

# Africa Transport Technical Note

Road Management Initiative  
RMI



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## Introducing the RMI Road Sector Database

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This Technical Note introduces the recently developed RMI road sector data basis. Building upon the results of the RMI road sector survey in 47 SSA countries, and available socio-economic and sector information from the World Bank and other sources, the database provides an initial framework for an assessment of the road sector across SSA countries. The ultimate goal of the database is to provide stakeholders with a more comprehensive framework for sector monitoring to support the implementation of reforms in the Region. To this extent, the database will be made available in the SSATP external Website and updated as new data becomes available.

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The purpose of this series is to share information on issues raised by the studies and work of the SSATP. The opinions expressed in the notes are those of the authors and do not necessarily reflect the views of the World Bank or any of its affiliated organizations.

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Road sector data for countries in Sub-Saharan Africa (SSA) tend to be fragmented. This is because it is only captured in various consultancy reports funded by the development community and the various stakeholders active in the Region. The RMI database is an attempt to construct a simple but complete database in Excel format based on and drawing from a number of available data sources.

### Objectives

The goal of capturing the available data in a consistent and coherent fashion was to provide users of the database, such as road users and managers, the development community, researchers, nongovernmental organizations, and journalists with a data source that can be used to analyze and illustrate progress and relevant issues in the sector for each of the countries or grouping of countries, or for the continent. These might include:

- relationship between the demand for road infrastructure and economic growth;
- growth and level of road traffic, for instance in terms of vehicles and vehicles-km, which could determine funding needs and revenues, such as fuel levies;
- adequacy of road infrastructure in

terms of, inter-alia, total road length, the percentage of paved roads, and the percentage of the main road network in good condition to serve economic requirements and the accessibility needs of the population;

- length of roads to be maintained relative to the size of the population and economic capacity to pay for the infrastructure;
- discrepancy between actual or programmed maintenance expenditure and required maintenance expenditure;
- progress made in ensuring a stable and reliable flow of funds for road maintenance;
- progress made in road sector policy reform to ensure sustainability of road assets;
- replacement value of the road assets; and
- progress made in terms of improving road safety.

### Data sources

Data were recorded for 47 countries in SSA (see box) for selected years between 1970 and 1998 to facilitate both cross-sectional and time series analyses.

Various sources were consulted in constructing the database. The main source for the state of the road sec-



### Countries included in SSA Road Sector Database

|        |  |
|--------|--|
| COMESA | Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Mauritius, Rwanda, Seyschelle, Sudan, Uganda   |
| ECOWAS | Benin, Burkina Faso, Capo Verde, Cote Ivoir, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leon, Togo |
| SADC   | Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia, Zimbabwe  |
| UDEAC  | Cameroon, Central African Republic, Chad, Congo Brazzaville, Democratic Republic of Congo, Equatorial Guinea, Gabon, Sao Tome & Principe                 |

tor was the report entitled “*Review of the Road Sector in Sub-Saharan African Countries*” undertaken by Mr. Ole Sylte under the RMI. The main objective of the study was to review the state of the road sector in each of the forty-seven countries of SSA and to make the findings of the RMI available to all SSA countries. The study included, in addition to specifically designed surveys, field trips to all the countries to collect relevant reports and other documentation and to obtain undocumented information through discussions and interviews with government officials and other road sector stakeholders. The economic and social indicators were obtained from a World Bank publication entitled “*World Development Indicators*.” The World Development Indicators presents 600 social and economic indicators in 80 tables, organized in six sections: overview, people, environment, economy, states and markets, and global links. The tables cover 148 economies, with basic indicators for a further 62 economies. Additional road and transport data were obtained from:

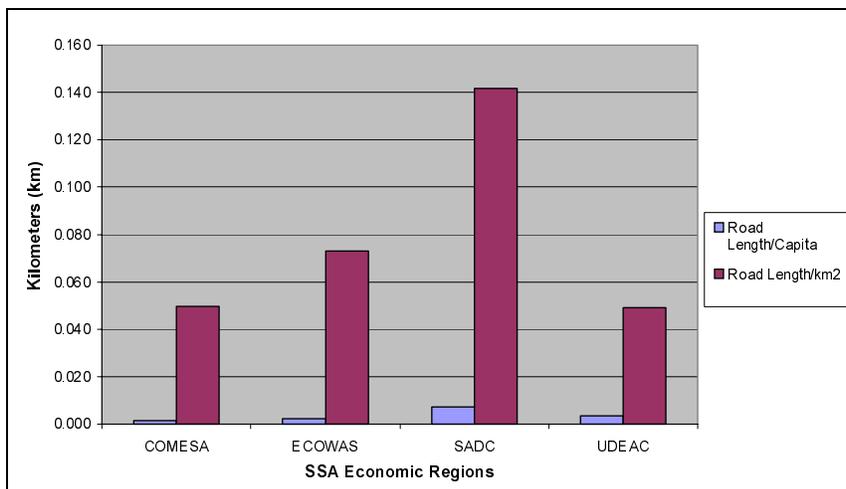
- *World Road Statistics* published by the International Road Federation;
- *Fuel Prices and Taxation with Comparative Tables for 160 Countries* published by the GTZ (Deutsche Gesellschaft für Technische Zusammenarbeit);
- *Motor Vehicle Facts & Figures* published by the American Automobile Association;
- *World Motor Vehicle Data* published by the Motor Vehicle Manufacturers Association;
- *World Automotive Market* published by Automobile International; and
- various United Nations and World Bank publications.

