needs were: Access, for rural transport thematic issue; Planning and Accessibility, for urban transport thematic issue; and, Infrastructure, for inter-municipal transport. Thematic issues by geographic context of transport that relate to the interest areas show that:

- 76 per cent considers accessibility - poverty - development as priorities for rural transport;
- 84 per cent consider infrastructure - planning - economy - development, as priority for inter provincial or inter municipal transport;
- 50 per cent considers accessibility and 50 per cent considers planning as priorities for urban transport; and for international transport, development, planning - economy - security, are considered priority.

BASIC CONCEPTS ON TRANSPORT INDICATORS

A background document on basic concepts of transport indicators was prepared at the beginning of the virtual workshop-forum. By the end of the third week it was enriched thanks to the contribution of participants of the virtual workshop forum. The full document is available only in Spanish from IFRTD web site in Spanish under Proyectos y actividades ([Conceptos básicos indicadores.doc](#)).

DISCUSSION ON TRANSPORT INDICATORS

The following topics were considered relevant:

- Energy: consumption, efficiency, etc.
- Infrastructure: road maintenance, technical specifications of rural roads
- Employment: employment and quality of life
- Financing: budget for conservation and rehabilitation of rural roads
- Safety: number of simple accidents, accidents with fatal victims and cost of accidents
- Environment: emissions, noise levels, those under Agenda 21, etc.
- Gender: inclusion, participation, etc.

On **Energy**, the proposed indicators are:

INDICATOR	NAME - GLOSARY	HOW TO CALCULATE
1	Energy consumption per Km	Energy / Km
2	Energy consumed per passenger transported	Energy / person
3	Energy consumed per passenger and cargo transported	Energy / persona-cargo
4	Energy consumed per transported Kg	Energy / cargo (Kg)
5	Energy consumed per average travel speed	Energy / transport speed
6	Energy consumed by vehicle capacity	Enero / capacity of transport means

The context of the above indicators came from a debate about the lack of indicators on river transport, means of transport (including going on foot) and their relevance for policy-making and targeted

transport interventions. They were also used to discuss around access to health in water-transport dependant environments.

Transport and Safety

The following table is based on a presentation made by ISEV at the regional workshop that took place in Tarapoto, Peru, in March 2007.

INDICATOR	NAME - GLOSARY	HOW TO CALCULATE
1	Mortality: number of dead people per 100 thousand inhabitants	Dead people in transport accident / 100.000 hab.
2	Dead people / vehicle-KM	Number of dead people per each 100 mil millions of Km travelled by motorised vehicles.

Related to some factors on road design:

- it was mentioned that several accidents on low-volume paved roads are due to the inconsistency between the speed of the design (proposed by the project designer) and the speed at which the driver actually drives.
- Manuals for geometric design of low-volume roads are a copy from other manuals and unsuitable for countries like Peru. Until not long ago the copied manuals (actually for high-volume roads) were creating over designed roads for areas with no more than 50 vehicles/day.
- Geometric design of roads do not specify a criterion to define an Indicator of Risk of the road.

It was felt that it was necessary to introduce road safety indicators associated to variables of geometric design, e.g. curvature degree / rural accidents

Safety was seen in its different concepts and contexts, for example, within the theory of traffic calming in:

- Hardware: related to the components of infrastructure
- Software: related to conditions and facilities for operating and circulating (signs, semaphore control, etc.)
- Humanware: related to physical, mental and socioeconomic characteristics of traffic users and actors (pedestrian, passenger, driver).

The above relates to the construction of indicators of accident risk and that are internalized by people through perception of risk. Technical risk is assessed by the equation:

$$\text{Risk} = \text{Threat by Vulnerability}$$

The discussion goes further into proposing how to elaborate urban, rural and suburban risk maps.

The following were identified as associated indicators of road safety:

- Risk: associated to the identification of factors of threat and vulnerability
- Cultural and behavioural: road 'culture', mobility patterns
- Social performance: evolution in the use of security elements like seat belt, helmet) or behavioural elements (e.g. alcohol, speed)
- Technical: associated to vehicle and road and infrastructure services connected.
- Political performance - institutional management (percentage of budget for road safety, institutionality of road safety in state organogram, etc.)
- Economic: cost/benefit
- Public health: morbidity, mortality, etc.
- Environmental: weather, visibility, lighting, etc.

Transport and Road Infrastructure

This debate was around questions and reflections on factors that influence in a poor road infrastructure (expansion, design, maintenance, etc.) Decentralisation, resources, transparency, policy, planning, management, good practices, community participation, gender as well as technical and geographic aspects were among the topics mentioned to serve the good development of rural roads. Are people really interested in monitoring the road system and its management? Also, the HDM-4 Deterioration Model and its contribution to this topic.

The above was based on a synthesis document prepared by Deysi Rodríguez (available only in Spanish on the IFRTD web site in Spanish under Proyectos y actividades) entitled [Sintesis semana 1.doc](#)

Rural Transport Indicators

Three topics were discussed: rural transport systems, rural access index and social analysis in transport projects.

Often transport indicators measure: cost of ton per km or cost of person per km transported by motorised vehicles. However, these indicators lack quality attributes that are in relation to infrastructure standards that determine time.

