

Transportation Data – Europe and Central Asia
Core Road Measures for Azerbaijan
(Initial Outputs, 2004)

Azerbaijan: Table 1 – Core Road Measures: Definitions, priorities, and sources of data

(Work in progress, last updated December 22nd, 2003)

	Core Measure	Unit	2000	2001	2002	2003	Priority	Definition of Term	Sources of data	Comment
1	Road Network									
1.1	Total Road Network	km				27,016	D	Kilometer length of the road network. The road network includes "all roads in a given area" (<i>Glossary of Transport Statistics</i> , 2003, p.29).	WDI (IRF data) - DERIVED	Aggregate of 1.1.1, 1.1.2, 1.1.3, 1.1.4 and 1.1.5.
1.1.1	Motorways	km				128	A	Kilometer length of roads, specifically designed and built for motor traffic, which does not serve properties bordering on it, and which: (a) is provided, except at special points or temporarily, with separate carriageways for the two directions of traffic, separated from each other, either by a dividing strip not intended for traffic, or exceptionally by other means; (b) does not cross at level with any road, railway or	Road Authority	All toll roads will be included in this category (if otherwise, please indicate).

								tramway track, or footpath; (c) is specially sign-posted as a motorway and is reserved for specific categories of road motor vehicles. Entry and exit lanes of motorways are included irrespectively of the location of the signposts (IRF, 2003, p.2).		
1.1.2	Highways, main or national roads	km				1,403	A	Kilometer length of A-level roads. "A-level roads are roads outside urban areas and other roads outside urban areas. A-level roads are roads outside urban areas that are not motorways but belong to the top-level road network. (...) A-level roads are characterized by a comparatively high quality standard, either non-divided roads with oncoming traffic or similar to motorways. In most countries, these roads are financed by the federal or national government" (IRTAD,	Road Authority	

								1998, p.6).		
1.1.3	Secondary or regional roads	km				5,485	A	Kilometer length of roads that are the main feeder routes into, and provide the main links between highways, main or national roads.	Road Authority	
1.1.4	Other roads: Urban	km				2,003	B	Length of roads within the boundaries of a built-up area, which is an area with entries and exists specially sign-posted as such (<i>Glossary of Transport Statistics</i> , 2003, p.30 and <i>Glossary of Transport Statistics</i> , 1997, p.30).	Road Authority	Other than those in 1.1.1, 1.1.2, 1.1.3
1.1.5	Other roads: Rural	km				17,997	B	Length of all remaining roads in a country not included in categories 1.1.1, 1.1.2, 1.1.3, 1.1.4, and 1.1.5.	Road Authority	
1.2	Paved roads: Total	km					D	Length of all roads that are surfaced with crushed stone (macadam) and hydrocarbon binder or bituminized agents,	WDI (IRF data) - DERIVED	Aggregate of 1.2.1, 1.2.2, 1.2.3, 1.2.4, and 1.2.5.

								with concrete or with cobblestones (WDI, 2003, p.293 Table 5.9; IRF, 2003, p.2).		
1.2.1	Paved motorways	km				128	A	Length of motorways that are paved.	Road Authority	expected to equal 1.1.1
1.2.2	Paved highways, main or national roads	km				1,403	A	Length of highways, main or national roads, that are paved.	Road Authority	ref. 1.1.2
1.2.3	Paved secondary or regional roads	km				4,968	A	Length of secondary or regional roads that are paved.	Road Authority	ref.1.1.3
1.2.4	Paved other roads: urban	km					A	Length of other roads (urban) that are paved.	Road Authority	ref. 1.1.4
1.2.5	Paved other roads: rural	km				6,132	A	Length of other roads (rural) that are paved.	Road Authority	ref. 1.1.5
1.3	Roads in “good and regular” (fair condition): Total	km					D	Total length of roads that are in good and regular conditions: (Roads in good condition) Paved roads, largely free of defects, requiring only routine maintenance and perhaps surface treatment. Unpaved roads which need only routine grading and localized repairs. (Roads in regular condition) Paved roads with defects and weakened structural resistance. They require resurfacing of	DERIVED	Aggregate of 1.3.1, 1.3.2, 1.3.3, 1.3.4 and 1.3.5

