SOURCE, a brief insight

The actual level of service offered by the road network (i.e. the quality of service) is assessed through mean travel times, the most direct expression of users' "expectations" (in fact, measuring these mean travel times or measuring mean travel speeds makes no difference).
A complementary assessment of traffic volumes also measures the quality of service in terms of production of road transport.

Speeds weighted by traffic volumes

The SOURCE method is based on standardized measurements of traffic and common speeds of light vehicles, made for each country over a standardized reference network. The two series of data (traffic/speeds) are aggregated for the entire reference network in the form of a single macro-indicator (a pseudo-speed) that reflects the actual level of service provided by the main roads in each country. Various by-products are also obtained, which naturally include a macro data bank for the network in question.

At the centre of the method: the floating vehicle

Speed and traffic levels are measured simultaneously using the special "floating vehicle" protocol. An ordinary vehicle (the floating vehicle) is integrated into the traffic and alternatively follows a fast vehicle (which has overtaken it) and a slow vehicle (which it has caught up). On the way, the traffic encountered in the opposite way is counted. This procedure is detailed in annex.

SOURCE, An ultralite method

Minimum equipment of the measuring team

YES:

- ***Vehicle (***ordinary ***4-wheel drive)***
- *Timer*
- *Ordinary road maps*
- *Pocket calculator*

NO:

- ***No*** *microcomputer,*
- ***no*** *radio transmission equipment,*
- ***no special instrumentation systems.***

Both in the field and at the office, this method is simple. The calculation and edition workbooks (see annex) are plus factors in terms of productivity and comfort, but they are not even really indispensable. Therefore no category of service provider is advantaged. Local engineering firms are perfectly capable of using the method.

A statistical integrator

The accurate measuring protocol assigned to the floating vehicle makes it a "statistical integrator" able to provide high-quality results. This is the key to the method. It means that once is enough for this "living" statistical integrator (so to speak) to travel the entire network under review, at speeds close to common speeds, without fixed facilities or instrumentation systems.

Common LV speed: a judicious approach

Experimenting has shown that measuring the common speed of light vehicles (LVs) in the dry season offers sufficient correlation with the surface condition of a road (unlike the common speed of lorries, owing to the unknown load factor). The method does not have to take into account other permanent speed-influencing factors (such as the type of road alignment).

The method applies indiscriminately to paved and unpaved roads unlike conventional methods of assessing road condition, all of which are discontinuous by nature.

Through suitable processing of the various distortion factors and after adjustment, the sensitivity of the indicator to disparities or changes in the car population is of minor significance (because the speeds are systematically levelled off at 90 km/h).
As a result, despite the low cost of the macro indicators, their configuration guarantees adequate statistical soundness (the specified quality thresholds are attained for any distance of at least 150 km).

Reference networks – for country-to-country comparisons

A fundamental aspect of the SOURCE method for making comparisons is the establishment of specific reference networks (on which the measurements are made), which statistically reflect basic transport requirements. They take urban demography into account in a standardized manner, with additional criteria for trans-border routes, port areas and transit or regional development corridors, excluding consideration of traffic levels.

The reference networks are classified into 4 ranks of priority depending on the extent of transport requirements (as for the measurement method, the rank makes no difference).

These networks act rather like "the housewife's shopping basket" used to monitor consumer prices. They change little over a time scale of a few years and they are restricted enough to always be within the priority networks determined at national level. It is essential to use these reference networks (only the 3 main ranks) as a basis for making comparisons between countries.

However, each SOURCE measurement campaign in a given country deserves to be extended to the national priority network. By producing a double series of statistics in this way, it is possible to satisfy two complementary visions (national and transnational).

The recommended usual frequency for assessing overall network condition from this objective angle of service provided for users, is one measurement campaign every three years. Measurement campaign costs and logistical constraints are minimized, for an abundant yield of results. Direct field costs: USD2 per km measured.

Warning concerning the goals

SOURCE indicators are not intended to replace conventional data on road condition. *The scale of SOURCE data collection (scale of dividing up the network) would not be small enough to meet requirements for daily maintenance management or work programmming, etc. The SOURCE method does not generate the detailed road data bank that is required for road operations, but exclusively a sound "macro data bank".*

SOURCE provides the minimum information, no more no less, essential to:

- *Authorities in charge of roads, to justify to user-payers the performance levels obtained on the network, through transparent, well-informed dialogue,*
- *Decision-makers at all levels, to assess the impact of road policies on the basis of physical results.*

In brief, to enlighten macro-decisions.

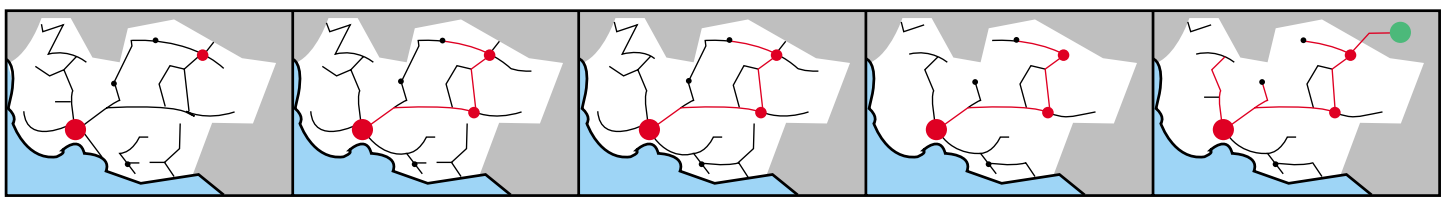

Fig.1. **Selection of reference networks in 5 stages. Method detailed in the SOURCE CD-ROM.**
In Africa, the reference networks defined by this method range from more than 10,000 (or even 15,000) km for jumbo-sized countries (such as Nigeria or South Africa) to less than 500 km for the smallest countries (such as Gambia, Djibouti or, naturally, the small island-states or archipelago-states).