An indicator that could be used for measuring the impact of a rural transport system in the generation of wealth and well-being would be: the efficient use of time; with the variables person/km, activity, gender and age. All these elements could be part of a pattern of travel which doesn't necessarily need to apply to motorised means of transport, as it could be applied to walking or mobility by other means. Therefore, the indicator would be: person (differentiated by sex and age) - km- activity - time. This indicator could be monitored or included in household surveys, which generally consider the frequency in a certain period of time (week, month, etc.)

For road infrastructure and maintenance, the technical variables used to establish differences between road segments and which allow differentiated cost on road maintenance are: road profile (undulated, flat, etc.), talud, talud altitude and drainage work. Depending on this there would be a higher or a reduced use of time and energy. Therefore, transitability of road is another factor for mobility and access of people.

The unit of analysis is the road. The level of transit could be: high, low, very low, and the level of service is measured by the Daily Average Index and/or Heavy Traffic.

The rural transport index "*measures the number of people that live within a ratio of 2 Km (typically equivalent to a walk of 20 to 25 minutes) from an all-weather road, as a proportion of the total rural population). An all-weather road is a road that is passable during the whole year. Having 2 Km as a set distance for adequate access allows to establish a comparison and add values to target populations (on the basis of population weight).*"

As discussed earlier, the variables to be added are age, gender, type of activity and frequency of travel. To this it can also be added energy consumption (Kcal x Km) which can in itself be improved by including gender and age).

The RAI was taken to river transport debate. It was proposed that river transport measures the number of people that live within a ratio of XX Km of a river way, who have access to a safe and efficient means of transport and economically accessible. It was added that in areas like the Amazon, road and water transport are complementaries, therefore multi modal transport is important to meet the conditions of passability and efficiency. An indicator for the means of water transport would be ton - km - HP of the boat and number of people adequately set.

Critical Factors of Access to Health Services in Peru

The research on mobility and health, which looked precisely into the mobility and access issues to health in rural areas, motivated the debate during these weeks. The proposed model is the Logit Model, an statistical model that identify variables that add in favour or against access to health services, taking into account the characteristics of the population and qualitative and quantitative variables that would explain access to these services.

A detailed explanation of this model including the variables used in Peru, as well as all topics related to Rural Transport Indicators are found on the [Sintesis semana 2](#).doc (available only in Spanish on the IFRTD web site in Spanish under Proyectos y actividades), prepared by Maria Gutiérrez

Urban Transport Indicators

Andrea Gutiérrez' introductory document on the subject challenges the way urbanisation is measured, with urban transport indicators as old as nearly 40 years and measuring very little with little innovation. This non-advancing of them doesn't reflect the continuous and speedy urbanisation of the region. She goes on talking about dispersed and concentrated population in urban and rural areas and population density as a distinguishing factor. Why talking about rural access and urban mobility in the World Bank databases? What happens to urban access and rural mobility? Do they not exist? Which would be the 'urban' version of the RAI?

Andrea proposes that there are different alternatives for studying transport and its indicators:

- a) by sector: road, air, water;
- b) by theme: environment/energy, social (employment), safety;
- c) by problems: accessibility, availability, quality -technical and perceived, efficiency, governance, inclusion and equity.

The advantage of getting to indicators through 'problems' is that it offers the possibility of cutting through and over come a thematic and sectoral vision of transport. As rural and urban issues share problems they can therefore also share indicators.

To measure how many bus tickets are sold or how many buses there are, is different from the number of people that travel by train or by car. Then, an increase in the quantity of passengers transported by public transport shows and increase in the social cover of the service? More passengers in public transport means more people accessing the services? Or a same person traveling many more times?

Using indicators to address a problem offers the possibility of overcoming a sectoral vision of transport and social indicators offer the possibility of overcoming a technical vision of a problem. How can access be measured? With indicators of social coverage or technical coverage of networks and/or services?

Quality indicators can be technical and perceived. Their use can be best exemplified by a case in Argentina. Suburban and underground trains were privatised in the 90s. It introduced an index to measure quality. It would combine indicators on quantity of trains providing service daily, timing and frequency and regularity. According to this, the index could have a maximum of quality even if trains travel empty or are heavily crowded during peak time.

Perceived quality indicators allow passengers to complain.

Whereas the Quality Indicator was used to justify an increase in the fare, thanks to the perceived quality indicators it was possible to cancel concessions which were giving poor services (break downs, crowding, accidents, etc.)

Governance indicators:

- Proposed projects / approved projects
- Approved projects / projects executed

Corruption indicators:

- Number of accusations per enterprise
- Number of accusations per zone
- Number of accusations per authority

Andrea closes the discussion with an invitation to participate in the analysis of the indicators base, sharing a list of alternative options.

CONCLUSIONS AND RECOMMENDATIONS

After three weeks of continuous inputs and debate, there was a feeling that timing was too short to cover in-depth discussion on all indicators topics. Issues that were often brought into the debate were road safety, rural access and governance, as well as energy and water transport. Conversation on transport indicators has continued through the ifrtdal but at a much lower speed and less number of inputs.