								the pavement, but without the need to demolish the existing pavement. Unpaved roads, which require grading and additional new gravel, plus drainage repair in some places (ECLAC, 1993, p.33)		
1.3.1	Motorways in “good and regular condition”	km				10	A	Length of motorways that are in “good and regular condition”.	Road Authority	ref. 1.1.1
1.3.2	Highways, main or national roads in “good and regular condition”	km				140	A	Length of highways, main or national roads, that are in “good and regular condition”.	Road Authority	ref. 1.1.2
1.3.3	Secondary or regional roads in “good and regular condition”	km				1,733	A	Length of secondary or regional roads that are in “good and regular condition”.	Road Authority	ref. 1.1.3
1.3.4	Other roads: urban in “good and regular condition”	km					A	Length of other roads: urban that are in “good and regular condition”.	Road Authority	ref. 1.1.4
1.3.5	Other roads: rural in “good and regular condition”	km				3,997	A	Length of other roads: rural that are in “good and regular condition”.	Road Authority	ref. 1.1.5
1.4	Road asset value: Total	(\$)					D	The total value of the road asset in a given year*. Road asset values can be expressed in a variety of ways, one of them would be to calculate	DERIVED	Aggregate of 1.4.1, 1.4.2, 1.4.3, 1.4.4, and 1.4.5.

								would be to calculate the replacement value of a road network, which is the original value of the network, minus depreciation (by component: pavement, land, base course, etc.) plus improvements made (productivity gains in making the road must also be accounted).		
1.4.1	Road asset value: Motorways	(\$)					A	see 1.4	Road Authority	ref. 1.1.1
1.4.2	Road asset value: Highways, main or national roads	(\$)					A	see 1.4	Road Authority	ref. 1.1.2
1.4.3	Road asset value: Secondary or regional roads	(\$)					A	see 1.4	Road Authority	ref. 1.1.3
1.4.4	Road asset value: Other roads: urban	(\$)					A	see 1.4	Road Authority	ref. 1.1.4
1.4.5	Road asset value: Other roads: rural	(\$)					A	see 1.4	Road Authority	ref. 1.1.5
2 Road Administration										
2.1	National Roads Board (NRB) exists and reports (at least annually)	Y/N	N	N	N	N	A	Does an institution that advises the Minister on various matters pertaining to management [and	In-country sector knowledge	

								financing] of roads, namely a National Roads Board (NRB) (or Road Council, Highways Agency Board) exist? (see Heggie, 1999).		
2.2	Private Sector Representatives form majority on NRB	Y/N	N	N	N	N	B	Do private sector representatives form majority on NRB?	In-country sector knowledge	ref. 2.1
2.3	Main (National) Road Agency operating with Annual Report published	Y/N	N	N	N	N	A	Does the Main (National) Road Agency - responsible for the main road network - operate with a report published at least on an annual basis?	Road Authority	
2.4	Main (National) Road Agency publishing Technical and Financial Audits	Y/N	N	N	N	N	B	Are technical and financial audits published by the Main (National) Road Agency?	Road Authority	ref. 2.3
2.5	Main (National) Road Agency Administration Cost	(\$)					A	The amount of resources spent by the Main (National) Road Agency in conjunction with its own operation and service per year* (<i>Glossary of Transport Statistics</i> , 2003, p.18).	Road Authority	ref. 2.3