### Structure of the database

The available data was entered in an Excel spreadsheet in a single file (workbook) consisting of various worksheets. Each worksheet captures the available data for each country and for the selected years for specific topics, such as network, accidents, etc. The different worksheets are labeled as follows and provides the following information:

- *Network*—The worksheet captures available information on SSA’s road network and provides data in terms of the total network kilometers, number of kilometers per road category (i.e., main, urban, rural and other roads), and the condition of the paved and unpaved main roads.
- *Accident*—The worksheet captures available data on the total number of accidents and casualties (further disaggregated by the number of injuries and fatalities).
- *Contract Work*—The worksheet captures available data on the percentage of routine and periodic maintenance work contracted out to private contractors.
- *Road Expenditure*—The worksheet provides available data on total road expenditure and in terms of the actual or programmed routine and periodic maintenance expenditure, as well as new investments.
- *Road Charges*—The worksheet provides data on the revenues collected by the government from road users as road user charges (i.e., road fuel levy, vehicle license fees, transport permits and international transit fees, road and bridge tolls and government taxes (i.e., government taxes and duties). For a few countries, data on the annual vehicle license fee per vehicle was available for cars, pickups, minibuses, buses, trucks and truck trailers, and this information was entered in the worksheet.
- *Fuel* —The worksheet provides available data on the pump price per liter for diesel and petrol, as well as data on the total fuel (petrol and diesel separately) consumed, the percentage used in road vehicles, the minimum price per liter and the percentage of the price that is taxes.
- *Maintenance*—In this worksheet the contrast between the actual or programmed maintenance expenditure and the required expenditure as estimated by the local country and the appointed consultant is captured for both the routine and periodic component.
- *Vehicle Fleet* —The worksheet captures various estimates pertaining to the vehicle fleets in the countries. Different sources provided estimates for the total vehicle fleet, the number of vehicles in use, and the total motor vehicle registrations by specified vehicle categories.

**Figure 1**  
Road infrastructure indicators for SSA: 1997



- *Road Assets*—The worksheet provides an estimate of the replacement value of the road assets of the countries as estimated by the appointed consultant.
- *Capacity*—The worksheet provides an overview of the institutional capacity in the relevant road agencies in the countries.
- *Basic Indicators* —A number of basic social and economic indicators were recorded in this worksheet, including the total population, Gross Domestic Product (GDP), Gross National Product (GNP), the official exchange rate, the inflation rate, the Consumer Price Index (CPI)
- *Calculated Indicators* —The worksheet contains a number of indicators calculated to highlight issues pertaining to the transport sectors of these countries (e.g., GDP growth, number of kilometers per million people, number of vehicles per 1,000 people, number of vehicles per 1,000 km<sup>2</sup>, road length per US\$ GNP, etc.)

**Possible indicators from the database**

Several indicators can be calculated (e.g., road length per capita and road length per km<sup>2</sup>) based on the available data for each country or country groupings. Some indicators for country groupings are illustrated in Figures 1 (availability of road infra-

