



SURVEY RESULTS: ROAD SAFETY DATA, DATA COLLECTION SYSTEMS AND DEFINITIONS

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Executive Summary

Africa is **the worst performing continent in road safety**. In order to improve road safety performance in African countries, many barriers need to be overcome. Among them stands the **substantial lack of detailed knowledge on road casualties** in terms of their number as well as associated factors leading to road accidents or affecting their consequences. There is a serious lack of road safety data in African countries, and even when data are available (e.g. through the reports of WHO, International Road Federation - IRF, etc.), little is known about data collection systems, data definitions, etc.

The objective of the present report is to outline the results of relevant surveys undertaken within the SaferAfrica project as well as existing road safety analysis documents in order to **assess the current situation of Africa in terms of road safety data, data collection systems and definitions**.


In order to assess the **needs** of stakeholders involved in road safety in terms of **knowledge and information** tools and convey a clear view of **current road safety practices** followed in Africa, two-fold surveys as well as existing road safety analysis documents were exploited. The surveys consisted of a **brief questionnaire** in order to point out the **current status** in each country in terms of **basic road safety aspects and definitions**, followed by an **extensive** one where, besides other concerns, **detailed demands and views of road safety stakeholders**, not necessarily directly involved in decision-making, in each examined African country were recorded. Furthermore, existing **road safety analysis documents** were exploited; namely the Global Status Report on Road Safety (WHO, 2015) and the IRF World Road Statistics 2016 (IRF, 2016) reports. Finally, aiming to assess the effects of current data definitions and collection procedures a **pilot study** was delivered on certain countries which were selected based on specific criteria described in the relevant chapter.

This **first survey** addressed an initial approach to identify per country the **current status** in terms of basic **road safety management** and **data collection practices**. Representatives from 20 African countries, mainly from the West, East and South regions of the African continent took part in this survey. Most of the respondents had a significant experience in the field of road safety (over 10 years), thus the information they provided is considered accurate and reliable.

Experts from all countries stated emphatically the high importance of data and knowledge to support road safety activities. This is a clear indication of the **urgent need** for the improvement of **data and information availability** with regard to the improvement of road safety in African countries.

The second survey included questions on **road safety management** and **data collection practices, road safety resources** and **basic road safety data** developed appropriately to reflect the conditions in Africa. This survey was filled-in by 29 stakeholders from 21 African countries. The majority of the replies were received by governmental representatives.

The objective of the pilot study was to investigate for African countries the **effects of current practice in managing road safety data**. This existing performance and capacity assessment in terms of handling data, data collection procedures and definitions was carried out specifically for



Tunisia, Burkina Faso, Malawi, Cameroon and South Africa which contributed in the second survey and were selected based on the following **criteria**: regional and cultural coverage, cross checked responses, position of the respondent and adequate filling of the survey.

The examination of the existing situation regarding road safety data, data collection systems and definitions in African countries based on the survey results, provides some important insight on **deficiencies of current practices** which might partially explain poor road safety performance in these countries. Furthermore, in combination with the special characteristics of these countries, common deeper problems in structures and policies may be identified.

Based on the stakeholders' responses it was found that there is a **significant demand for data and knowledge** in order to be used for road safety-related decision making. Currently, such information is **poorly available** in African countries. This fact makes the work of road safety stakeholders difficult, therefore, their discontent was expressed. In several cases, it was found that stakeholders are not even aware of the availability status of items that they consider to be irrelevant to their work. Generally, stakeholders seem to be poorly informed about the availability of road safety data and tools.


The assessment of the existing road safety data collection systems in African countries revealed similarities but mostly **differences** since besides the existence of formal systems for recording road accidents for almost all countries, the data collection practices from the **road safety monitoring and evaluation** points of view are addressed in various ways.

Among the most important is the fact that **sustainable systems to collect and manage data** on road accidents, fatalities and injuries are in place for many but not all the examined countries. On the other hand, it was surprising to see that in-depth accident investigations for road safety purposes are conducted for approximately 40% of the countries. More or less, the same countries have a national observatory centralizing data systems for road safety as well as a reporting procedure to monitor road safety interventions. For about 35% of the countries there is a process for assessing the progress of the applied safety measures (process evaluation) in place during the implementation period of a road safety programme which is mainly addressing road safety campaigns.

Exposure indicators were found in the examined countries' national observatories, where 5 countries out of 10 seem to include exposure data in their national road safety observatories.

Approximately 50% of the examined countries have in place a sustainable system for the collection and management of data on **behavioural indicators** emphasizing on speeding and alcohol impaired driving. Safety belt wearing rates were found to be somehow lower. In general, apart from behavioural indicators, the countries utilizing safety performance indicators during a process evaluation seem to be no more than 4.

Regarding the critical aspect of a **common definition** for road accident fatalities, serious injuries and work related accidents, it was found that although the existence of a common fatality definition (mainly) was highly prioritized such a classification is not available in all the examined countries. Another highlighted issue of general concern is the **underreporting** of road accidents for which the



accessibility to relevant data, though regarded as a priority of major importance for the majority of the stakeholders, is only partially available. Road accident databases that link Police and hospital data may serve as a potential solution to the underreporting issue. Such a perspective for **joined databases**, although once again highly acknowledged by the respondents, at present, seems not available to the majority of stakeholders. Identifying **high-risk sites** are considered more important compared to performing in-depth accident analysis, where regarding the latter, the existence of a common methodology seems rather limited.

Exposure data although appreciated by more than 50% of the stakeholders are fully available to approximately 20% of them.

Information on road users' **behavioural aspects and attitudes** were found to be highly prioritized by more than 70% of road safety stakeholders in all countries. However, availability of such information is rather limited to almost 30% of stakeholders. The same percentages more or less in terms of priority and availability ratings respectively were found regarding information on road accident causation factors. From the road infrastructure point of view, data on road safety audits – inspections were greatly appreciated by the stakeholders, although such information is currently available to less than 10% of the respondents.

Only few countries dispose suitable **time series of road fatality data** and especially for the latest available decade 2005-2014, only 21 African countries have available data for more than 5 years. The greatest lack in data concerns risk exposure and safety performance indicators, for which few countries have collected such data.

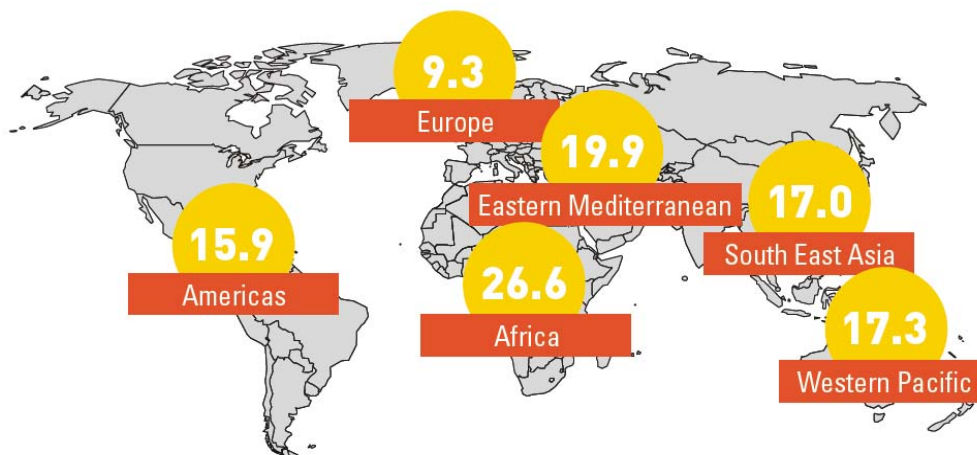
Moreover, a second issue concerns the **comparability** of the data and the potential of using **different databases** in a complementary way. Concerning the fatality data, the review revealed that different definitions are used among the countries. Thus, the data cannot be comparable among the countries, without being processed before, while attention is needed when combining the two databases.

Concerning the data on **exposure and road safety performance**, the comparability of the countries with available data is not totally reliable, since the data refer to different years, with a difference of more than 10 years in some cases (e.g. road network density). Moreover, there is not much information on the collection methods that ensures an appropriate comparison.

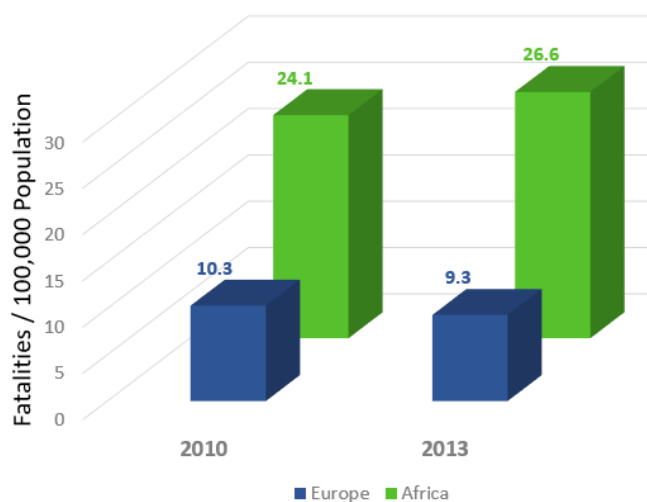
However, the available data are presented in tables and related figures drafted in order to obtain an approximate picture of the road safety situation in African countries. There are clear **differences on road safety performance** of the countries in terms of road safety outcomes, which are also obvious when examining the motorization level or the characteristics of the road infrastructure of the countries. However, the lack of data on road safety performance and traffic exposure do not permit to come to some first conclusions so far.

1 Introduction

Africa is **the worst performing continent in road safety**. The mortality rate in Africa (26.6 fatalities/10⁵ population) is almost three times that of Europe's (Figure 1.1a), where the number of road fatalities represents 31% of the relevant global figure. However, the most disturbing concern is the fact that the disparity in road safety results seems to be increasing. More specifically, according to the World Health Organisation (WHO, 2015), in Europe fatality rates improved from 10.3 per 100,000 population in 2010 to 9.3 per 100,000 population in 2013. Over the same period, road fatality rates in Africa increased from 24.1 per 100,000 population to 26.6 per 100,000 population (Figure 1.1b). As far as Africa is concerned, road trauma is expected to worsen further, with fatalities per capita projected to double from 2015 to 2030 (WHO, 2015).




(a)



(b)

Figure 1.1 (a,b): Mortality rate (fatalities/100,000 population) per region, WHO 2015.



The specific characteristics of victims in the region signifies that road crash is **the fourth leading cause of deaths of people aged 5-44 years** (Jacobs et al., 2000); over 75% of the casualties are of productive age between 16-65 years; and vulnerable road users constitute approximately 65% of the deaths. These figures are indicators of the direct linkage and the impact of road crash in worsening poverty in Africa. Compared with other regions, the losses caused in Africa are proportional to the level of motorization and road network density (African Development Bank Group, 2013).

Despite these pressuring and unfavourable potentials, several actions are already ongoing and important documents are already in place, paving the way for road safety improvements. Such an example is the **African Road Safety Action Plan 2011-2020** developed by the common effort of the African Union (AU) and the United Nations Economic Commission for Africa (UNECA).

However, based on the mid-term review in 2015 of the African Road Safety Action Plan 2011-2020 carried out by UNECA more than **40% of African countries have not taken any significant action** in:

- establishing/strengthening/harmonising the injury data system for health facilities;
- engaging local research centres on road safety data management;
- building capacity for road safety data management;
- mandatory reporting, use of standardised data or sustainable funding for road safety data management.


In the same report it is stated that fewer than 18% of countries monitor important road safety performance indicators, such as seatbelt or helmet-wearing rates.

In order to improve road safety performance in African countries, many barriers need to be overcome. Among them stands the **substantial lack of detailed knowledge on road casualties** in terms of their number as well as associated factors leading to road accidents or affecting their consequences. There is a serious lack of road safety data in African countries, and even when data are available (e.g. through the reports of WHO, International Road Federation - IRF, etc.), little is known about data collection systems, data definitions, etc.

Reliable and accurate data are a fundamental prerequisite to understand the magnitude of road safety problems in Africa and convince stakeholders to take appropriate actions. Reliable and accurate data are also needed to identify problems, risk factors and priority areas in order to formulate strategies, set targets and monitor performance.

As an initial approach, existing **national data should be gathered, assessed and processed** to improve quality. Safety data should be enhanced through additional data and indicators, which may be available at the individual country level but are not currently published (e.g. exposure data, road safety performance indicators, road safety management, etc.). As a final step, data should be analysed to provide a factual appraisal of road safety level in Africa, to reveal critical issues and to indicate priority areas with high potentials for road safety improvement.

At the same time, it is essential to **assess the needs of road safety stakeholders** in African countries in terms of knowledge, data and information tools, and to deliver concrete data and information that can be accessed by all stakeholders involved in road safety.



Towards this direction, the objective of the present report is to outline the results of relevant surveys undertaken within the SaferAfrica project as well as existing road safety analysis documents in order to **assess the current situation in Africa in terms of road safety data, data collection systems and definitions.**



2 Methodology

A key assignment within the SaferAfrica project is to thoroughly assess the **needs** of stakeholders involved in road safety in terms of **knowledge** and **information** tools and convey a clear view of **current road safety practices** followed in Africa.

For this purpose, two-fold surveys as well as existing road safety analysis documents were exploited. The surveys consisted of a **brief questionnaire** in order to point out the **current status** in each country in terms of **basic road safety aspects and definitions**, followed by an **extensive** one where, besides other concerns, **detailed demands and views of road safety stakeholders** not necessarily directly involved in decision-making in each examined African country were recorded. Furthermore, existing **road safety analysis documents** were exploited; namely the Global Status Report on Road Safety (WHO, 2015) and the IRF World Road Statistics 2016 (IRF, 2016) reports. Finally, aiming to assess the effects of current data definitions and collection procedures upon data quality and accuracy, a **pilot study** was delivered on certain countries which were selected based on specific criteria described in chapter 6.

The following sections outline in more detail the basic characteristics and assumptions of the above mentioned approaches. However, it should be noted that the road safety issues raised in both surveys and mostly the contents of the extensive one are not limited solely in identifying the current status of Africa in terms of road safety data, data collection systems and definitions. Therefore, road safety fields such as management practices which although are tackled in the current surveys, at the same time fall outside the scope of the present report, will be incorporated in other project deliverables.

Due to the low number of answers to the two-fold surveys, the conclusions have to be confirmed in the future by in depth analysis and additional incoming questionnaires.

2.1 Brief Questionnaire

This first survey addressed an initial approach to identify per country the current status in terms of basic road safety management and data collection practices. A brief questionnaire was distributed in the context of a Road Safety workshop sponsored by the joined efforts of World Bank and IRTAD, in Nairobi (Kenya), in December 2016. Representatives from 20 African (English speaking) countries, mainly from the West, East and South regions of the African continent shown in Figure 2.1 participated in the Workshop.



n _o	Countries	n _o	Countries
1	Ethiopia	11	Botswana
2	Kenya	12	Lesotho
3	Malawi	13	Namibia
4	Mauritius	14	South Africa
5	Mozambique	15	Swaziland
6	South Sudan	16	The Gambia
7	Tanzania	17	Ghana
8	Uganda	18	Liberia
9	Zimbabwe	19	Nigeria
10	Cameroon	20	Sierra Leone

(1st World Bank – IRTAD Road Safety Workshop, Nairobi, December 2016)
 Figure 2.1: African countries participating at the short survey.

Most of the respondents had a significant experience in the field of road safety (over 10 years), thus the information they provided, is expected to be accurate and reliable.

Since the objective of the short survey was to understand basic road safety aspects and definitions, mainly questions related to practices on road safety management as well as data collection were raised. The survey was structured with 10 core questions accompanied with several explanatory queries (no more than 15 questions in total) the majority of which were based on a Yes – No reply. A copy of the brief questionnaire can be found in Annex I.

Experts from all countries stated emphatically the high importance of data and knowledge to support road safety activities. This is a clear indication of the urgent need for the improvement of data and information availability with regard to the improvement of road safety in African countries.

2.2 Extensive Questionnaire

The detailed questionnaire was distributed during the above mentioned Workshop in Nairobi (December 2016) with representatives from 20 African countries (Figure 2.1). It was also presented to a similar meeting for northern and generally French-speaking African countries organised once again jointly by World Bank and IRTAD, in Marrakesh (Morocco) in February 2017. In this meeting, stakeholders from 13 additional African countries, mainly from the North and West regions of Africa, were asked to fill it in (Figure 2.2). The questionnaire was also distributed during the "13th Prévention Routière Internationale (PRI) World Congress and Exhibition on Road Governance & its Impact on Road Safety" in Tunisia (May 2017). However, no feedback has been received. Furthermore, the questionnaire has been distributed via e-mail to appropriate contacts of the project partners who have been repeatedly reminded to provide their feedback. A copy of the extensive questionnaire can be found in Annex II.

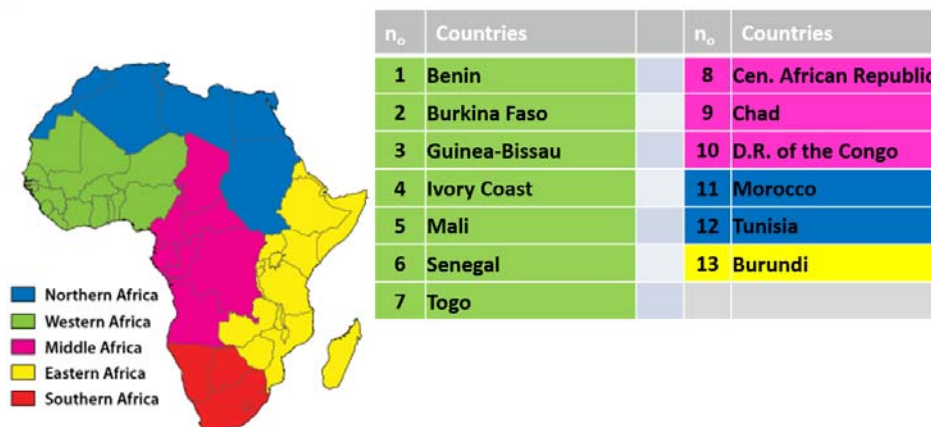


Figure 2.2: African countries participating at the 2nd World Bank – IRTAD workshop (Marrakesh, February 2017).