3 Road Finance

3.1	Annual road expenditure	(\$)				57,700,000	D	The total amount of expenditure on new construction and extension of existing roads, including reconstruction, renewal and major repairs of roads per year* (<i>Glossary of Transport Statistics</i> , 2003, p.19).	Road Authority	Aggregate of 3.1.1 and 3.1.2.
3.1.1	Capital investment	(\$)				50,300,000	A	The total amount of investment in the road sector to maintain sufficient capacity as well as increase capacity per year*.	Road Authority	What about R&D?
3.1.2	Maintenance expenditure	(\$)			5,700,000	7,300,000	A	The total expenditure for keeping roads in working order per year*. This includes maintenance, patching and running repairs (work relating to roughness of carriageway's wearing course, roadsides, etc.) (<i>Glossary of Transport Statistics</i> , 2003, p.19 and <i>Glossary for Transport Statistics</i> , 1997, p.37).	Road Authority	

3.2	Road maintenance requirement	(\$)					A	The amount of financing required per year* to keep roads in working order. This includes maintenance, patching and running repairs (work relating to roughness of carriageway's wearing course, roadsides, shoulder, drains, structures, slopes, signs, etc.) (<i>Glossary of Transport Statistics, 2003, p.19 and Glossary for Transport Statistics, 1997, p.37</i>).	Road Authority	
3.3	Maintenance contracts cost	(\$)					B	The amount of maintenance expenditure per year* that is dispersed through maintenance contracts. The contracts include specific items of maintenance work (routine works, periodic works, special works and development), such as the resealing, overly or reconstruction of a specific length of pavement for example.	Road Authority	Expected not to exceed 3.1.2
3.4	Road Network Financing by	(\$)					D	The total amount of road sector financing	DERIVED	Aggregate of 3.4.1,

	Source: Total							obtained from different sources per year*.	3.4.2, and 3.4.3.
3.4.1	Official Development Assistance (ODA)	(\$)					B	The total amount of financing for the road network provided by official agencies, including state and local governments, or by their executive agencies while each transaction of which meets the following tests (1) ODA is administered with the promotion of the economic development and welfare of developing countries as its main objective, (2) ODA is concessional in character and conveys a grant element of at least 25 percent (calculated at a rate of discount of 10 percent) (OECD) per year*.	
3.4.2	Private Finance	(\$)					B	The amount of financing for the roads network (exclusively roads that are open to public use) provided by the private sector (e.g. likely to apply to toll roads, BO, etc.) per year*.	

3.4.3	Public Finance	(\$)						B	The amount of financing for the roads network provided by national and local government through taxation or other means per year*.		
4 Road Usage											
4.1	Stock of road motor vehicles	number of vehicles	440,626	451,642	457,442			B	Number of road motor vehicles registered at a given date in a country and licensed to use roads open to public traffic. This includes road (motor) vehicles exempted from annual taxes or license fees; it also includes imported second-hand vehicles and other road vehicles according to national practices. The statistics should exclude military vehicles. Road vehicle is a vehicle running on wheels and intended for use on roads (Glossary for Transport Statistics, 1997, p.30 and Glossary of Transport Statistics, 2003, p.31).	national vehicle licensing authority	see footnote (1)

4.2	Daily traffic flow: Total	number of vehicles					D	Total number of road motor vehicles that move on a given network per day*. When a road motor vehicle is being carried on another vehicle, only the movement of the carrying vehicle (active mode) is considered (<i>Glossary of Transport Statistics</i> , 2003, p.41).	DERIVED	Aggregate of 4.2.1, 4.2.2 and 4.2.3.
4.2.1	Daily traffic flow on motorways	number of vehicles					A	Total number of road motor vehicles that move on motorways per day*.	Road Authority	ref. 1.1.1
4.2.2	Daily traffic flow on highways, main or national roads	number of vehicles					A	Total number of road motor vehicles that move on main/national highways per day*.	Road Authority	ref. 1.1.2
4.2.3	Daily traffic flow on secondary or regional roads	number of vehicles					A	Total number of road motor vehicles that move on secondary/national highways per day*.	Road Authority	ref. 1.1.3
4.2.4	Daily traffic flow on other roads: urban	number of vehicles					B	Total number of road motor vehicles that move on other roads (urban) per day*.	Road Authority	ref. 1.1.4
4.2.5	Daily traffic flow on other roads: rural	number of vehicles					B	Total number of road motor vehicles that move on other roads (rural) per day*.	Road Authority	ref. 1.1.5