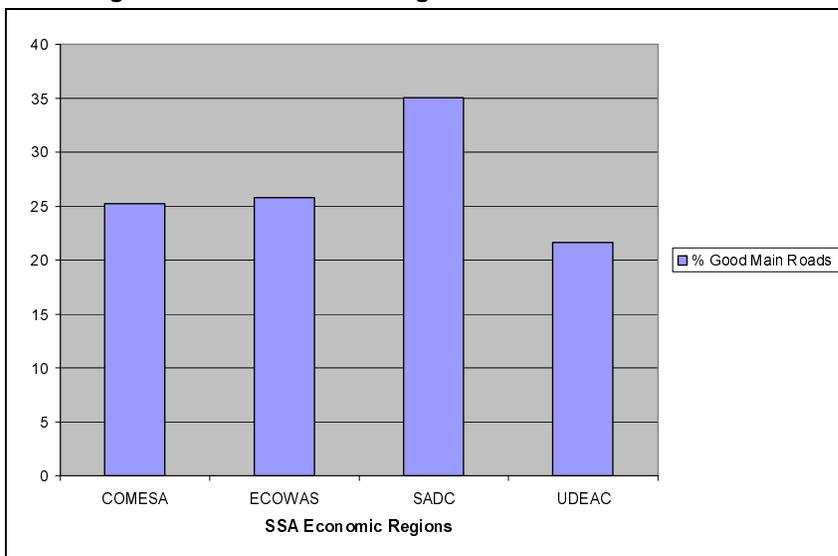
structure), 2 (road condition), and 3 (economic capacity).

**Conclusions**

The general lack of robust information regarding the road sector in SSA is, of course, reflected in the database with regard to certain data elements and countries for which limited information was available. Of particular concern is the fact that very limited data exist in terms of road expenditure (for both maintenance and new investments), revenues from road user charges, the replacement value of road assets, and the institutional capacity available to

the various road agencies. In general, satisfactory data exist for both the size and the condition of the main road networks, for most of the countries for 1989 and 1997. Satisfactory data also exist for the required expenditure to maintain these networks for most of the countries for 1997. Accident data are limited to a few indicative figures for selected countries, with the exception of Benin, Botswana, Malawi, Mauritius, Mozambique, Namibia, Senegal, Sierra Leone, Swaziland and Zimbabwe. Indicative fuel price and consumption data exist for most countries, although not necessarily for the same years. Vehicle fleet data were available for most countries for selected years from a number of different data sources,

**Figure 2**  
Percentage of main road network in good condition in SSA: 1997

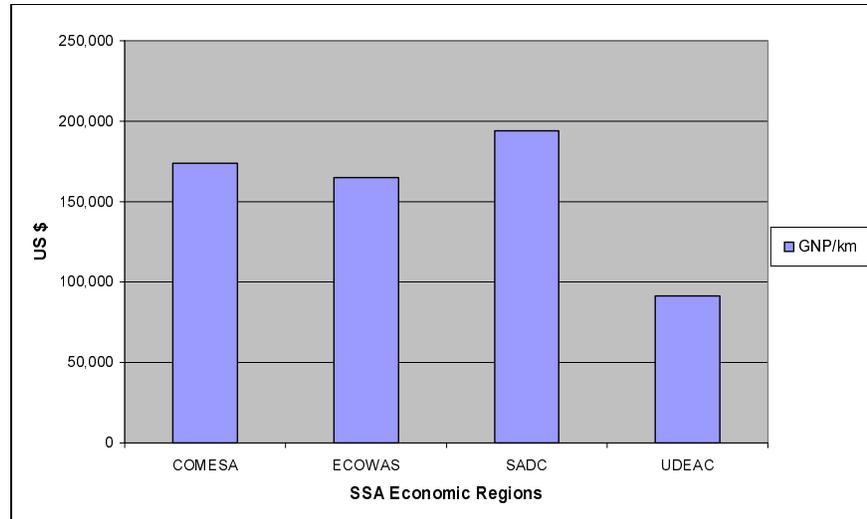


which were not necessarily consistent (see forthcoming Technical Note on this matter).

To facilitate appropriate analyses of the road sector in SSA, it is important that a certain minimum number of data elements for each country be consistently captured in the database, namely:

- total road length
- length of paved road network
- condition of main road network (paved and unpaved roads distinguished)
- total vehicle fleet categorized by auto, bus and truck
- traffic data, including vehicle kilometers and ton-kilometers
- major economic and social indicators (such as, land area, population, GDP, GNP)
- actual, programmed and required maintenance expenditure
- road accident data
- road fund revenue/ road user charges, and
- data on the replacement value of road assets.

**Figure 3**  
Road lengths relative to economic capacity: 1997



Efforts will continue towards the comprehensive updating of the database within the framework developed in this Note. In the meantime, the database, as it stands, will be posted in the SSATP external Web site.

### Road Management Initiative

The Road Management Initiative was launched in 1988 by the United Nations Economic Commission for Africa (UNECA) and the World Bank, under the auspices of the Sub-Saharan Africa Transport Policy Program (SSATP). Presently, nineteen African countries are collaborating within the framework of the RMI. The Road Maintenance Initiative is administered by the World Bank's Africa Region, and supported by the governments of Denmark, France, Germany, Japan, the Netherlands, Sweden, Switzerland, and the European Union.