Since the official languages of certain African countries differ, the questionnaire, besides English was translated and distributed in French as well as Portuguese.

The number of countries that provided feedback on the entire extended survey, as well as the distribution of respondents per their professional status (i.e. governmental representatives or independent experts), is illustrated in Figure 2.3 per region, where it can be seen that the majority of the replies were received by governmental representatives. Up to now, 29 stakeholders from 21 countries have provided feedback.

no	Country	Governmental Representative	Independent Expert	Total
1	Tunisia	1		1
2	Kenya		1	1
3	Malawi	1		1
4	Mauritius	2		2
5	South Sudan	2		2
6	Tanzania	2		2
7	Cameroon	2		2
8	D. R. of the Congo	1		1
9	Botswana	1		1
10	Lesotho	1		1
11	South Africa		1	1
12	Swaziland	1		1
13	Benin	1	1	2
14	Burkina Faso	2		2
15	The Gambia	1		1
16	Guinea	1		1
17	Mali	2		2
18	Nigeria	1		1
19	Senegal	1		1
20	Sierra Leone	1		1
21	Togo	2		2
Total	21	26	3	29

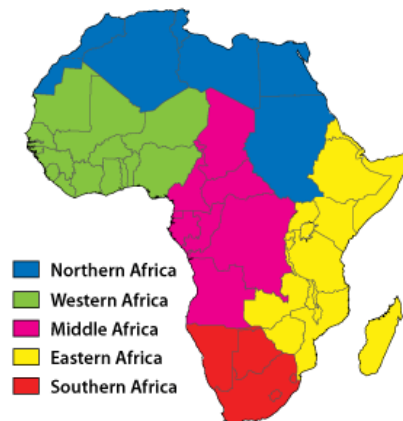


Figure 2.3: African countries participating in the extensive survey.

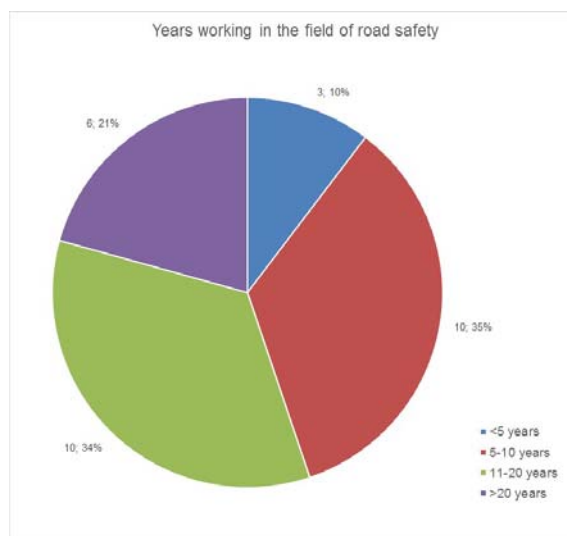
The structure of the detailed survey, the responding process to which is continuously ongoing, was partially based on relevant questionnaires developed in the framework of the EU funded project "DaCoTA". (Papadimitriou et al, 2012). Besides other concerns, detailed demands and views of road safety stakeholders not necessarily directly involved in decision-making are addressed for each African country.

Specifically, previously developed questions on respondent's background information, road safety management and data collection practices were adjusted to the needs and particularities of SaferAfrica and included in the extensive questionnaire. Furthermore, this extensive questionnaire was enriched with new questions on road safety resources and basic road safety data, developed appropriately to reflect the conditions in Africa. It consists of two sections; namely, Road Safety Activities (including subsections A-C) and Data & Data Practices (including subsections D and E). More specifically, the sections contain:

- Section 1 – Road Safety Activities
 - ✓ A: Activity in the field of road safety
 - ✓ B: Road safety management practices per country
 - ✓ C: Key road safety resources utilized in respondent's daily work
- Section 2 – Data and Data Practices
 - ✓ D: Data collection practice
 - ✓ E: Basic road safety data per country

The first part of Section 1 is aimed at collecting “background information” allowing a more thorough description of the way the stakeholder is involved in the field of road safety. The input required information, such as: their country of work, the type of organisation they worked for, the types of activities they were primarily involved in concerning road safety, as well as their experience in the field of road safety.

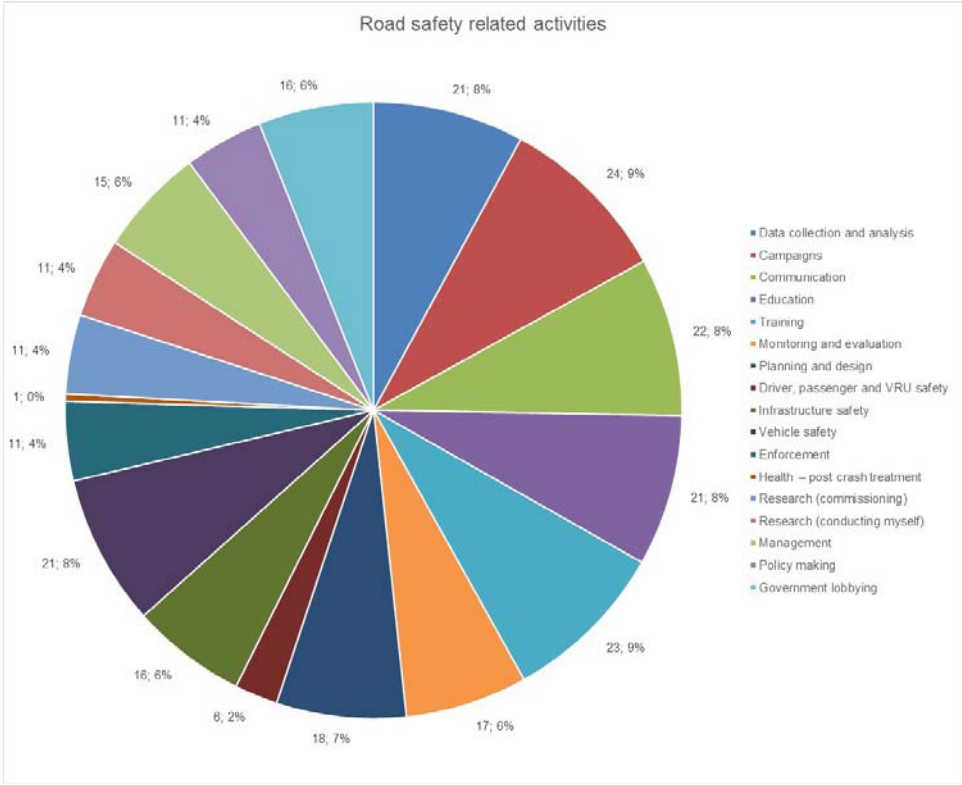
Based on the answers to subsection 1A, in almost all countries, the respondents had a considerable experience in the field of road safety. More specifically, the involvement in road safety for the majority of the contributors (approximately 55%) was found to be over 10 years, thus the information they provided is considered accurate and reliable (Figure 2.4).



Note: The number of respondents and the respective percentage are shown in the graph

Figure 2.4: Years of experience of the respondents in the field of road safety

As far as the road safety activities fields of the participants are concerned, several types appear to be favoured. Among them campaigns, training, communication, education, vehicle safety and data collection & analysis seem to prevail (Figure 2.5).



Note: The number of respondents and the respective percentage are shown in the graph

Figure 2.5: Road safety activities fields of the participants

The second part of Section 1 deals with road safety management systems and acts as a tool for the assessment of road safety legislation, policy and institutional capacity in African countries. This part consists of the following five fields:

- Institutional organisation, coordination and stakeholders’ involvement
- Policy formulation and adoption
- Policy implementation and funding
- Monitoring and evaluation
- Scientific support and information, capacity building

From the above fields, only the data included in the “monitoring and evaluation” sub-part and some of the information comprised in the “scientific support and information, capacity building” sub-part fall in the scope of the present report and are further assessed.

As already stated above, an effort was made that these questions are addressed to two types of road safety professionals in each partner country:

- Government representatives: Road safety practitioners who are or have been directly involved in policy and decision making over a long enough period of time for them to have acquired wide-ranging experience in road safety
- Independent experts: Road safety researchers or scientists who may contribute to policy but do not have a decision making role and could offer a non-partisan view of the road safety legislation, policy and institutional capacity in each country.

The third part of Section 1 deals with key road safety resources utilized in the respondent's daily work and consists of:

- Databases – information sources
- Documents (road safety analyses, management and good practice manuals)
- Contacts of key road safety stakeholders in their country
- Conferences and events recently organised in their country
- Web resources in their country

From the above fields of key road safety resources, only the responses related to databases - information sources as well as documents addressing road safety analyses are further assessed.

In the first part of Section 2 an assessment of the demands and views of road safety stakeholders is carried out in terms of the scientific input (information, data, tools etc.) that actors, involved at various levels and in various areas of road safety, consider important and necessary for their work. Specifically, questions concerned items on:

- Data and resources for fact finding and diagnosis of road safety issues
- Data and resources for the development of road safety related programmes
- Data and resources for the implementation of road safety related measures
- Data and resources for the monitoring and evaluation of road safety measures

The respondents were asked to evaluate each listed item on two different dimensions: (1) the perceived priority for their personal work, and (2) the perceived availability at the level of their country (i.e. the extent to which, according to their knowledge, the item in question was available should they want to use it) (Papadimitriou et al, 2012).


The priority ratings were made on a scale comprising four response options: "High priority" (3); "Medium priority" (2); "Low priority" (1), and "Not relevant to my work" (0). The availability of each item was evaluated on the basis of the following response options: "Already available" (3); "Partially available" (2); "Currently not available" (1); "Unknown" (0).

From the above mentioned groups of items the following data and resources fall in the scope of the present report and are further analysed:

- Data and resources for fact finding and diagnosis of road safety issues
- Data and resources for the implementation of road safety related measures

Finally, in the second and final part of Section 2, the following basic road safety data per country were recorded

- Definitions of
 - Road fatality

- 
- Road injury
 - Hospitalised due to road accident
 - Road fatalities in time-series (1995-2015 or any available years)
 - Road fatalities in 2015 or latest available year
 - Risk Exposure
 - Road Safety Measures
 - Road Safety Performance Indicators
 - Economy and Management Indicators

In order to draw a reliable and accurate picture of the road safety “profile” for each country, and allow in-depth country comparisons for selected key items, a thorough qualitative analysis was carried out by cross-checking the questionnaire responses and the related comments to different subsections.


The results of this assessment serve as a baseline for monitoring and evaluating progress of the road safety policies and road safety performance in each country. Results show important diversity in the structures and processes at the higher level of road safety management.

As already seen through Figure 2.3, up to now, 21 African countries have provided feedback on the extended survey. In certain countries responds from two different stakeholders were delivered, however most of them were from public stakeholders and only Benin, Kenya and South Africa provided responds from independent experts. As stated above, the questionnaire is continuously being distributed via e-mail to appropriate contacts of the project partners who have been repeatedly reminded to provide their feedback. The survey is still ongoing with much potential to improve the sample in terms of collecting additional road safety data from more countries as well as stakeholders.

Based on the feedback provided through the extensive questionnaire, an overall as well as a comparative analysis of road safety data collection systems and road safety definitions is compiled in order to identify good practices and priority areas for improvement. It should be noted that the results described in chapters 3 and 4 are based on experts’ opinions and views, not concrete data, and therefore, should be treated as such.

2.3 Road Safety Data Documents

Apart from the data and information obtained through the short and the extensive questionnaire, the review of road safety data collection systems and definitions in African countries was further elaborated through the exploration of information included in two key road safety data resources; namely the "Global Status Report on Road Safety" published by WHO in 2015 and the "World Road Statistics" published by IRF in 2016. From each one of these two publications information on road safety indicators, data collection methodology, definitions of accident data and data availability were obtained and an accident data overview was compiled. Furthermore, risk exposure data (per road user, vehicle and road infrastructure) were retrieved from IRF while data on road safety performance indicators were obtained through WHO.



Moreover, two additional road safety data resources were exploited; namely the report “The Global Burden of Disease from Motorized Road Transport, (GBD)” published by World Bank in 2014 and the IRTAD database.

The GBD report (2014) presents comprehensive global estimates of the health losses from road deaths and injuries worldwide. It marks the first attempt to quantify the disease burden attributable to air-pollution as well as injuries from motorised road transport. Although the report presents also estimate of non-fatal road injuries, hospital data records from 28 countries worldwide were exploited. Moreover, the authors underline an urgent need for continued work in order to improve their analytical methods for combining available epidemiological data as well as their measurement techniques.

OECD has established the International Road Traffic and Accident Database (IRTAD) as a mechanism for providing an aggregated database, in which international road accident and victim as well as exposure data are collected on a continuous basis. The development and use of the IRTAD is carried out by the International Traffic Safety Data and Analysis Group (IRTAD Group). Information collected for IRTAD comes directly from relevant national data providers in member countries. The data are provided in a common format, based on definitions developed and agreed by the IRTAD Group. If needed, appropriate correction factors are applied in order to enhance international comparability. Currently 32 countries are contributing data to the IRTAD Database. The database includes more than 500 data items, aggregated by country and year (since 1970) and shows up-to-date accident and relevant exposure data, including:

- Injury Accidents classified by Road Network
- Road Fatalities by Road Usage and Age, by Gender and Age or by Road Network
- Car Fatalities by Driver / Passengers and by Age
- Hospitalised Road Users by Road Usage, Age or Road Network
- Accident Involvement by Road User Type and Associated Victim Data
- Risk Indicators: Fatalities, Hospitalised or Injury Accidents Related to Population or Kilometrage figures
- Monthly Accident Data (three key indicators)
- Population Figures by Age Bands
- Vehicle Population by Vehicle Types
- Network Length Classified by Road Network
- Kilometrage Classified by Road Network or Vehicles
- Passenger Kilometrage by Transport Mode
- Seat Belt Wearing Rates of Car Drivers by Road Network
- Area of State

Selected data is available for free while full online access requires IRTAD membership. Latest data are also published in book format in the IRTAD Road Safety Annual Reports.

2.4 Pilot Study

Finally, a pilot study focused on five selected countries has been carried out aiming to assess the effects of current road safety data definitions and collection procedures on data quality and accuracy. The criteria for selecting these countries are outlined in chapter 6. A comparative analysis and synthesis of the findings across the selected countries was also conducted.

3 Road Safety Data Collection Systems in African Countries

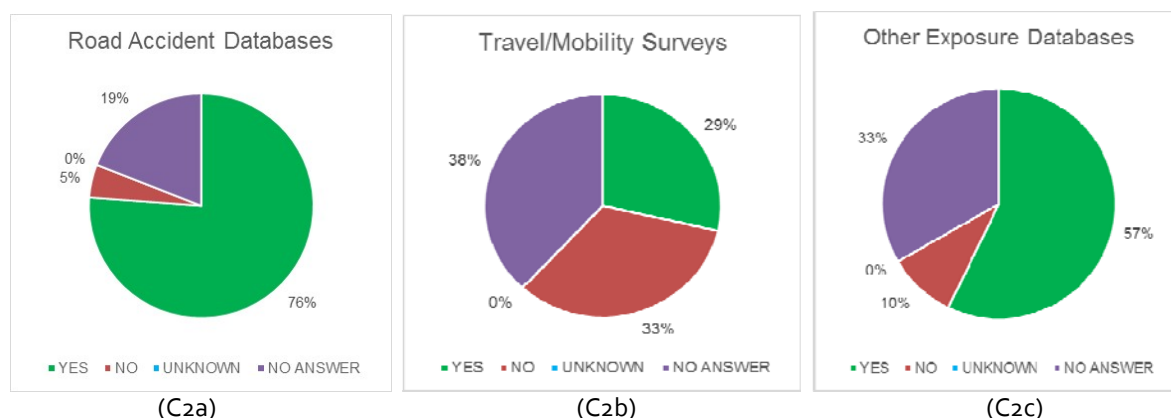
3.1 General

The present chapter aims in clarifying the **current status in terms of the existence, extent and level of road safety data collection systems** in African countries.

This was achieved by exploiting the responses acquired through the extensive questionnaire and reflecting the utilized data collection practices of each examined country. However, there were cases where respondents from the same country provided different answers on the same questions. In order to homogenize similar replies and deliver an accurate as possible view of current road safety practices in the examined countries, a certain process was utilized in such cases of different answers:

- For each question, the answer provided by the majority of respondents from the same country was considered the correct one.
- In cases of ties between two different options, the following adjustments were applied
 - "Yes" and "No" was considered "Unknown"
 - "Yes" and "No Answer" was considered "Yes"
 - "Yes" and "Unknown" was considered "Yes"
 - "No" and "No Answer" was considered "No"
 - "No" and "Unknown" was considered "No"
 - "No Answer" and "Unknown" was considered "Unknown"

As an initial approach the use of road safety databases – information at national level in the examined countries was questioned. Figure 3.1 illustrates the replies on the potential utilization of databases on road accidents, travel – mobility surveys as well as other exposure indicators (e.g. vehicle fleet).



Notes: The alphanumeric variables in the parenthesis indicate the section and number of the respective question in the extensive questionnaire (available in Annex II).

C2a: No feedback provided from Kenya, South Sudan, Senegal and Tunisia

C2b: No feedback provided from Benin, Kenya, Sierra Leone, South Africa, South Sudan, Senegal, Tanzania and Tunisia.

C2c: No feedback provided from Gambia, Kenya, Sierra Leone, South Sudan, Senegal, Tanzania and Tunisia.

Figure 3.1: Use of databases – information at national level

It can be seen that in most examined countries there are formal systems in place for recording road accidents since they are being utilised by 75% of the respondents. Also it is interesting to know that other exposure databases are utilized in more than 50% of the countries. On the other hand, surveys regarding travel – mobility demands seem not so widespread.