4.3	Total passenger activity	million passenger km	25,076,712	25,868,493	26,309,589		D	Total number of passenger kilometers driven per day*.	DERIVED	Aggregate of 4.3.1, 4.3.2, 4.3.3
4.3.1	Passenger activity on motorways	million passenger km					B	Total number of passenger kilometers driven on motorways per day*.	Road Authority	Based on 4.2.1
4.3.2	Passenger activity on highways, main or national roads	million passenger km					B	Total number of passenger kilometers driven on highways, main or national roads per day*.	Road Authority	Based on 4.2.2
4.3.3	Passenger activity on secondary or regional roads	million passenger km					B	Total number of passenger kilometers driven on secondary or regional roads per day*.	Road Authority	Based on 4.2.3
4.3.4	Passenger activity on other roads: Urban	million passenger km					B	Total number of passenger kilometers driven on other roads (urban) per day*.	Road Authority	Based on 4.2.4
4.3.5	Passenger activity on other roads: Rural	million passenger km					B	Total number of passenger kilometers driven on other roads (rural) per day*.	Road Authority	Based on 4.2.5
4.4	Total freight activity	ton km	9,624,658	13,268,493	15,161,644		D	Total freight ton kilometers carried per day*.	DERIVED	Aggregate of 4.3.1, 4.3.2, 4.3.3
4.4.1	Freight activity on motorways	ton km					B	Total freight ton kilometers carried on motorways per day*.	Road Authority	Based on 4.2.1

4.4.2	Freight activity on highways, main or national roads	ton km					B	Total freight ton kilometers carried on highways, main or national roads per day*.	Road Authority	Based on 4.2.2
4.4.3	Freight activity on secondary or regional roads	ton km					B	Total freight ton kilometers carried on secondary or regional roads per day*.	Road Authority	Based on 4.2.3
4.4.4	Freight activity on other roads: Urban	ton km					B	Total freight ton kilometers carried on other roads (urban) per day*.	Road Authority	Based on 4.2.4
4.4.5	Freight activity on other roads: Rural	ton km					B	Total freight ton kilometers carried on other roads (rural) per day*.	Road Authority	Based on 4.2.5
4.5	Roads carrying 'tollable' traffic volume	km	46	46	46	46	B	Length of roads that have a higher average traffic volume than 10,000 vehicles/day. 10,000 vehicles/day is approximately the threshold to extend a road from two to four lanes.	Road Authority	
4.6	Rural Accessibility	million people	??	??	??	??	A	Number of rural people living within 2 km of an all-season road.	Road Authority	
5 Road Motor Vehicle Fuel Consumption										
5.1	Annual Fuel Consumption: Total	1000 tons					B	The total fuel (gasoline and diesel oil) consumption for a given year* in a	National Energy Ministry	

								country.		
5.2	Annual road motor vehicle fuel consumption	1000 tons	918	920	930	939	D	Total amount of road motor vehicle fuel consumption per year*.	DERIVED	Aggregate of 5.2.1, 5.2.2.
5.2.1	Annual road motor vehicle consumption of gasoline (petroleum): regular and super	1000 tons	341	352	359	368	B	The amount of consumption of light hydrocarbon oil for use in internal combustion engines, excluding those in aircraft per year*. Motor gasoline is distilled between 35 degree C and 215 degree C and treated by reforming, catalytic cracking or blending with an aromatic fraction to reach a sufficiently high octane number (_80RON) (<i>Glossary of Transport Statistics</i> , 2003, p.48).	National Energy Ministry	
5.2.2	Annual road motor vehicle consumption of Petrol/diesel oil (distillate fuel oil)	1000 tons	577	568	571	571	B	The road motor vehicle fuel consumption of oil obtained from the lowest fraction from atmospheric distillation of crude oil per year*. Gas/diesel oil includes heavy gas oils obtained by vacuum re-distillation of the residual from	National Energy Ministry	