As a second approach, core road safety management concerns related to data collection practices in the examined African countries were addressed from the road safety monitoring and evaluation points of view. The replies per country for these basic aspects, which are once again based on the extensive survey, are shown in Figure 3.2.


	KENYA	MALAWI	MAURITIUS	SOUTH SUDAN	TANZANIA	CAMEROON	DR CONGO	BOTSWANA	LESOTHO	SOUTH AFRICA	SWAZILAND	BENIN	BURKINA FASO	THE GAMBIA	GUINEA	MALI	NIGERIA	SENEGAL	SIERRA LEONE	TOGO	TUNISIA
B34	√	√	√	N/A	√	√	√	√	√	√	√	U/K				√	√	√	√	U/K	√
B35		√				√	√		√							√	√	√		√	N/A
B37		√				√	√		√	√		U/K	√			√	√			√	√
B38	N/A	√	U/K			√	√			√			√			√	√				√
B40			U/K	N/A			√			√			√			N/A	√	N/A	√		√

Notes: √: Yes, Empty cell: No, N/A: No Answer, U/K: Unknown.
 The alphanumeric variables in the first column indicate the section and number of the respective question in the extensive questionnaire (available in Annex II).



Figure 3.2: Basic aspects in monitoring and evaluation of road safety data collection practices in African countries.

Experts revealed that sustainable and reliable systems (durable, funded and maintained) to collect and manage data on road accidents, fatalities and injuries are available for a number of African countries. On the other hand, sustainable in-depth accident investigations for road safety purposes



seem to be conducted for 8 out of 21 examined countries (Malawi, Cameroon, D.R. of the Congo, Lesotho, Mali, Nigeria, Senegal and Togo). A national observatory centralizing the data systems for road safety is available in almost 50% of the responding countries. On the whole, the same countries also have a reporting procedure to monitor road safety interventions in place. Last but not least, benchmarking is not really utilized in most countries except for D.R of the Congo, South Africa, Burkina Faso, Nigeria, Sierra Leone and Tunisia.

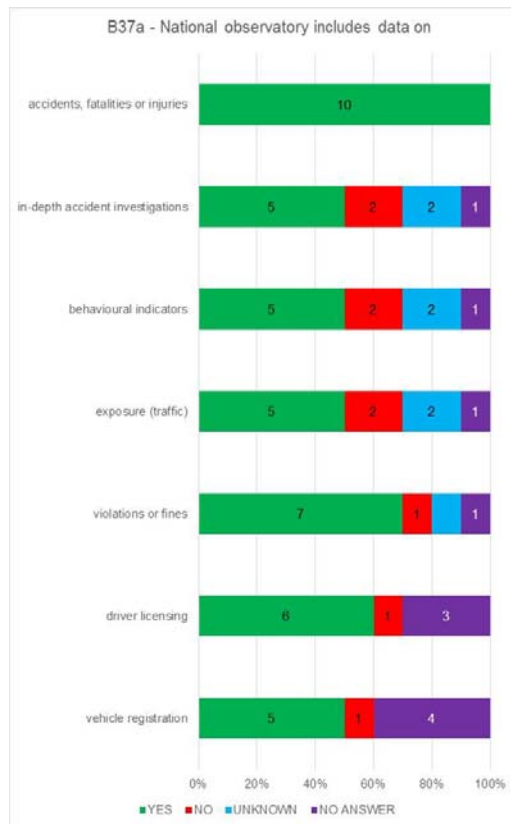
In the following sub-chapters, additional and more detailed aspects of road safety data collection systems for the examined African countries as a whole are presented. The fields of such data collection practices are classified as follows:

- Road accident data
- Risk exposure
- Road safety performance indicators

Specific data collection concerns per country are discussed in the pilot study for selected countries that follows.

3.2 Road Accident Data

As seen through Figure 3.2, for 10 countries a national observatory is available for centralizing the data systems for road safety. For these countries, different types of data included in the national observatory were further specified. Although in general such data vary, in Figure 3.3 it can be seen that all 10 countries incorporate in their observatories data on accidents, fatalities and injuries, 50% of them data regarding in-depth accident investigations, and also 50% data on behavioural indicators.

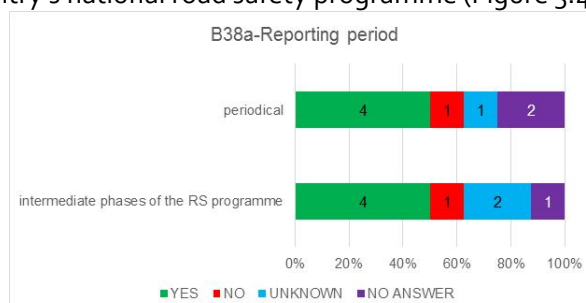


Note: The alphanumeric variables in the title indicate the section and number of the respective question in the extensive questionnaire (available in Annex II).

Figure 3.3: Data included in national road safety observatories.

Monitoring road safety interventions through a reporting process is available for 8 of the examined African countries (Figure 3.2). Aiming to further understand such practices in these countries, further questions were addressed and the results are presented in Figure 3.4 to Figure 3.9.

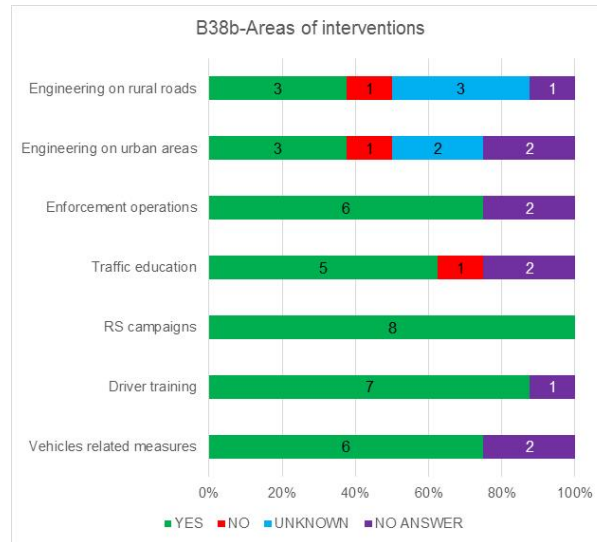
The reporting of monitoring road safety interventions is either periodical or linked to intermediate phases of the country's national road safety programme (Figure 3.4).



Note: The alphanumeric variables in the title indicate the section and number of the respective question in the extensive questionnaire (available in Annex II).

Figure 3.4: Reporting period for monitoring road safety interventions.

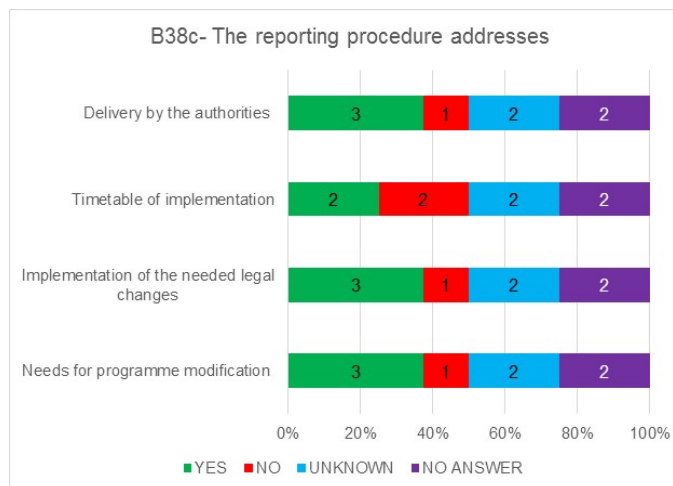
In Figure 3.5 it can be seen that the most common areas of intervention to which the reporting procedure applies are driver training, campaigns, enforcement and vehicle related measures.



Note: The alphanumeric variables in the title indicate the section and number of the respective question in the extensive questionnaire (available in Annex II).

Figure 3.5: Areas of road safety interventions covered by the reporting process.

The reporting process addresses mainly deliveries by the involved authorities, the implementation of necessary legal actions and identified needs for modifications during the implementation phase (Figure 3.6).

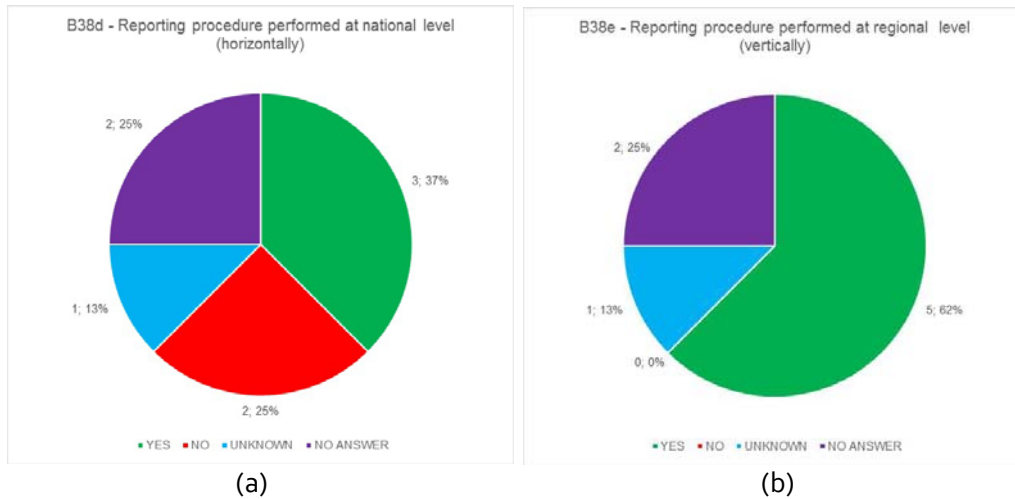


Note: The alphanumeric variables in the title indicate the section and number of the respective question in the extensive questionnaire (available in Annex II).

Figure 3.6: Aspects related to the reporting process.

Another interesting fact of the reporting process to monitor road safety interventions is related to the level at which this is performed. As seen through Figure 3.7a and Figure 3.7b, the reporting

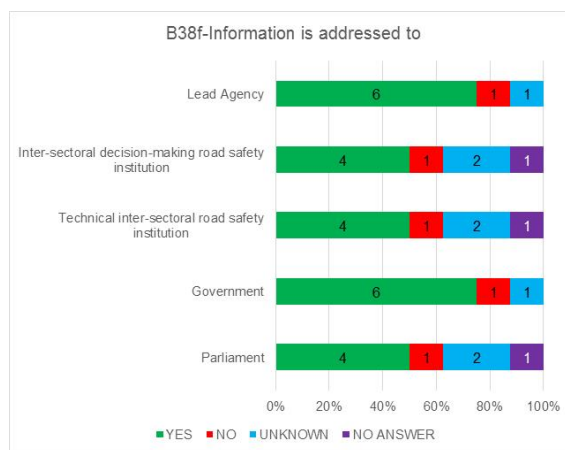
procedure is performed mostly at regional / local level and only in 3 countries at national level (covering ministries, government agencies, etc.) as well.



Notes: The alphanumeric variables in the title indicate the section and number of the respective question in the extensive questionnaire (available in Annex II). The number of respondents and the respective percentage are shown in the graph separated by semicolon.

Figure 3.7 (a,b): Reporting process performed at national (a) and local (b) levels.

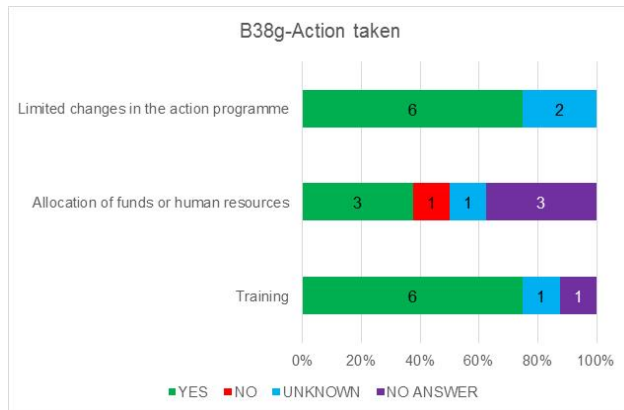
However, the information of this process is addressed mainly to the road safety lead agency or the government itself, as seen in Figure 3.8.



Note: The alphanumeric variables in the title indicate the section and number of the respective question in the extensive questionnaire (available in Annex II).

Figure 3.8: Organizations receiving information from reporting process.

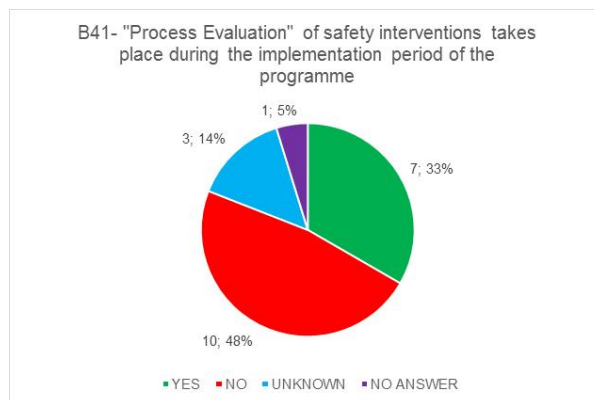
An important outcome is whether certain actions have been taken based on the information collected through the reporting process and towards which direction. In Figure 3.9 it can be seen that these actions in most cases concern training as well as slight changes in the action programme, while allocation of funds or human resources take place in less than 50% of the countries.



Note: The alphanumeric variables in the title indicate the section and number of the respective question in the extensive questionnaire (available in Annex II).

Figure 3.9: Areas of action taken.

Safety interventions need time to show results. However, it is important to check whether such measures work as expected and do not generate undesired side-effects. Figure 3.10 reveals that such a process is undergoing for only 7, approximately 35%, of all the examined countries.

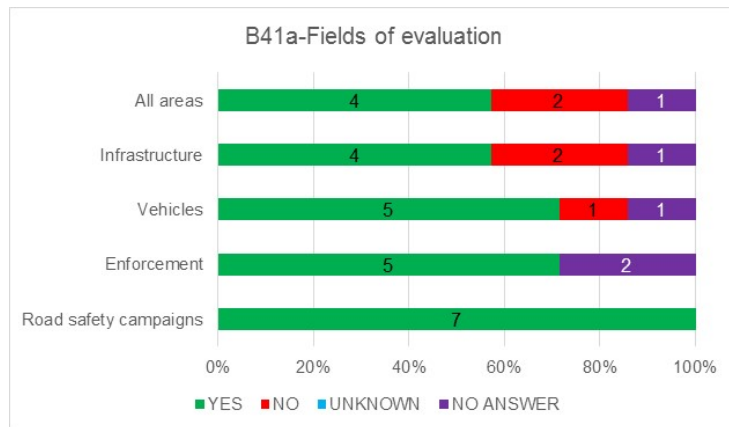


Notes: The alphanumeric variables in the title indicate the section and number of the respective question in the extensive questionnaire (available in Annex II). The number of respondents and the respective percentage are shown in the graph separated by semicolon. No feedback provided from South Sudan.

Figure 3.10: Existence of process evaluation for safety interventions.

Additional responses from these 7 countries) which provide further insight into this process are summarized in Figure 3.11 to Figure 3.14.

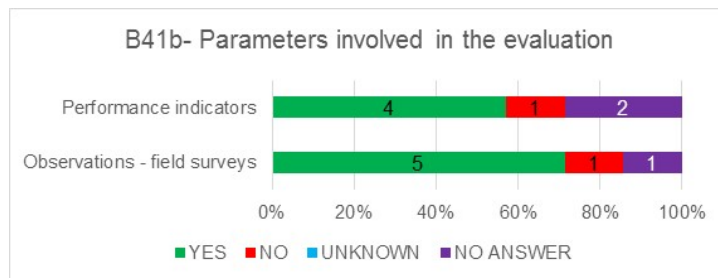
In Figure 3.11 it can be seen that in all 7 countries, the evaluation for interventions addresses road safety campaigns.



Note: The alphanumeric variables in the title indicate the section and number of the respective question in the extensive questionnaire (available in Annex II).

Figure 3.11: Fields of evaluating road safety interventions.

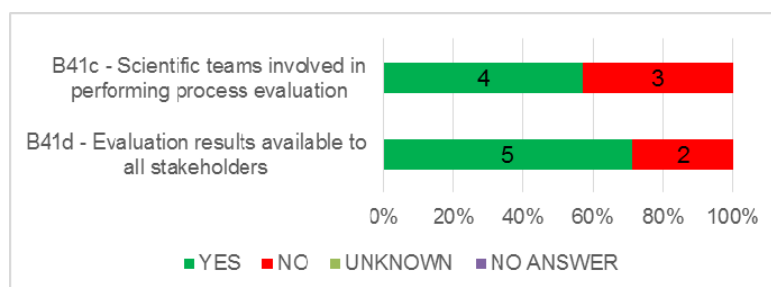
The evaluation is performed using observations and/or field surveys or measurements in 5 of the countries, whilst, for this task, safety performance indicators are utilized by 4 countries (Figure 3.12).



Note: The alphanumeric variables in the title indicate the section and number of the respective question in the extensive questionnaire (available in Annex II).

Figure 3.12: Parameters involved in the assessment.

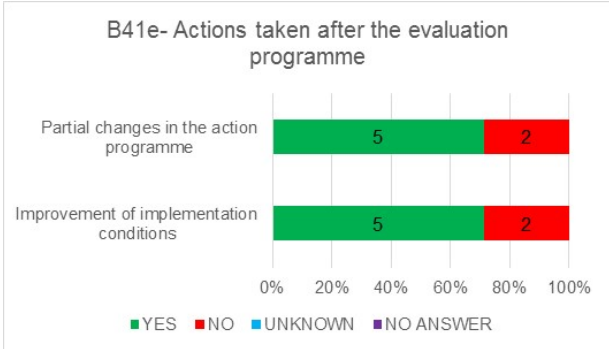
Scientific expertise seems to be present in performing process evaluation in almost 60% of the countries while the evaluation results are available to all stakeholders in 70% of the countries (Figure 3.13).



Note: The alphanumeric variables in the title indicate the section and number of the respective question in the extensive questionnaire (available in Annex II).

Figure 3.13: Scientific expertise and evaluation results availability during process evaluation.

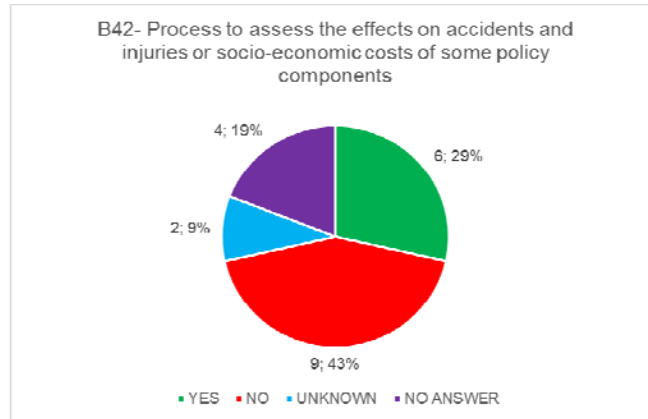
The actions taken on the basis of the evaluation process results for most of these 7 countries involve both improvements of the implementation conditions and well as partial changes in the action programme (Figure 3.14).



Note: The alphanumeric variables in the title indicate the section and number of the respective question in the extensive questionnaire (available in Annex II).

Figure 3.14: Parameters involved in the assessment.

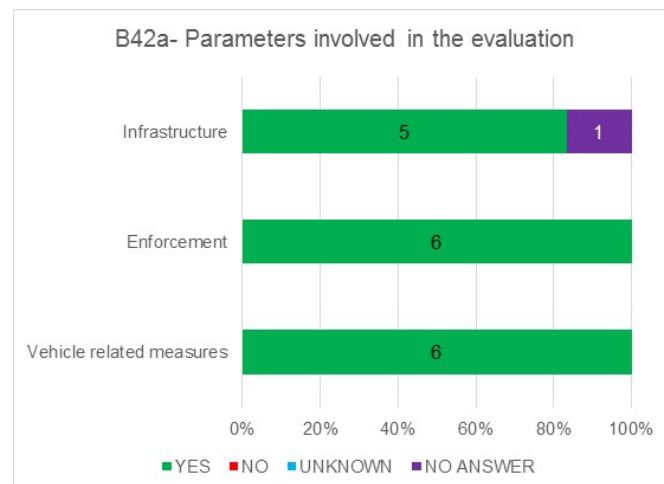
A process to assess the effects on accidents and injuries or socio-economic costs of certain policy components seem to be available in 6 (29%) of the examined 21 countries (Figure 3.15).



Notes: The alphanumeric variables in the title indicate the section and number of the respective question in the extensive questionnaire (available in Annex II).
 The number of respondents and the respective percentage are shown in the graph separated by semicolon.
 No feedback provided from Kenya, Mali, South Africa and South Sudan.

Figure 3.15: Process to assess the effects on accidents and injuries.

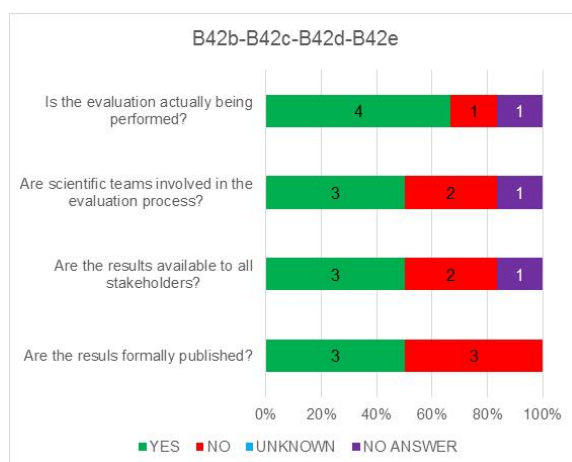
For these 6 countries the areas of interventions covered by the evaluation plan are mainly enforcement and vehicle related measures, while infrastructure is slightly less covered (Figure 3.16).



Note: The alphanumeric variables in the title indicate the section and number of the respective question in the extensive questionnaire (available in Annex II).

Figure 3.16: Areas covered in the process to assess the effects on accidents and injuries.

Finally in Figure 3.17 certain aspects related to the assessment of the effects on accidents and injuries are outlined. Such an evaluation is currently performed in 4 countries.



Note: The alphanumeric variables in the title indicate the section and number of the respective question in the extensive questionnaire (available in Annex II).

Figure 3.17: Aspects related to the assessment of the effects on accidents and injuries.

3.3 Risk Exposure

The amount of travel in each country is one of the main determinants of road fatality risk. However, traffic measurements are not systematically carried out in all countries. In general, the lack of sufficient and reliable exposure data is still a major limitation of road safety analyses and may significantly affect the potential for evidence-based policy making in the African countries, regions and cities.

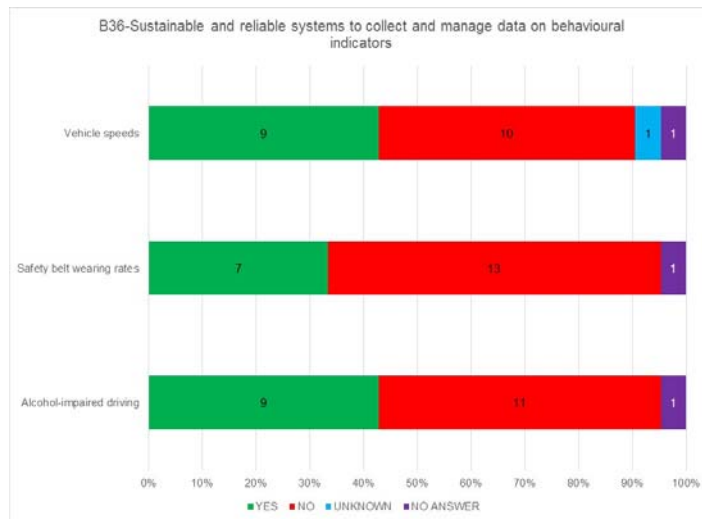
In terms of data collection systems, exposure indicators were found in the examined countries' national observatories. As already discussed (Figure 3.2), for 10 countries a national observatory seems to be available for centralizing the data systems for road safety. From these 10 countries managing national observatories, 50% (5 countries) seem to include exposure data as seen in Figure 3-3.

3.4 Safety Performance Indicators

In order to develop effective measures to reduce the number of accidents/ injuries it is necessary to understand the processes that lead to accidents. Safety Performance Indicators (SPIs) can serve this purpose since, by providing information, they serve as a link between the casualties from road accidents and the measures to reduce them.

Road users' behavioural aspects are a vital field of safety performance indicators. The collection and management of such information are assessed through certain behavioural indicators, such as speeding, drinking and driving, use of protection systems, distraction, etc.

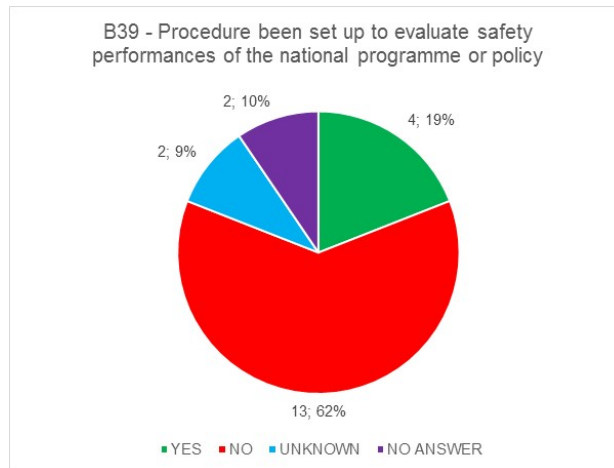
Concerning data on behavioural indicators, a sustainable system for their collection and management is in place for something less than 50% of the 21 questioned countries. As seen through Figure 3.18, safety belt wearing rates are systematically collected and managed in fewer countries compared to speeding and alcohol impaired driving.



Notes: The alphanumeric variables in the title indicate the section and number of the respective question in the extensive questionnaire (available in Annex II).
No feedback provided from Swaziland.

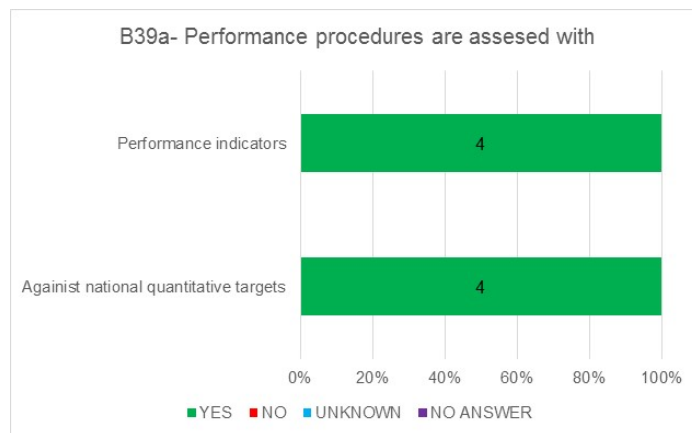
Figure 3.18: Fields of behavioural indicators.

During the implementation period of a country's national programme or policy, it is very important to assess its safety performance. Such a process is currently available for only 19% of the countries (Figure 3.19), where in all 4 of them the safety performance besides through national quantitative targets is assessed based on performance indicators as well (Figure 3.20).



Notes: The alphanumeric variables in the title indicate the section and number of the respective question in the extensive questionnaire (available in Annex II).
The number of respondents and the respective percentage are shown in the graph separated by semicolon.
No feedback provided from Mali and South Sudan.

Figure 3.19: Process for evaluating safety performance of the national programme or policy.



Note: The alphanumeric variables in the title indicate the section and number of the respective question in the extensive questionnaire (available in Annex II).

Figure 3.20: Assessment of safety performance.

As already stated in Figure 3.10, 7 countries have adopted a “process evaluation” of safety interventions. Safety performance indicators seem to be involved in this practice by 4 countries as shown in Figure 3.12.


3.5 Comparative Analysis and Synthesis

The assessment of the existing road safety data collection systems in African countries revealed many **differences** since besides the existence of formal systems for recording road accidents for a number of countries, the data collection practices from the **road safety monitoring and evaluation** points of view are addressed in various ways.

More specifically, **sustainable systems to collect and manage data** on road accidents, fatalities and injuries **are in place** for many but not all the examined countries. On the other hand, it was surprising to see that in-depth accident investigations for road safety purposes are conducted for approximately 40% of the countries. More or less the same countries have a **national observatory** centralizing data systems for road safety as well as a **reporting procedure** to monitor road safety interventions. In the latter case, the procedure is **linked to intermediate phases** of the **national** road safety program and it is performed mostly at **regional / local** level. The most common areas of intervention to which the reporting procedure applies are **driver training, campaigns, enforcement and vehicle related measures**. For about 35% of the countries there is a “process evaluation” of safety interventions in place during the implementation period of a road safety programme. In most countries, the evaluation for interventions addresses road safety campaigns.

Exposure indicators were found in the examined countries’ national observatories, where 5 countries out of the 10 who have a national observatory seem to include exposure data in their national road safety observatories.

Approximately 50% of the examined countries have in place a sustainable system for the collection and management of data on **behavioural indicators** emphasizing on speeding and alcohol impaired driving. In general, apart from behavioural indicators, the countries utilizing safety performance indicators during a process evaluation seem to be no more than 4.



The examination of the existing situation regarding road safety data collection systems in African countries provides some important insight on **deficiencies of current practices** which might partially explain poor road safety performance in these countries. Furthermore, in combination with the special characteristics of these countries, common deeper problems in structures and policies may be identified.

Such data for many African countries are collected for the first time and can be very **useful to road safety decision-makers** to take into consideration for future actions. In addition, identification of the specific problems through analysis of robust and reliable data may enhance participation of the African countries in road safety **initiatives** and undertaking a more active role which will promote their efforts towards the improvement of road safety in the area.

Future research that would analyse the current situation in road safety data collection systems in **more countries** and with **more participants** is the key to better comprehend the existing problems and suggest the most appropriate interventions.



4 Road Safety Definitions in African Countries

4.1 General

Road safety definitions affect data quality by determining which incidents are counted as road accidents and by determining injury and accident severity classifications. Standard definitions of road accidents and fatal – non fatal road injuries are not universally applied (WHO, 2011).

In the present analysis, **demands and views** of road safety stakeholders concerning **road safety definitions and practices** related to broader road safety procedures in African countries are assessed. This assessment is performed based on the responses in certain fields of data collection practices in Africa as provided from the extensive questionnaire and more specifically through the following tasks:

- Data and resources for fact finding and diagnosis of road safety issues
- Data and resources for the implementation of road safety related measures

As already mentioned in the general description of the extensive survey, the respondents were asked to evaluate each item on two different dimensions:

- the **perceived priority** for their personal work (high, medium, low, not relevant to my work)
- the **perceived availability** at the level of their country, (available, partially available, currently not available, unknown)

The respondents were asked to assess from their professional standpoint as well as rate based on the above mentioned options the priority and availability of road safety definitions and practices related to broader road safety procedures in the following fields:

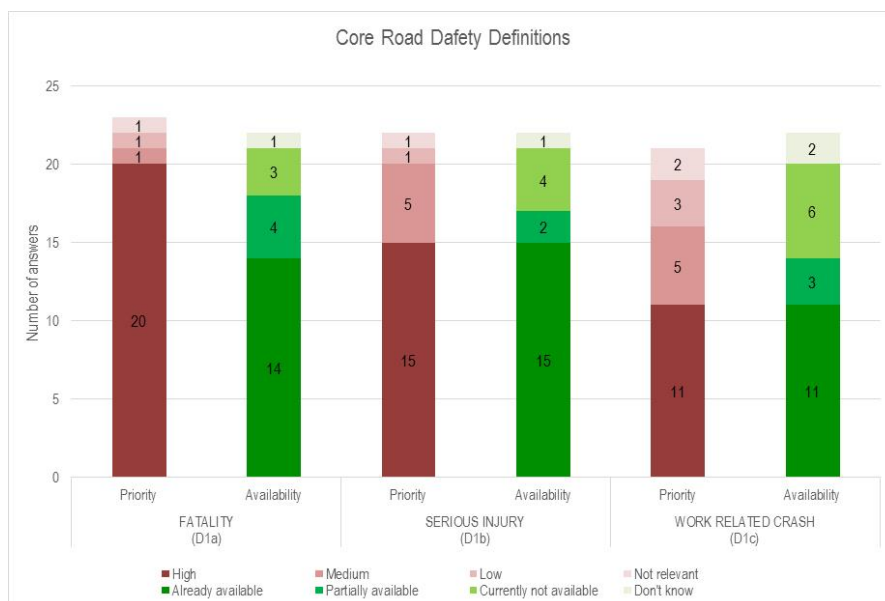
- **Road accident data**
- **Risk exposure**
- **Road safety performance indicators**

The subsequent sections present and discuss in more detail the results of this assessment.

4.2 Road Accident Data

Although, as seen from the previous chapter almost all African countries have a formal system of regularly recording road accidents, not all of them adhere to the international definitions (African Development Bank Group, 2013). Therefore, the assessment presented in this chapter is essential in order to assess the status of road safety more consistently for all African countries.

Stakeholders were asked initially to assess a common definition for road accident fatalities, serious injuries and work related accidents. Their responses can be seen in Figure 4.1 where the most interesting outcome is that although the respondents prioritize rather high the existence of a common fatality definition, this is not available in all the examined countries.



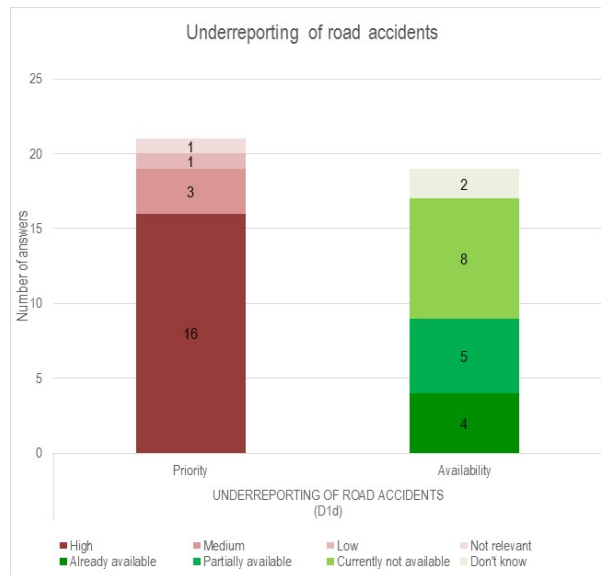
Notes: The alphanumeric variables in the legend indicate the section and number of the respective question in the extensive questionnaire (available in Annex II).
No feedback provided from South Sudan and Swaziland.

Figure 4.1: Core road safety definitions - availability and priority.

Underreporting affects the degree to which the statistical output of a data system reflects reality on the roads. In Africa, it has long been recognized (WHO, 2015) that a rather vast problem exists with underreporting of road accidents, not limited however to those that result in slight injury or are property-damage only.