								atmospheric distillation. Gas/diesel oil distils between 200oC and 380oC, with less than 65 per cent in volume at 250oC, including losses, and 80 per cent or more at 350oC. The flashpoint is always above 50oC and their density is higher than 0.81. Heavy oils obtained by blending are grouped together with gas oils, provided that their kinematic viscosity does not exceed 25 cST at 40oC. Calorific value: 43.3 TJ/1 000 t (<i>Glossary of Transport Statistics</i> , 2003, p.48).		
6 Road User Charges, Taxes, Fares, and Prices										
6.1	Competitive private sector participation in transport services	Y/N					A	Are there clear and reasonable processes for transport operators to be legally able to deliver different forms of transport service in a competitive manner?	In-country sector knowledge	
6.2	Road Motor Vehicle User Charge									

6.2.1	Road user charge (public)	(\$)						B	The total funds collected per year* through indirect and direct (public) charges for road services that are levied as fees. Tolls for instance refer to direct charges that can function like prices (analogous to public utility tariffs). An indirect road user charge could include a surcharge on fuel taxes (TWU-26).	In-country sector knowledge	
6.2.2	Road user charge (private)	(\$)						B	The total funds collected per year* through charges by a private operator, normally in the form of tolls or access charges.	In-country sector knowledge	
6.2.3	Road user taxes (excluding above charges)	(\$)						B	The total amount of public taxes (per year*) collected in relation to transport provision and operations (vehicle and parts import duties, sales taxes, fuel taxes, etc.) that contribute to general revenue (in excluding any "user charge" in 6.2.1)	In-country sector knowledge	
6.3	Passenger Fares										

6.3.1	Average Passenger Fare: inter-city	(\$)/km						B	The average charge (per km) for a passenger on an inter-city journey. This will usually be calculated on the basis of the total passenger fare collection divided by the total passenger distance carried during the year*.	Local Chamber of Commerce or Passenger Transport Assn.	
6.3.2	Subsidy of inter-city passenger service	Y/N						B	Is there a subsidy of inter-city passenger services?	Passenger Transport Assn.	
6.3.4	Average Passenger Fare: intra-city	(\$)/km						B	The average charge (per km) for a passenger on an intra-city journey. This will usually be calculated on the basis of the total passenger fare collection divided by the total passenger distance carried during the year*.	Local Chamber of Commerce or Passenger Transport Assn.	
6.3.5	Subsidy of intra-city passenger service	Y/N						B	Is there a subsidy of intra-city passenger services?	Passenger Transport Assn.	
6.3.6	Average Passenger Fare: rural transport	(\$)/km						B	The average charge (per km) for a passenger on a rural journey. This will usually be calculated on the basis of the total passenger fare collection divided by	Local Chamber of Commerce or Passenger Transport Assn.	

								the total passenger distance carried during the year*.		
6.3.7	Subsidy of rural transport passenger service	Y/N					B	Is there a subsidy of rural transport passenger services?	Passenger Transport Assn.	
6.4	Average Freight Rate									
6.4.1	Average Freight Rate: inter-city	(\$)/km					B	The average charge for transporting freight by common carrier per km between cities in a fixed year*.	Local Chamber of Commerce or Freight Transport Assn.	
6.4.2	Average Freight Rate: (intra-city)	(\$)/km					B	The average charge for transporting freight by common carrier per km inside a city in a fixed year*.	Local Chamber of Commerce or Freight Transport Assn.	
6.4.3	Average Freight Rate: rural transport	(\$)/km					B	The average charge for transporting freight by common carrier per km in rural areas in a fixed year*.	Local Chamber of Commerce or Freight Transport Assn.	
6.5	Motor vehicle fuel prices									
6.5.1	Vehicle fuel prices: Gasoline/petrol - regular/super	(\$)/liter					B	The average amount paid by road motor vehicle users for one liter of gasoline (regular/super) per year*. GTZ uses the	GTZ	ref. 5.2.1

								year*. GTZ uses the most widely sold grade of gasoline (in terms of quantity) as the respective basis for each country. In countries where regular-grade gasoline is still the norm this fuel is used instead of super gasoline (GTZ, 2003).		
6.5.3	Vehicle fuel prices: Diesel oil (distillate fuel oil)	(\$)/liter					B	The average amount paid by road motor vehicle users for one liter of diesel per year*.	GTZ	ref. 5.2.2
7 Environmental and Social										
7.1	Environmental assessment mainstreamed	Y/N					A	Are road construction works and road traffic measures subject by law to a thorough appraisal (at least equivalent to the standards required for WB investment) of environmental impact and monitoring?	In-country sector knowledge	
7.2	Communicable disease control	Y/N					A	Are requirements in force (either through environmental appraised or otherwise) which require on-going assessment of the risks through transport	In-country sector knowledge	

								and transport-related activity (eg. Road construction) of transmitting communicable diseases (including HIV/AIDS) and the planning and implementing of measures to reduce those risks?		
7.3	Road Safety									
7.3.1	Road safety plan published and implemented	Y/N	N	N	N	N	A	Is there a government endorsed plan to improved road safety, which is published and being actively implemented?	In-country sector knowledge	
7.3.2	High level inter-ministerial safety commission is active	Y/N	Y?	Y?	Y?	Y?	B	Is a high level inter-ministerial safety commission active?	In-country sector knowledge	
7.3.3	Road accident: Fatal	Number of people	596	559	642		A	Number of people who were involved in any injury accident with at least one motor road vehicle in motion on a public road or private road to which the public has right of access, resulting in at least one person killed as a result of the accident and within 30 days of its occurrence. Included are: collisions	WHO	

								between road vehicles ; between road vehicles and pedestrians; between road vehicles and animals or fixed obstacles and with one road vehicle alone. Included are collisions between road and rail vehicles. Multi-vehicle collisions are counted as only one accident provided that any successive collisions happen at very short intervals. Injury accident excludes accidents incurring only material damage (<i>Glossary of Transport Statistics, 2003, p.49</i>).		
7.3.4	Road accident: Seriously injured	Number of people					B	Number of people who had any injury accident other than a fatal. This includes any person injured who was hospitalized for a period of more than 24 hours (not including slight injury) (<i>Glossary of Transport Statistics, 2003, p.49/50</i>).	WHO	
7.4	Social assessment									

7.4.1	Social assessment mainstreamed	Y/N					A	Are road construction works and road traffic measures subject by law to a thorough appraisal (at least equivalent to the standards required for WB investment) of social impact and monitoring?	In-country sector knowledge	
7.4.2	Gender assessment	Y/N					B	Is there a requirement to (or are there significant public initiatives taken to) differentiate and take account of transport needs and impacts by gender?	In-country sector knowledge	
7.4.3	Access for all	Y/N					B	Is there a legal requirement to assess the particular transport needs of different segments of the population (eg. people with disability; the aged) and to plan and implement in such a way as to meet their needs?	In-country sector knowledge	
7.4.4	Planning data disaggregated	Y/N					B	Is key information, on the basis of which policy and investment decisions are taken, routinely surveyed in a disaggregated manner which permits the impacts on important	In-country sector knowledge	

				segments of the population (women / men, young / aged, those with disability etc) to be assessed?		
7.5	Employment standards					
7.5.1	Core labor standards	Y/N	B	Are the Core Labor Standards of the International Labour Organisation legislated by the Government and actively implemented by the construction and transport industries?	ILO and in-country sector knowledge	
7.5.2	Health and safety	Y/N	B	Are appropriate Health and Safety standards legislated by the Government and actively practiced, monitored and reported by the construction and transport industries?	In-country sector knowledge	

Note:

(\$) Symbol representing local currency. Local currency is preferred over US\$ amounts (please specify when local currency is, otherwise specify exchange rate in current prices).