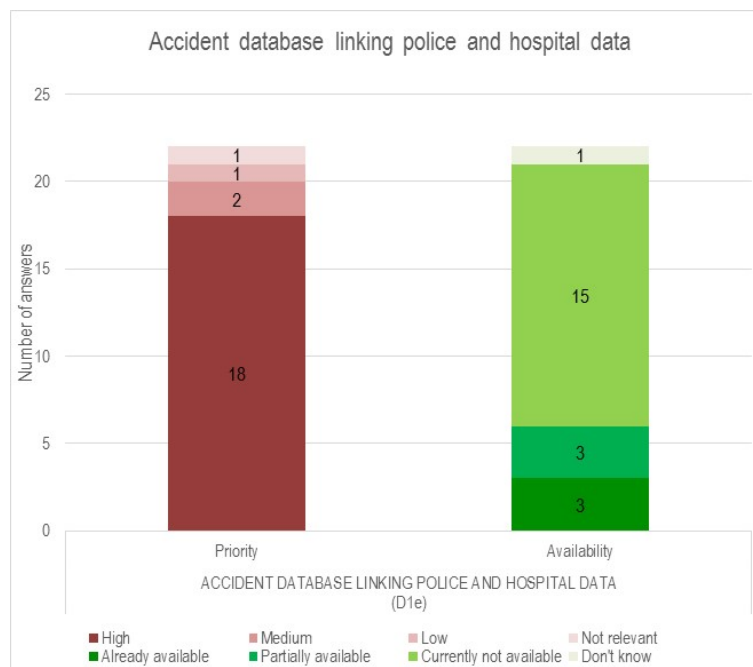
Considering data and resources needed for the identification of specific road safety problems, the general setback of underreporting of road accidents was highlighted by the stakeholders who, in their majority, consider the accessibility to relevant data a high priority but to most of them, however, such data are fully or partially available (Figure 4.2). Although these answers are based on a limited number of experts' opinions, underreporting is an issue of general concern in Africa and affects the degree to which the statistical output of a country's data system reveals the actual situation of road safety.

Another important resource that would also be useful for tackling the underreporting problem is the availability of road accident databases that link data from the Police and the hospitals. In almost all examined countries, such accident databases are of a high priority. However, as seen through Figure 4.3, at the moment such joined databases are not available to the majority of stakeholders.



Notes: The alphanumeric variables in the legend indicate the section and number of the respective question in the extensive questionnaire (available in Annex II).
No feedback provided from South Sudan and Swaziland.

Figure 4.2: Data on the underreporting of road accidents - availability and priority.



Notes: The alphanumeric variables in the legend indicate the section and number of the respective question in the extensive questionnaire (available in Annex II).
No feedback provided from South Sudan and Swaziland.

Figure 4.3: Accident databases linking Police and hospital data - availability and priority.

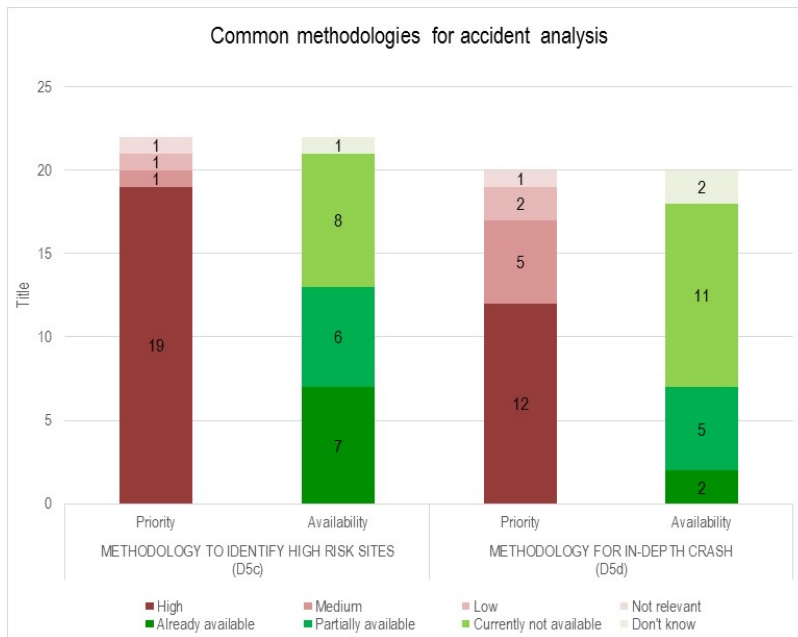
As far as research on road safety data is concerned, although there seem to be no significant results available from studies related to in-depth accident investigations, naturalistic driving and data from driving simulators, the stakeholders prioritize such research activities rather high, with the higher rate being given to in-depth accident investigations (Figure 4.4).



Notes: The alphanumeric variables in the legend indicate the section and number of the respective question in the extensive questionnaire (available in Annex II).
 No feedback provided from South Sudan and Swaziland.

Figure 4.4: Research on road safety data - availability and priority.

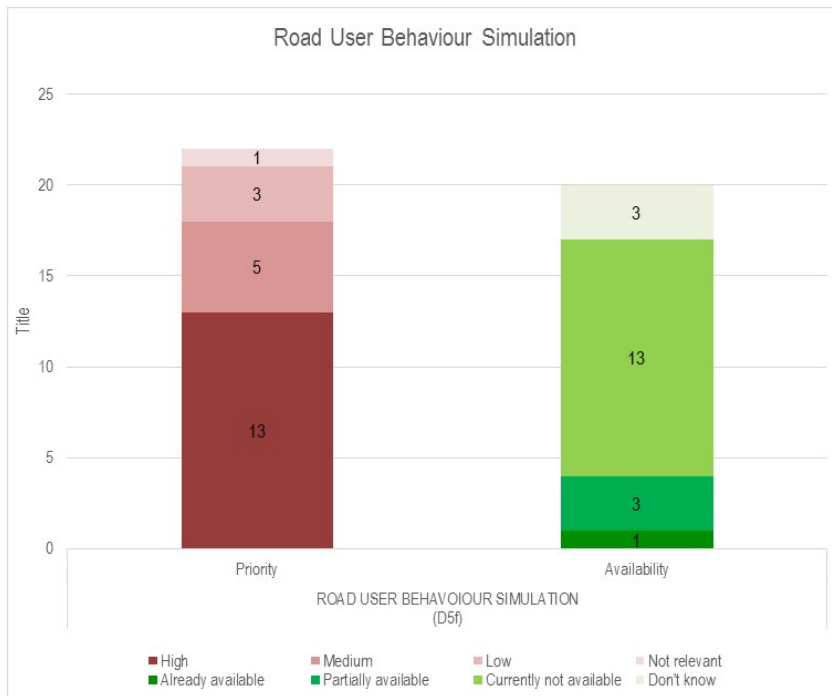
In terms of defining common methodologies for accident analysis (Figure 4.5), the respondents consider the identification of high risk sites more important than performing in-depth accident analysis. More specifically the existence of a common practice to identify high risk sites is greatly appreciated by the stakeholders but at the same time a common methodology available for in-depth accident analysis is rather limited.



Notes: The alphanumeric variables in the legend indicate the section and number of the respective question in the extensive questionnaire (available in Annex II).
 No feedback provided from South Sudan, Sierra Leone and Swaziland.

Figure 4.5: Common methodologies for accident analysis - availability and priority.

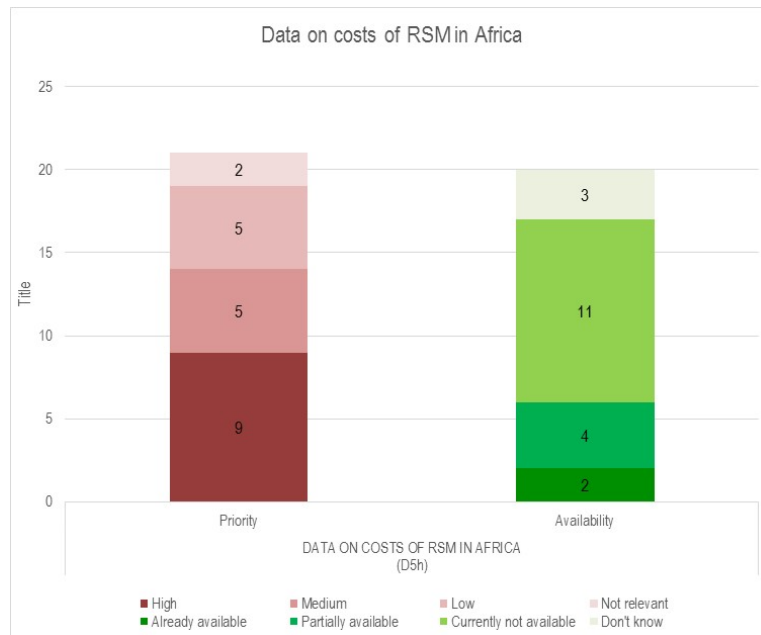
Road user behaviour assessment is the subject of an increasing number of studies worldwide and new methods are being introduced for this purpose. Simulation of road user behaviour is one of the most popular methods at the moment. Therefore, it was not surprising to see a medium priority for tools for simulating road user behaviour. At present time such tools are available to very few stakeholders and mainly in Mauritius (Figure 4.6).



Notes: The alphanumeric variables in the legend indicate the section and number of the respective question in the extensive questionnaire (available in Annex II).
No feedback provided from Mali, Sierra Leone and Swaziland.

Figure 4.6: Tools for simulating road user behaviour - availability and priority.

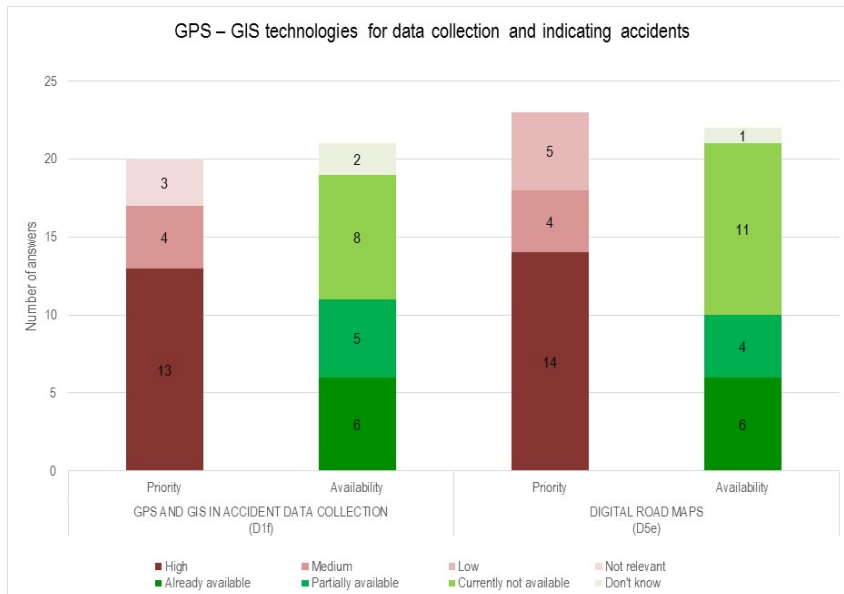
It is well known that road safety is a typical field with high risk of expensive investments not bringing results. On the other hand, since every country experiences road safety budget limitations, it is very important for relevant stakeholders to gain as much information as possible on the costs and benefits of a road safety measure. As a starting point it is essential for a country to sustain data on the costs of road safety measures. Almost 50% of the stakeholders prioritized high this process, where such tools are once again available to very few stakeholders (Figure 4.7).



Notes: The alphanumeric variables in the legend indicate the section and number of the respective question in the extensive questionnaire (available in Annex II).
 No feedback provided from Mali, Sierra Leone and Swaziland.

Figure 4.7: Data on the costs of road safety measures - availability and priority.

The utilization of modern technologies may improve marginally road accident data collection processes. As an example GPS and GIS technologies are wide spread, continuously evolving, and may support more integrated user demand actions. The expediency of these tools seems to be recognized by many stakeholders for which the implementation rates, at least at present time, seem available to approximately 50% of them as seen through Figure 4.8.



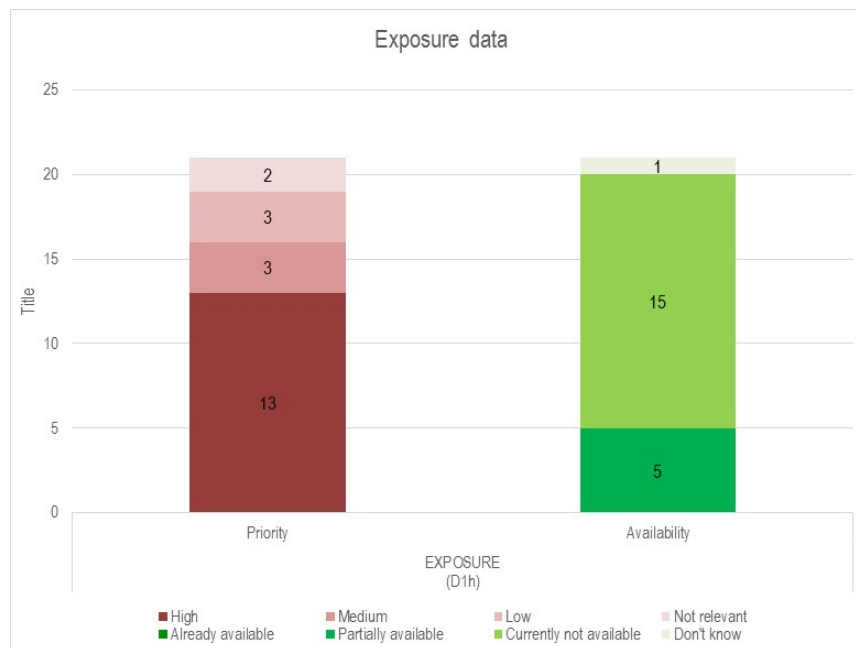
Notes: The alphanumeric variables in the legend indicate the section and number of the respective question in the extensive questionnaire (available in Annex II).
No feedback provided from Mali and Swaziland.

Figure 4.8: GPS – GIS technologies for data collection and indicating accidents - availability and priority.

4.3 Risk Exposure

Exposure indicators are typically divided into three groups: those relating to road users and their behaviour, those relating to the vehicles being used, and those relating to the road infrastructure. Road safety policies and measures operate upon one or more of these groups. The most relevant exposure measure for the number of fatalities is the number of kilometres travelled (either by road users or by vehicles).

Exposure data were found to be highly appreciated by more than 50% of the stakeholders but only 20% of them have such information available (Figure 4.9).



Notes: The alphanumeric variables in the legend indicate the section and number of the respective question in the extensive questionnaire (available in Annex II).
No feedback provided from Mali, South Sudan and Swaziland.

Figure 4.9: Exposure data - availability and priority.

4.4 Safety Performance Indicators

As road users are considered the most important factor of road accidents it is not surprising that information on their behaviour and attitudes were found to be highly prioritized by more than 70% of road safety stakeholders in all countries. On the other hand, availability of such information is rather limited to almost 30% of stakeholders.

Apart from information on road users' behaviour and attitudes, it is shown that road safety stakeholders are also very interested in acquiring information on road accident causation factors in general, in order to be able to select the most appropriate countermeasures. The relevant percentages of stakeholders' priority and availability of information on accident causation factors is approximately 60% and 20% respectively.

Information on socio-economic cost of accidents, fatalities and injuries consists a core field for identifying and developing evidence-based, cost-effective road safety policies. However, such data were rated with lower percentages such as 50% and 8% concerning priority and availability respectively.

The above results are shown in more detail through Figure 4.10.



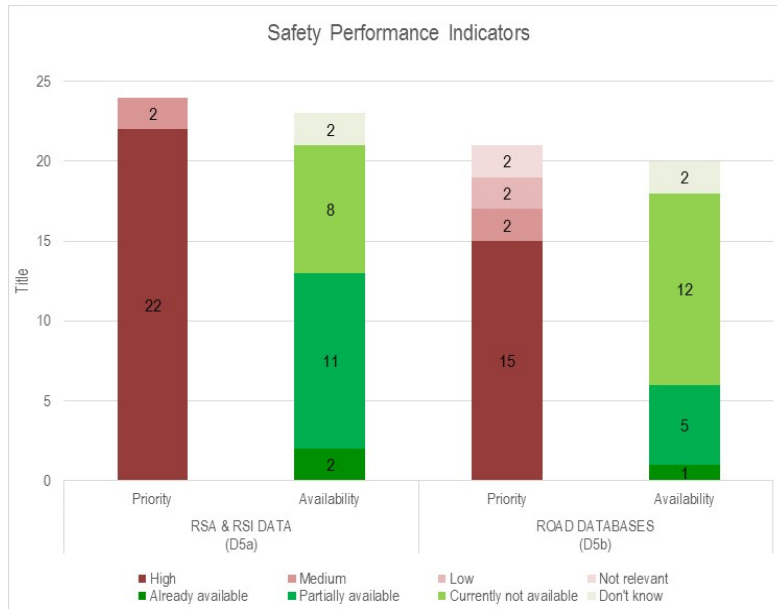
Notes: The alphanumeric variables in the legend indicate the section and number of the respective question in the extensive questionnaire (available in Annex II).

D1g: No feedback provided from Mali, South Sudan and Swaziland.

D1o and D1q: No feedback provided from Kenya, Mali, South Sudan and Swaziland.

Figure 4.10: Information on road users' behaviour and attitudes, accident causation factors and socio-economic cost of accidents, fatalities and injuries - availability and priority.

Finally (Figure 4.11), information related to road safety from the road infrastructure point of view seems to be highly valued by the stakeholders. More specifically it was found that more than 75% of the respondents greatly appreciate data from road safety audits and inspections, although such information is currently available to less than 8% of them. Data related to road layouts, signing, marking etc. is another area of interest where 50% of the respondents prioritize highly such information for which, however, availability is below 5%.



Notes: The alphanumeric variables in the legend indicate the section and number of the respective question in the extensive questionnaire (available in Annex II).
D5a: No feedback provided from Swaziland.
D5b: No feedback provided from Mali and Swaziland.


Figure 4.11: Detailed information from road safety audits - road safety inspections and road databases providing descriptions of road layouts, signing, etc. - availability and priority.