* "Daily" or "per day" refers to a typical day in the survey year (usually the fiscal year) of the country.

.. "Annual" or "per year" refers to the fiscal year of a given country (please specify the period or otherwise note: calendar year)

(1) The stock of *non-motorized* vehicle, as core transport measure is expected to be dealt with in a separate urban transport

measures list.

Priority:

- A** Essential
- B** Highly desirable, should be included as soon as possible
- D** Derived, essential measure which is the aggregate of other measures

Note on Sources of data and the institutional framework:

Original sources of data largely depend on components of the institutional framework. This is often complex and is generally becoming more so. In many countries road transport infrastructure has been managed separately from transport operations and traffic. Within transport operations, various aspects of enforcement are often the responsibility of the police, but data on road crash injuries generally come from the hospitals. At the sub-national level, local governments usually have some responsibilities for municipal and district roads etc.

Over recent years many countries have initiated significant reforms in terms of decentralization and for management of the transport sector. This has resulted in changes to the institutional framework and, usually to an increase in the number of organizations which are responsible for aspects of the road transport sub-sector. In many cases there do not yet seem to be systems to bring together the data collected by the various agencies.

The situation described above has two main consequences for collecting the data described on this form. Data for different aspects of the sub-sector may have to be obtained from different organizations (road agency, traffic authority, police, hospital services, etc.). For some aspects, such as the road network may be administered by different agencies at national and local level, several organizations could be involved and each may have to be approached for up-to-date statistics on their section of responsibility.

The Core Labour Standards of the International Labour Organisation are:

1. Freedom of Association and the effective recognition of collective bargaining;
2. The elimination of all forms of compulsory labour;
3. The effective abolition of child labour;
4. The elimination of discrimination in respect of employment and occupation.

Sources:

EUROSTAT, ECMT, UN/ECE, 1997, *Glossary for Transport Statistics*, Document prepared by the Intersecretariat Working Group on Transport Statistics, 2nd edition, Geneva: United Nations.

GTZ, 2003, *International Fuel Prices*, 3rd Edition, May 2003, Eschborn: GTZ GmbH.

Gwilliam, K.M. and Z. Shalizi, 1997, Road Funds, User Charges and Taxes. *Discussion Paper TWU-26*, World Bank: Washington, DC.

IRF, 2003, *World Road Statistics 2004: 2003 - Questionnaire*, Geneva: IRF.

IRTAD, 1998, *Definitions and Data Availability, Compilation and Evaluation of A-Level Roads and Hospitalised Victims in OECD Countries, Special Report, Accident and Injury Definitions*, OECD, Road Transport Research Programme, BASt, Germany, June 1998.

OECD, DAC Statistical Reporting Directives, <http://www1.oecd.org/dac/htm/dacdir.htm#32,33>, October 1st, 2003.

United Nations, Economic and Social Council, Intersecretariat Working Group on Transport Statistics (IWG), 2003, *Glossary of Transport Statistics*, Third Edition, Transmitted Jointly by the Eurostat, UNECE and the European Conference of Ministers of Transport (ECMT), Working Party on Transport Statistics, TRANS/WP.6/2003/6, 4 April 2003.

United Nations, Economic Commission for Latin America and the Caribbean (ECLAC), 1993, *Roads, A New Approach for Road Network Management and Conservation*, June 1993, Santiago: United Nations.

World Bank, 2003, *World Development Indicators 2003*, Washington, DC: World Bank.

Note: If not otherwise indicated, the definitions are proposed by Peter Roberts (TUDTR) and Cordula Thum (TUDTR).