4.5 Comparative Analysis and Synthesis

In the framework of the SaferAfrica project, needs and priorities of road safety data and information to stakeholders in African countries was explored. This assessment is performed based on the responses in certain fields of data collection practices in Africa as provided from the extensive questionnaire and more specifically through the following sub-sections:

- Data and resources for fact finding and diagnosis of road safety issues
- Data and resources for the implementation of road safety related measures

The stakeholders were initially asked to assess a common definition for road accident fatalities, serious injuries and work related accidents. Although, the existence of a common **fatality definition** (mainly) was highly prioritized, such a classification is not available in all the examined countries. Another highlighted issue of general concern is the **underreporting** of road accidents for which the accessibility to relevant data, though regarded as a priority of key importance for the majority of the stakeholders, is only partially available. Road accident databases that link Police and hospital data may serve as a potential solution to the underreporting issue. Such a perspective for **joined databases**, although once again highly acknowledged by the respondents, at present, seems not available to the majority of stakeholders. **Identifying high-risk sites** are considered more important compared to performing in-depth accident analysis. However, mostly for in-depth accident analysis, the availability of a common methodology seems rather limited. Tools for **simulating road user**



behaviour and data on the **costs of road safety measures** are prioritized at a medium level and available at low degree to stakeholders.

Exposure data although appreciated by more than 50% of the stakeholders are fully available to approximately 20% of them.

Information on road users' **behavioural aspects and attitudes** were found to be highly prioritized by more than 70% of road safety stakeholders in all countries. However, availability of such information is rather limited to almost 30% of the stakeholders. Approximately the same percentages in terms of priority and availability ratings respectively were found regarding information on road **accident causation factors**. From the road infrastructure point of view, data on **road safety audits – inspections** as well as **road layouts, signing, marking** etc. were greatly appreciated by the stakeholders, although such information is currently available to less than 10% of the respondents.

Based on the stakeholders' responses it was found that there is a significant demand for **data** and **knowledge** in order to be used for road safety-related decision making. Currently, such information is **poorly available** in African countries. This fact makes the work of road safety stakeholders difficult, therefore their discontent was expressed. In several cases, it was found that stakeholders are not even aware of the availability status of items that they consider to be irrelevant to their work. Generally, stakeholders seem to be poorly informed about the availability of road safety data and tools.

5 Road Safety Data in African Countries

5.1 General

There is a serious lack of road safety data on African countries, and even when data are available, for example through international databases, little is known about data collection systems, data definitions, etc. The present section aims at reviewing the **international data sources** in order to exploit existing road safety related data for **African countries**. The main international databases explored for that purpose are that of the World Health Organisation (**WHO**) with data collected for reporting road safety worldwide, collected in five pillars namely road safety management, road accidents, road safety legislation, road safety performance indicators and post-crash response for more than 180 countries and the database of the International Road Federation (**IRF**) including road infrastructure, exposure and road accident data for 200 countries. The review of these two data sources are outlined below and concern three types of data: road accident data, exposure data and road safety performance indicators.

5.2 Road Accident Data

The two international databases were reviewed and the available accident data concerning African countries were collected. For a better evaluation of the provided data, information on data collection methodology, the definitions used and the availability of the data for the African countries are presented separately for each database.

5.2.1 World Health Organization (WHO)


5.2.1.1 Indicators

The theme pages of the Global Health Observatory (GHO - <http://www.who.int/gho/en/>) of WHO provide data and analyses on global health priorities, including road safety (under the topic "Injuries and violence"). The WHO publishes every 2 years the Global status report on road safety with related data for more than 180 countries. The road accident data included in the statistics tables and the country profiles of these reports are the following:

- Reported number of road traffic deaths
- Estimated number of road traffic deaths
- Estimated mortality rate
- Distribution of road deaths by road user type: drivers/passengers of 4-wheeled vehicles, drivers/passengers of 2- or 3- wheeled vehicles, cyclists, pedestrians and other or unspecified user
- Distribution of road deaths by gender

5.2.1.2 Data Collection Methodology

The WHO collects the data from a number of different sectors and stakeholders in each country under National Data Coordinators (NDCs), who are nominated by their governments and trained in the project methodology. As representatives of their ministries, they are required to identify up to eight other road safety experts within their country from different sectors (e.g. health, police, transport, non-governmental organisations and/or academia) and to facilitate a consensus meeting of these respondents. While each expert responds to the questionnaire based on his expertise, the consensus meeting facilitated by NDCs allows for discussion of all responses, and the group uses this



discussion to agree on one final set of information that best represents their country's situation at the time. This is then submitted to the WHO.

Especially the estimates on the number of road traffic deaths rely in part on data from questionnaires as well as from other sources. However, countries/areas are asked to provide a breakdown of deaths by road user type. These proportions (where available) are reflected in the country profiles.

5.2.1.3 Definitions of Accident Data

Three types of road deaths are included in the WHO reports, which are defined as follows:

1. Reported numbers of road deaths are included in the Country Profiles, with a footnote to indicate the source of data and the definition of a road death that was used.
2. Reported numbers of road deaths adjusted to 30-days definition are included in the statistics tables. This definition applies to any person, in a road accident, who is killed immediately or dies within 30 days as a result of an injury accident
3. Estimated number of road deaths based on the following methodology: The countries are divided into 4 categories, based on the quality of death registration data. More specifically, the first category includes the countries with good death registration data, the second one includes the countries with other sources on information on causes of death, the third category includes the countries with population less than 150.000 and the last one concerns the countries without eligible death registration data. Among the African countries only Egypt and South Africa belong to the first group of countries, Seychelles belong to the third group and all the remaining countries belong to the last group. For the countries in the last group, a regression model was used to estimate road deaths.

In Table 5.1, the definitions of road traffic deaths by country have been summarized according to the WHO report 2015. Data and thus, the respective definitions refer to 2013 for most countries. As shown, the majority of countries (24 out of 47) define the killed persons according to the 30-day definition. In six countries the definition of killed persons includes those killed at the scene of the crash, while in five countries there is no limit of the time period after the crash during which the person is killed.

Country	at crash scene	24 hours	48 hours	7 days	30 days	1 year	unlimited time period	no definition
Algeria					x			
Egypt, Arab Rep.	x							
Libya			x					
Morocco					x			
Sudan							x	
Tunisia					x			
Burundi								
Comoros								
Djibouti								
Eritrea					x			
Ethiopia					x			
Kenya					x			
Madagascar		x						
Malawi					x			
Mauritius					x			
Mozambique					x			
Rwanda					x			
Seychelles					x			
Somalia								
South Sudan								
Tanzania						x		
Uganda						x		
Zambia						x		
Zimbabwe					x			
Angola	x							
Cameroon							x	
Central African Republic	x							
Chad				x				
Congo, Rep.					x			
Congo, Dem. Rep.				x				
Equatorial Guinea								
Gabon					x			
Sao Tome and Principe					x			
Botswana						x		
Lesotho					x			
Namibia	x							
South Africa					x			
Swaziland							x	
Benin				x				
Burkina Faso	x							
Cape Verde					x			
The Gambia								x
Ghana					x			
Guinea							x	
Guinea-Bissau			x					
Ivory Coast					x			
Liberia								
Mali					x			
Mauritania					x			
Niger	x							
Nigeria					x			
Senegal							x	
Sierra Leone					x			
Togo				x				
Total	6	1	2	4	24	4	5	1

Source: WHO, 2015

Table 5.1: Definitions of road traffic deaths used by country, 2013.



5.2.1.4 Data Availability

In the GHO there are available data only for 2013, while data on the number of road fatalities for 2010 and 2007 are available in the published reports. As far as the African region is concerned, 43 out of 47 countries have participated in the last report (2015).

5.2.1.5 Accident Data Overview

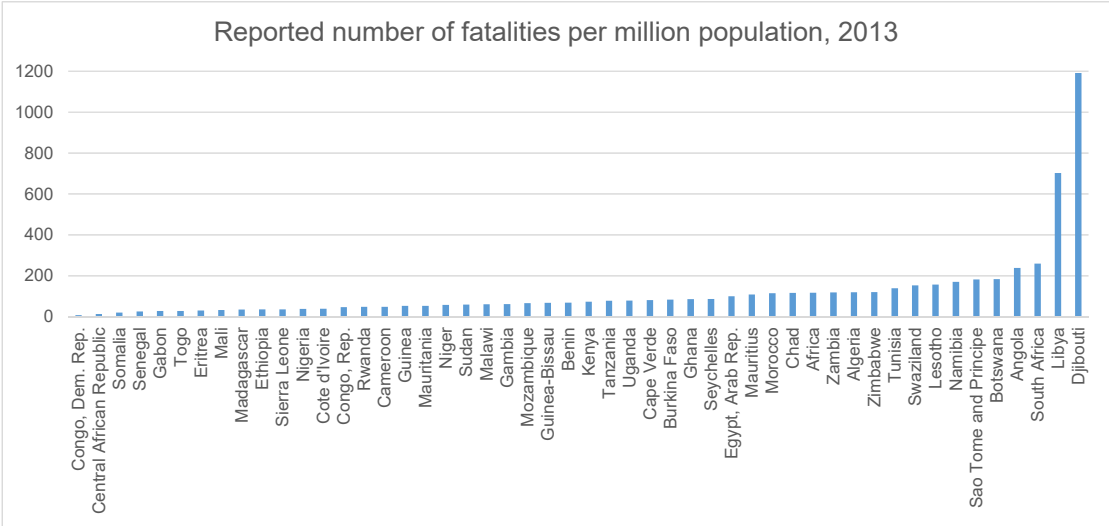
In Table 5.2, the reported number of fatalities (adjusted to 30-days definition) and the estimated number of fatalities published in the last report of WHO are compared. As shown below, the estimated number of fatalities is much higher than the respective reported number in almost all countries. For Angola, Botswana, Egypt, Libya, Mauritius, Seychelles and South Africa the estimated number of fatalities is close to the reported one. For the remaining countries, the estimation of WHO is from about 2 to 13 times higher than the reported number of fatalities. The highest difference between the estimated and the reported number of fatalities is observed in the Democratic Republic of the Congo (45 times higher), while in Djibouti the number of fatalities has been estimated by the WHO as the 20% of the reported number for 2013.

Country	Reported number of fatalities	Estimated number of fatalities
Algeria	4.540	9.337
Egypt, Arab Rep.	8.701	10.466
Libya	4.398	4.554
Morocco	3.832	6.870
Sudan	2.281	9.221
Tunisia	1.505	2.679
Burundi		
Comoros		
Djibouti	1.030	216
Eritrea	148	1.527
Ethiopia	3.362	23.837
Kenya	3.191	12.891
Madagascar	791	6.506
Malawi	977	5.732
Mauritius	136	152
Mozambique	1.744	8.173
Rwanda	526	3.782
Seychelles	8	8
Somalia	201	2.664
South Sudan		
Tanzania	3.885	16.211
Uganda	2.851	10.280
Zambia	1.797	3.586
Zimbabwe	1.787	3.985
Angola	5.591	5.769
Cameroon	1.063	6.136
Central African Republic	58	1.495
Chad	1.527	3.089
Congo, Dem. Rep.	498	22.419
Congo, Rep.	206	1.174
Equatorial Guinea		
Gabon	45	383
Sao Tome and Principe	33	60
Botswana	399	477
Lesotho	327	584
Namibia	400	551
South Africa	13.802	13.273
Swaziland	191	303
Benin	708	2.855
Burkina Faso	1.461	5.072
Cape Verde	41	130
Cote d'Ivoire	844	4.924
Gambia	115	544
Ghana	2.240	6.789
Guinea	629	3.211
Guinea-Bissau	117	468
Liberia		1.448
Mali	529	3.920
Mauritania	204	952
Niger	1.047	4.706
Nigeria	6.450	35.641
Senegal	356	3.844
Sierra Leone	220	1.661
Togo	1.044	2.123
Africa	87.836	276.678

Source: WHO, 2015

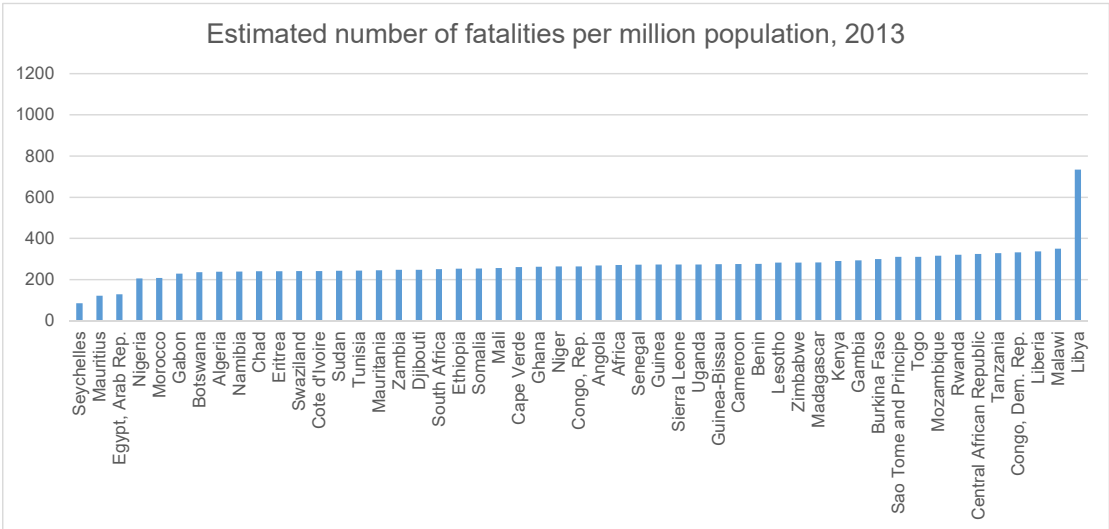
Table 5.2: Reported and estimated number of road traffic fatalities, 2013.

These differences affect the ranking of the countries concerning their road safety performance in terms of road safety outcomes. Figure 5.1 and Figure 5.2 show the fatalities per million population by country, calculated with the reported and the estimated number of fatalities from WHO respectively.



Source: WHO, 2015


Figure 5.1: Reported number of fatalities per million population, 2013.



Source: WHO, 2015

Figure 5.2: Estimated number of fatalities per million population, 2013.

According to the first figure, the highest fatality rates per million population were recorded in Djibouti, Libya and South Africa and the lowest fatality rates were recorded in the Democratic Republic of Congo, the Central African Republic and Somalia. In contrast, the second figure shows that the ranking of the countries is totally different. For example, the Central African Republic is now



amongst the countries with the highest fatality rates in Africa, while Egypt has the lowest fatality rate amongst the large African countries.

In Figure 5.3, the fatality rates per million population in 2010 and 2013 are shown by geographical region (based on the reported number of fatalities-adjusted to 30-days definition). It is noted that the countries with no available data for at least one year are not shown.

In North Africa, the fatality rates in 2013 ranged between 59 killed persons per million population in Sudan and 142 killed persons per million population in Algeria. In addition, in Sudan a reduction of 40% was recorded between 2010 and 2013, while in Algeria the fatality rate was increased by 40% over the same period.

In Eastern Africa, the lowest fatality rate was recorded in Somalia (15 fatalities per million population) and the highest fatality rate in Zimbabwe (188 fatalities per million population). In most countries, the number of fatalities per million population was reduced between 2010 and 2013, except for Rwanda, Madagascar, Ethiopia, Zambia and Zimbabwe. Especially in Zimbabwe, the fatality rate in 2013 was more than twice the respective rate in 2010.

In Central Africa, the fatality rates range between 7 killed persons per million population in the Democratic Republic of Congo and 238 killed persons per million population in Angola. Gabon experienced the highest decrease in road fatalities between 2010 and 2013, while in Angola an increase of 25% was recorded.

In Southern Africa, the range of the fatality rates is smaller compared to the other regions (153 in Swaziland and 270 in Namibia). In all counties the number of fatalities per million population decreased, except Namibia which experienced an increase of 10% between 2010 and 2013.

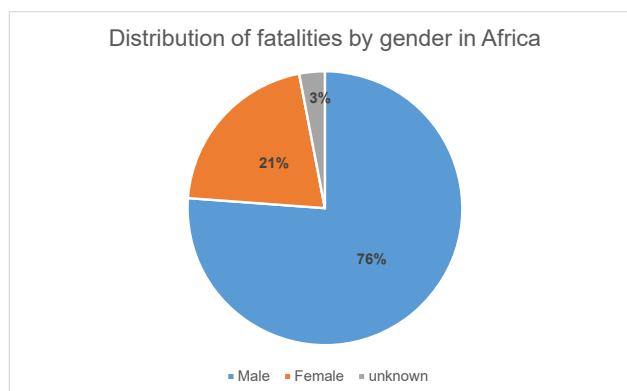
In Western Africa, the lowest fatality rate was recorded in Senegal (12 killed persons per million population) and the highest was recorded in Burkina Faso (83 killed persons per million population). The highest decrease in road fatalities was recorded in Cape Verde (from 128 to 81 fatalities per million population), while the highest increase was recorded in Burkina Faso (from 7 to 83 fatalities per million population).



Source: WHO, 2015

Figure 5.3: Fatalities per million population by country in African regions, 2010 and 2013.

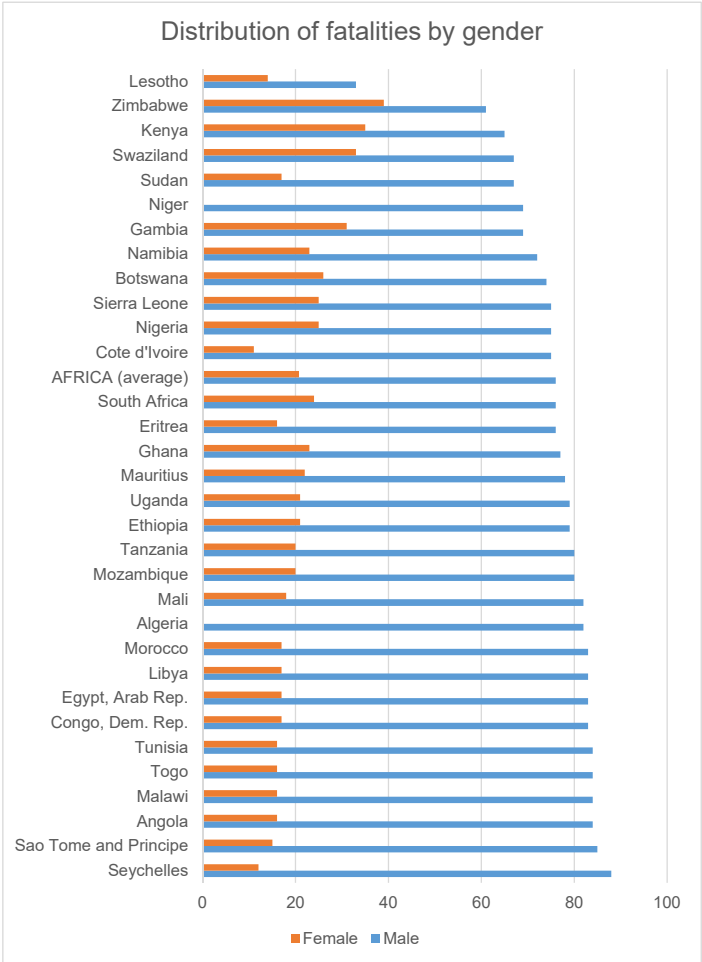
The distribution of fatalities by gender in Africa is shown in Figure 5.4 based on data provided by countries to the last report of WHO (2015). The distribution of fatalities by gender in 2013 was calculated as the average percentages of fatalities by gender of 30 countries. As shown, 76% of the fatalities were male and 21% of the fatalities were female.



Source: WHO, 2015

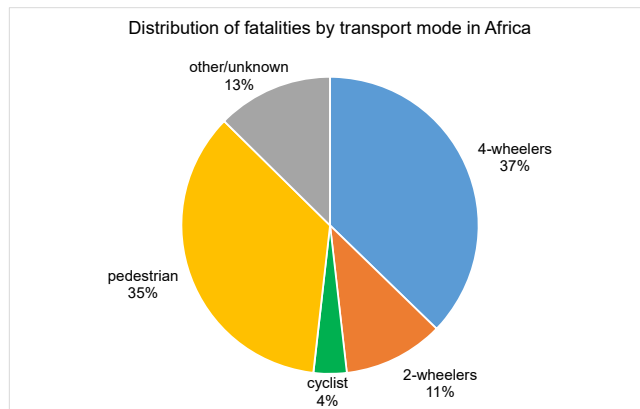
Figure 5.4: Distribution of fatalities by gender in Africa.

In Figure 5.5, the gender distribution of fatalities by country is shown. In 12 countries, the percentage of male fatalities is higher than 80%. Algeria and Niger have not provided data on female fatalities, while in Lesotho more than 50% of fatalities have unknown gender.



Source: WHO, 2015
 Figure 5.5: Distribution of fatalities by gender and country, 2013.

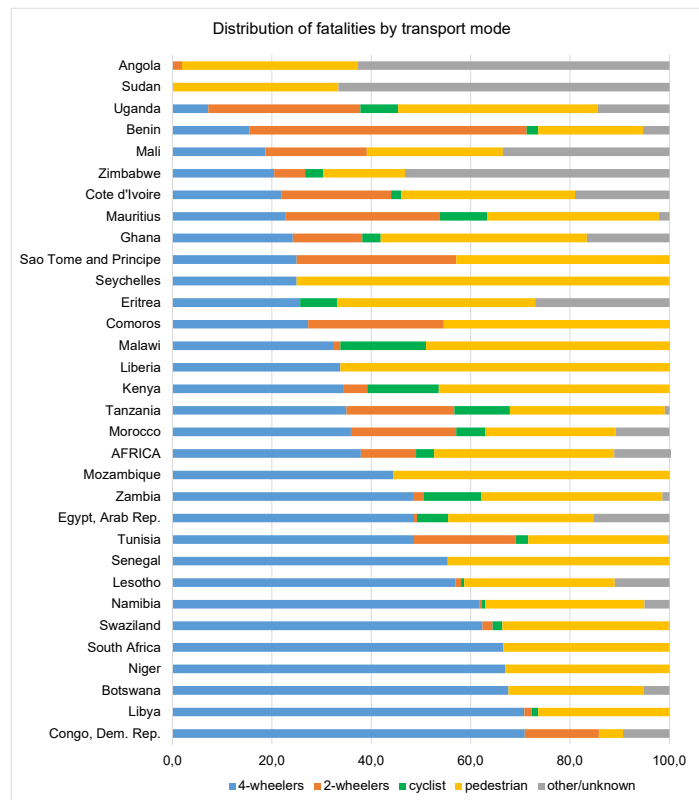
In Figure 5.6 the distribution of fatalities by transport mode in Africa is presented, based on data from 31 countries. 37% of people killed in road accidents were travelling by 4-wheeled vehicles and 35% were pedestrians. Another 11% of fatalities were 2-wheelers' riders.



Source: WHO, 2015

Figure 5.6: Distribution of fatalities by transport mode, 2013.

In Figure 5.7, the respective distribution of fatalities by country is shown. The highest percentages of pedestrian fatalities were recorded in Liberia (66%), Mozambique (56%) and Malawi (49%), while in Democratic Republic of Congo only 5% of traffic fatalities concerned pedestrians. As far as 4-wheelers are concerned, the Democratic Republic of Congo and Libya had the most fatalities, while in Uganda only 7% of killed persons were travelling by 4-wheeled vehicles and in Sudan and Angola no 4-wheeler fatalities were recorded.



Source: WHO, 2015

Note: 2010 data are used for Comoros, Liberia, Mozambique and Senegal

Figure 5.7: Distribution of fatalities by transport mode by country, 2013.

5.2.2 International Road Federation (IRF)

5.2.2.1 Indicators

The IRF (<http://www.irfnet.ch/>) through its annual reports - World Roads Statistics (WRS - <http://worldroadstatistics.org/>) - provides the following road accident data/indicators:

- Road accident figures and rates
- Total number of injury accidents
- Total number of persons injured in road accidents
- Total number of persons killed in road accidents
- Persons killed in road accidents per 100.000 people
- Injury accidents per 100.000 people
- Injury accidents per 100 million Veh-Km

5.2.2.2 Data Collection Methodology

The IRF collects the data for the World Roads Statistics (WRS) reports by conducting an annual survey, which is sent to its network of local and official primary statistics sources in over 200 countries. This annual survey uses a questionnaire, in four different languages (English, French, Spanish and Russian), to collect data on the nine sections of the WRS and for the last 5 years. The data collected from the survey is complemented by using national statistics from secondary sources such as official yearbooks. The validity of the data is checked in several ways; comparisons with data from various sources, comparison with historical data, reconciling the definitions of indicators, and by checking the validity of questionable data by going back to the network of national contacts.

5.2.2.3 Definitions of Accident Data

The key road accident data definitions used in the IRF database are the following:


Injury accident: Any accident involving at least one road vehicle in motion on a public road or private road to which the public has right of access, resulting in at least one injured or killed person. Types of collisions included are: collisions between road vehicles; between road vehicles and pedestrians; between road vehicles and animals or fixed obstacles and with one road vehicle alone; collisions between road and rail vehicles. Multi-vehicle collisions are counted as only one accident provided that any successive collisions happen within a very short time period. In addition, injury accidents exclude accidents incurring only material damage and terrorist acts are also excluded.

Person injured: Any person who, as result of an injury accident, was not killed immediately or not dying within 30 days, but sustained an injury, normally needing medical treatment, excluding attempted suicides. Persons with lesser wounds, such as minor cuts and bruises are not normally recorded as injured.

Person killed: Any person killed immediately or dying within 30 days as a result of an injury accident, excluding suicides.

5.2.2.4 Data Availability

As shown in Table 5.3, only 6 countries, i.e. Botswana, Egypt, Kenya, Mauritius, Morocco and South Africa, have provided the IRF with road accident data for the whole period 2000-2014, while for 11 countries, i.e. Burkina Faso, Cape Verde, Central African Republic, Congo Republic, Ivory Coast, Djibouti, Equatorial Guinea, Gambia, Lesotho, Sao Tome and Principe and South Sudan, there are



no accident data or they are not participating in the surveys. In addition, 12 countries have more than 60% availability of road accident data over this period, ranging from 93% in Ghana and 67% in Algeria, Cameroon and Guinea. However, this is not the case for all road accident indicators, e.g. data may be available for a country for a specific year on the number of injury accidents but not on the number of killed or injured persons

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Algeria															
Angola															
Benin															
Botswana															
Burkina Faso															
Burundi															
Cameroon															
Cape Verde															
Centr. Afr. Republic															
Chad															
Comoros															
Congo, D.R.															
Congo, Rep.															
Cote d'Ivoire															
Djibouti															
Egypt, Ar. R.															
Equatorial Guinea															
Eritrea															
Ethiopia															
Gabon															
Gambia															
Ghana															
Guinea															
Guinea-Bissau															
Kenya															
Lesotho															
Liberia															
Libya															
Madagascar															
Malawi															
Mali															
Mauritania															
Mauritius															
Morocco															
Mozambique															
Namibia															
Niger															
Nigeria															
Rwanda															
Sao Tome & Principe															
Senegal															
Seychelles															
Sierra Leone															
Somalia															
South Africa															
South Sudan															
Sudan															
Swaziland															
Tanzania															
Togo															
Tunisia															
Uganda															
Zambia															
Zimbabwe															

Source: <http://worldroadstatistics.org/index.html>

Table 5.3: Availability of road accident data by country and year in the IRF database.

5.2.2.5 Accident Data Overview

Table 5.4 shows the number of fatalities in road accidents in African countries during the decade 2005-2014. The table includes the available data published in WRS reports from 2013 to 2016.

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Algeria				4.422	4.607	3.660	4.598	4.447	5.432	
Egypt, Arab Rep.	6.109	6.180	6.666	6.603	6.486	7.040	7.115	6.431	6.700	6.236
Libya										
Morocco	3.617	3.754	3.838	4.162	4.042	3.378	4.066	4.055	3.832	3.381
Sudan			2.227							
Tunisia	1.519	1.516	1.497	1.530	1.380	1.208	1.485	1.623	1.505	1.565
Burundi		65								
Comoros										
Djibouti										
Eritrea										
Ethiopia		2.522	2.517	2.161						
Kenya	2.531	2.715	2.921	3.158	4.072	3.055	3.302	3.141	3.191	2.907
Madagascar		550	336	396	261					
Malawi	930	865	871	869	548	974	765	882		
Mauritius				168	140	158	152	156	136	137
Mozambique	1.183	1.295	1.502	1.529	1.830	1.963	1.726	1.574	1.744	2.040
Rwanda			308		155	270	237	220	315	
Seychelles				7	6	11	9	10	8	
Somalia				112	110	162	152	156	155	130
South Sudan										
Tanzania				2.905						
Uganda		2.171	2.334	2.035	2.734	2.954	3.343	3.124		
Zambia	869	1.170	1.266	1.238	1.413	1.388				
Zimbabwe		1.037	1.161	989	1.045	1.121	1.265	2.094	2.797	
Angola			1.814							
Cameroon	1.091	944	963	1.074	1.064	1.258	1.145	957	1.099	
Central African Republic			583							
Chad			840							
Congo, Dem. Rep.			281							
Congo, Rep.			214							
Equatorial Guinea										
Gabon						252				
Sao Tome & Principe										
Botswana					475	397	483	404	411	377
Lesotho				710						
Namibia					278	536	301		633	685
South Africa	14.316	15.419	14.920	13.875	13.768	13.967	13.954	13.528	11.844	12.702
Swaziland										
Benin	691	505	605	555	710					
Burkina Faso			619	249	527	108	155			
Cape Verde										
Cote d'Ivoire				673						
Gambia										
Ghana	1.784	1.856	2.043	1.938	2.237	1.986	2.199	2.240	1.898	
Guinea	85	85	78	87	102	75	127			
Guinea-Bissau					83	117	98	69	96	92
Liberia					104	55	110	51	114	59
Mali			659	671	573	687	889	795	529	676
Mauritania	183	186	152	179	177	44		143		
Niger	314	273	265	616	563	654	656	685	806	
Nigeria	8.980	9.131	4.673	6.661	5.693	4.065			5.539	4.430
Senegal	435	286	320	237	196	163	118	162	175	
Sierra Leone	48		71		204	216				
Togo										

Source: IRF database

Table 5.4: Number of fatalities in road accidents, 2005-2014

5.3 Risk Exposure Data

Exposure data are considered indispensable for explaining road safety outcomes and making international comparisons. The most relevant indicator is annual distance travelled. As data of distance travelled (by travel mode, by age) are usually difficult to collect, approximations are used, such as vehicle fleet size or road length.

Indicators are divided into three categories: the first one is related to road user, the second one is related to vehicles and the third one is related to the road infrastructure. Such data are collected annually by the IRF, however, few are available for African countries.

5.3.1 Road User

Data related to traffic and multimodal traffic were explored in the IRF database, such as vehicle-distance travelled (expressed in km) in total and by transport mode, as well as the person distance travelled (expressed in km) in total, by transport mode and by road user's age and gender. In the IRF database the following indicators with the respective definitions are available:

- Vehicle-kilometre: Unit of measurement representing the movement of a road motor vehicle over one kilometre.
- Passenger-kilometre: Unit of measurement representing the transport of one passenger by road over one kilometre. The distance to be taken into consideration is the distance actually travelled by the passenger.

However, available data are very limited.

5.3.2 Vehicle

The vehicle fleet size (number of vehicles), (in total and stratified by type of vehicle) is available in the IRF database with the following definitions:

Passenger cars: Road motor vehicle, other than a motor cycle, intended for the carriage of passengers and designed to seat no more than nine persons (including the driver). "Passenger car" includes microcars (needing no permit to be driven), taxis, vans designed for transport of passengers and passenger hire cars, provided that they have fewer than ten seats.

Buses and motor coaches: Passenger road motor vehicle designed to seat more than nine persons (including the driver). Included are mini-buses and mini-coaches designed to seat more than nine persons (including the driver).

Vans & Pick-ups (Light goods road vehicle): Good road vehicle with a gross vehicle weight of not more than 3500 kg, designed, exclusively or primarily, to carry goods, e.g. vans and pick-ups.

Lorry: Rigid road motor vehicle designed, exclusively or primarily, to carry goods.

Road tractor: Road motor vehicle designed, exclusively or primarily, to haul other road vehicles which are not power-driven (mainly semi-trailers). Agricultural tractors are excluded.

Motorcycle: Two, or three-wheeled road motor vehicle not exceeding 400 kg (900 lb) of net weight. All such vehicles with a cylinder capacity of 50cc or over are included, as are those under 50cc which do not meet the definition of moped.

Moped: Two, or three-wheeled road motor vehicle which is fitted with an engine with less than 50cc and a maximum authorized design speed in accordance with national regulations.

The following Table 5.5 shows the vehicles fleet size by type of vehicle in African countries. Data derived from IRF, however, for the countries that there were not available data in this database, WHO reports of 2013 and 2015 were used. It is noted that the latest available data have been

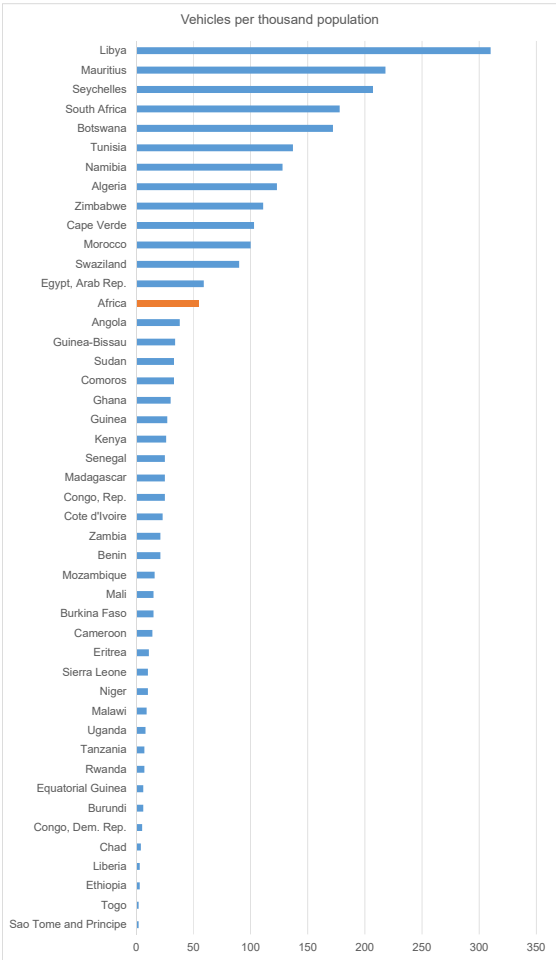
retrieved for each country; for 18 countries the latest available data refer to 2013 and 2014, while for 19 countries the data refer to 2007.

Country	Total (excl. 2-wheelers)	Total (incl. 2-wheelers)	Passenger car	Buses/ Motor coaches	Vans and Lorries	2-wheelers
Algeria	4.831.281	4.849.231	3.268.220	80.212	1.482.849	17.950
Egypt, Arab Rep.	5.283.436	7.648.443	4.107.362	130.565	1.045.509	2.365.007
Libya	1.790.003	1.826.534	1.388.165	91.327	310.511	36.531
Morocco	4.215.015	4.256.116	2.423.609	818.168	973.238	41.101
Sudan	1.080.000	1.116.000	768.000	12.000	300.000	36.000
Tunisia	1.489.051	1.496.967	1.033.891	18.409	436.751	7.916
Burundi	48.183	59.485	15.466		32.717	11.302
Comoros	21.035	22.378	19.245		1.790	1.343
Djibouti						
Eritrea	55.372	58.414	31.033	1.825	22.514	3.042
Ethiopia	236.929	244.257	70.834	17.098	148.997	7.328
Kenya	1.175.214	1.913.433	709.812	95.644	369.758	738.219
Madagascar	510.886	531.442	141.236	280.835	88.815	20.556
Malawi	119.600	130.000	53.300	6.500	59.800	10.400
Mauritius	274.920	462.771	225.522	4.277	45.121	187.851
Mozambique	422.070	480.981	303.711	103.564	14.795	58.911
Rwanda	76.039	151.056	47.468	7.073	21.498	75.017
Seychelles	18.958	19.198	15.476	475	3.007	240
Somalia	56.000	56.760	56.000			760
South Sudan						
Tanzania	302.632	380.003	171.821	27.200	103.611	77.371
Uganda	253.536	545.799	96.575	63.789	93.172	292.263
Zambia	264.505	271.701	167.055	5.615	91.835	7.196
Zimbabwe	1.416.493	1.525.454	1.214.137	15.566	186.790	108.961
Angola	478.426	581.530	403.794	1.477	68.530	103.104
Cameroon	278.487	356.142	204.292	18.554	55.641	77.655
Central African Republic	4.490	4.781	3.736	304	450	291
Chad	57.140	120.176	18.867	3.278	34.995	63.036
Congo, Dem. Rep.	311.781					
Congo, Rep.	92.500	95.500	56.000	500	36.000	3.000
Equatorial Guinea	8.411	8.503	6.970	194	1.247	92
Gabon	195.000					
Sao Tome and Principe	345	1.150	305	3	37	805
Botswana	340.748	342.464	197.293	13.875	129.580	1.716
Lesotho		122.997				
Namibia	308.447	314.086	142.454	4.722	161.271	5.639
South Africa	9.634.224	10.002.253	6.620.822	350.572	2.662.830	368.029
Swaziland	102.125	105.607	52.223	8.124	41.778	3.482
Benin	186.080	201.680	149.310	1.114	35.656	15.600
Burkina Faso	271.200	1.792.248	179.832	10.296	81.072	1.521.048
Cape Verde	49.820	54.153	35.738	542	13.540	4.333
Cote d'Ivoire	410.252	447.448	314.165	17.512	78.575	37.196
Gambia	10.496	10.496	9.107	1.389		
Ghana	709.183	912.939	439.527	145.144	124.512	203.756
Guinea	27.016	33.943	26.609	38	369	6.927
Guinea-Bissau	51.834	56.770	42.222	289	9.323	4.936
Liberia	10.754	11.087	7.428	554	2.772	333
Mali	230.660	279.029	139.769	26.150	64.741	48.369
Mauritania		416.190				
Niger	187.197	296.696	146.990	8.515	31.692	109.499
Nigeria			4.560.000			3.040.000
Senegal	350.733	373.778	248.824	16.925	84.984	23.045
Sierra Leone	48.833	64.529	44.685	469	703	15.696
Togo	13.023	47.269	10.611	193	2.219	34.246

Sources: IRF database, WHO database

Table 5.5: Number of vehicles in use by country.

Based on the data above, the number of vehicles per thousand population was calculated, as shown in Figure 5.8. Despite the fact that the data do not refer to the same year and are not directly comparable, the following figure gives a picture of the motorization level in Africa, highlighting the clear differences that exist among the countries. 32 out of 45 countries have a vehicle rate lower than the average African rate (shown in red). Libya is the country with the highest vehicle rate (310 vehicles in use per thousand population), followed by Seychelles, Mauritius and South Africa, while the countries with the fewest vehicles per population are Sao Tome and Principe, Togo, Ethiopia and Liberia.

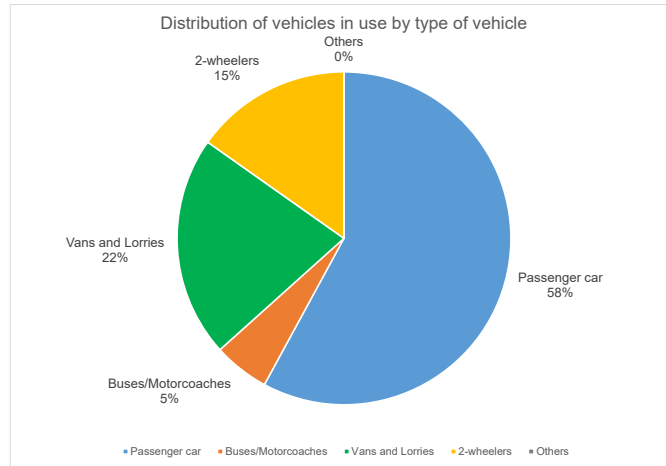


Sources: IRF database, WHO database

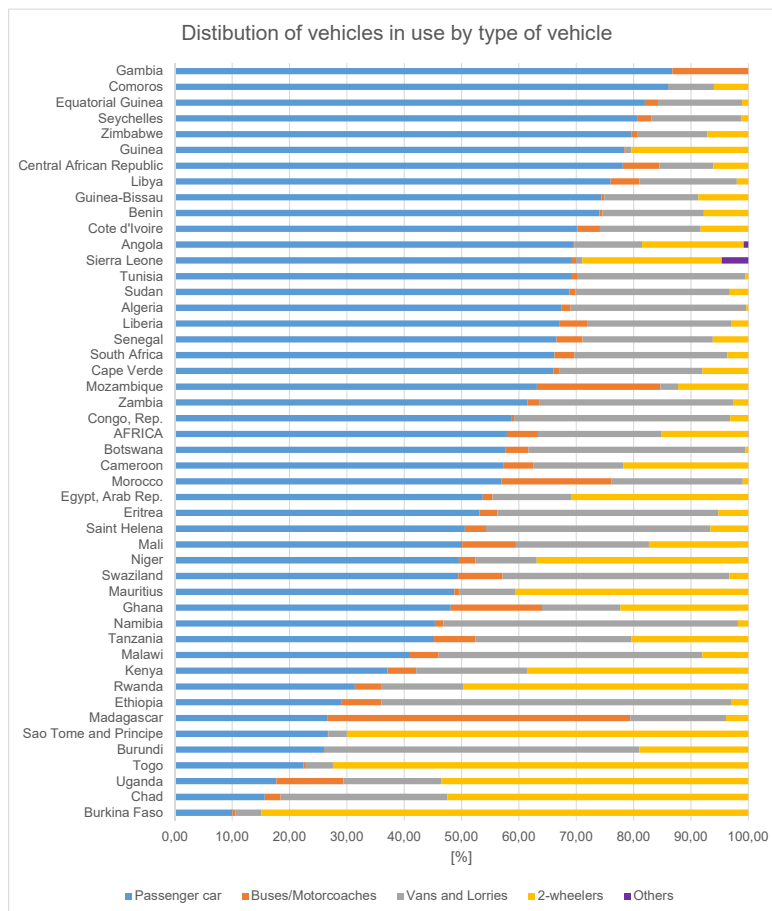
Figure 5.8: Number of vehicles in use per thousand population by country, 2013 or latest available year.

The distribution of vehicles in use in Africa is shown in Figure 5.9. About 60% of vehicles are passenger cars and 22% are vans and lorries. The motorized two-wheelers constitute 15% of the total vehicle fleet.

Figure 5.10 shows the distribution of the vehicles by type of vehicle, with the countries being sorted by the proportion of passenger cars. Gambia is the country with the highest proportion of passenger cars, while in Burkina Faso most vehicles in use are motorized two-wheelers.



Sources: IRF database, WHO database
 Figure 5.9: Distribution of vehicles by vehicle type in Africa.



Sources: IRF database, WHO database
 Figure 5.10: Distribution of vehicles in use by vehicle type and country, 2013 or latest available year.



5.3.3 Road Infrastructure

Data concerning the characteristics of the road network were explored in the IRF database. The following indicators are available with their respective definitions:

Total Road Network: Kilometre length of the road network. The road network includes “all roads in a given area”.

Motorways: Kilometre 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 tramway track, or footpath;

(c) is especially 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.

Urban motorways are also included.

Paved roads: Length of all roads that are surfaced with crushed stone (macadam) and hydrocarbon binder or bituminized agents, with concrete or with cobblestones, expressed in km.

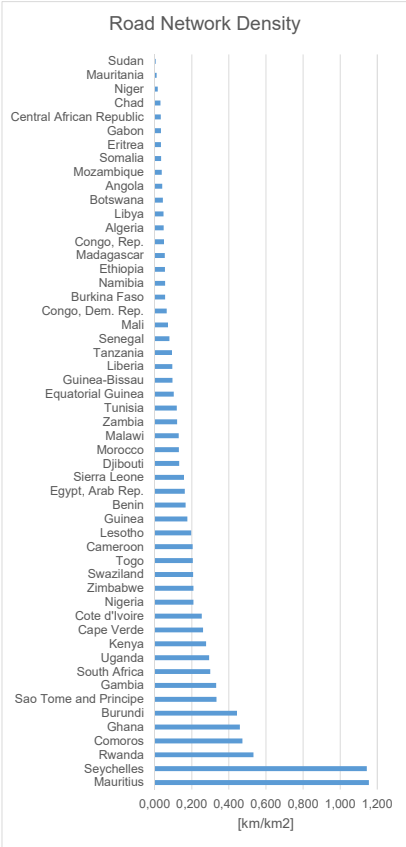
In Table 5.6, the main characteristics of the road network are presented by country, i.e. the length of the road network, the road network density (i.e. the total road length divided by the land area of the country) the proportion of motorways and the proportion of paved roads. For each country, data for the latest available year have been collected with the most common year being 2000. Only 19 countries have provided IRF with data referring to 2010 and later.

Country	Road network [km]	Road Network Density [km/km ²]	Motorways (%)	Paved Roads (%)	Year of data
Algeria	113.655	0,048		77,08	2010
Egypt, Arab Rep.	163.070	0,163		95,18	2014
Libya	83.200	0,047		57,20	2000
Morocco	58.698	0,131	2,38	70,56	2011
Sudan	11.900	0,005		36,30	2000
Tunisia	19.440	0,119	1,83	77,62	2013
Burundi	12.322	0,443	0,00	10,44	2004
Comoros	880	0,473		76,50	2000
Djibouti	3.065	0,132		45,00	2000
Eritrea	4.010	0,034		21,80	2000
Ethiopia	60.466	0,055		23,51	2014
Kenya	160.904	0,277		8,15	2013
Madagascar	31.640	0,054		21,91	2013
Malawi	15.451	0,130		26,36	2010
Mauritius	2.356	1,155	4,202	98,30	2014
Mozambique	30.331	0,038		20,78	2012
Rwanda	14.008	0,532	0,00	19,00	2004
Seychelles	526	1,143		97,72	2014
Somalia	22.100	0,035		11,80	2000
South Sudan					
Tanzania	87.664	0,093		10,03	2014
Uganda	70.746	0,293	0,00	23,00	2003
Zambia	91.440	0,121	0,00	22,00	2001
Zimbabwe	81.601	0,209			2012
Angola	51.429	0,041	0,00	10,40	2001
Cameroon	97.121	0,204		5,97	2013
Central African Republic	20.278	0,033		6,84	2010
Chad	40.000	0,031			2006
Congo, Dem. Rep.	153.497	0,065	0,00	1,82	2004
Congo, Rep.	17.000	0,050		7,13	2009
Equatorial Guinea	2.880	0,103			2000
Gabon	9.170	0,034		11,97	2007
Sao Tome and Principe	320	0,333		68,10	2000
Botswana	25.798	0,044		32,60	2005
Lesotho	5.940	0,196	0	18,30	2000
Namibia	46.378	0,056		15,45	2014
South Africa	364.131	0,299	0,07	17,30	2001
Swaziland	3.594	0,207	0	29,99	2002
Benin	19.000	0,166		9,50	2004
Burkina Faso	15.304	0,056		23,80	2014
Cape Verde	1.046	0,260			2013
Cote d'Ivoire	81.996	0,254	0,17	7,93	2007
Gambia	3.742	0,331	0	19,32	2004
Ghana	109.515	0,459		12,59	2009
Guinea	43.348	0,176			2012
Guinea-Bissau	3.455	0,096		27,94	2002
Liberia	10.600	0,095		6,20	2000
Mali	89.024	0,072	0,00	6,98	2013
Mauritania	11.790	0,011		36,12	2012
Niger	19.710	0,016		21,44	2013
Nigeria	193.200	0,209	0,00	15,00	2004
Senegal	15.609	0,079		35,90	2013
Sierra Leone	11.300	0,158	0,00	8,00	2002
Togo	11.652	0,205	0	21,00	2007

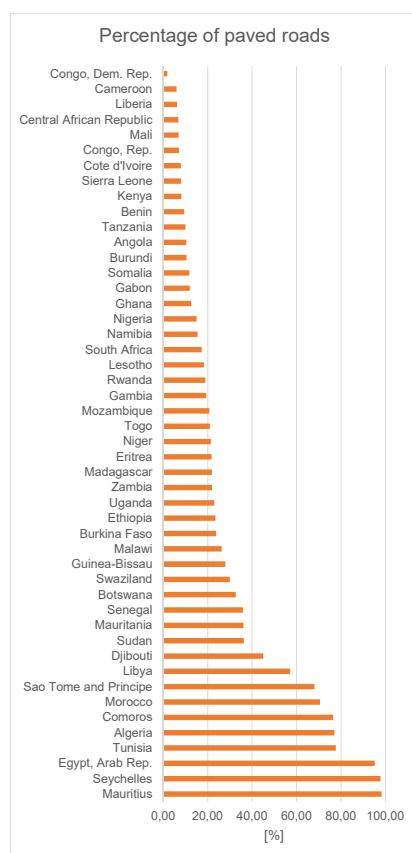
Source: IRF database

Table 5.6: Main characteristics of road network by country.

As shown in Figure 5.11, among the large countries, Sudan, Mauritania and Niger have the lowest road network density, while South Africa, Kenya and Nigeria have the densest road network. In addition, Egypt, Tunisia and Algeria have the highest proportion of paved roads, while the Democratic Republic of Congo has the lowest proportion (Figure 5.12).



Source: IRF database
 Figure 5.11: Road network density (km/km²) by country.



Source: IRF database

Figure 5.12: Percentage of paved roads of total road network by country.

5.4 Road Safety Performance Indicators

Data on road safety performance indicators are limited and especially for the African region. In the context of the SaferAfrica project, the related data were collected from the WHO database and concern road users' behaviour and more specifically the use of safety devices. The following indicators are available in the WHO database:

- Total seat-belt use rate
- Driver seat-belt use rate
- Front seat-belt use rate
- Rear seat-belt use rate
- Total helmet use rate
- Driver helmet use rate
- Passenger helmet use rate

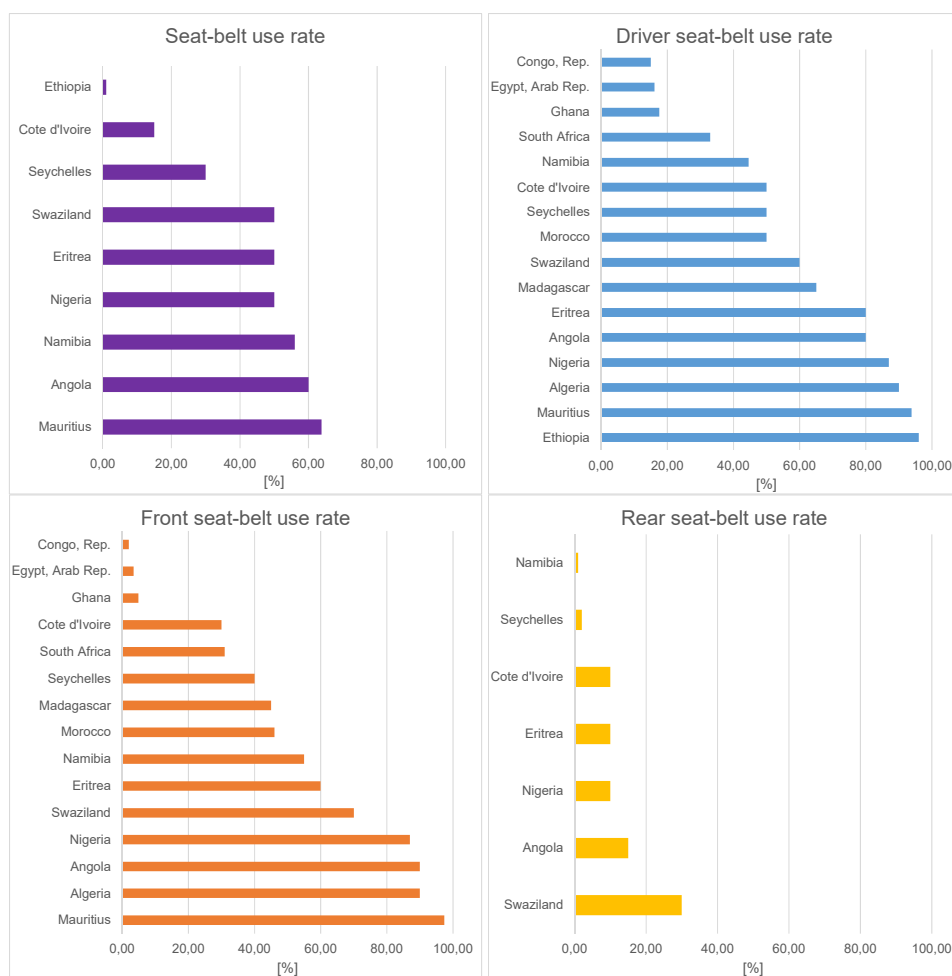
The aforementioned data were collected by the WHO via the questionnaires given to the country representatives and were included in the reports only when a published source was indicated. However, the stratified rates may not refer to the same year nor come from the same source.

Sixteen countries have only data on the use of seat-belts for drivers and for the front seats in general (Table 5.7), while total use rates and use rates for rear occupants are available only for 9 and 7 countries respectively (Figure 5.13).

Country	Total	Driver	Front seats	Rear seats
Algeria		90	90	
Egypt, Arab Rep.		16	4	
Morocco		50	46	
Eritrea	50	80	60	10
Ethiopia	1	96		
Madagascar		65	45	
Mauritius	64	94	97	0
Seychelles	30	50	40	2
Angola	60	80	90	15
Congo, Rep.		15	2	0
South Africa		33	31	
Swaziland	50	60	70	30
Cote d'Ivoire	15	50	30	10
Ghana		18	5	
Namibia	56	45	55	1
Nigeria	50	87	87	10

Source: WHO database

Table 5.7: Seat-belt use rates (%) by country, 2013.



Source: WHO database

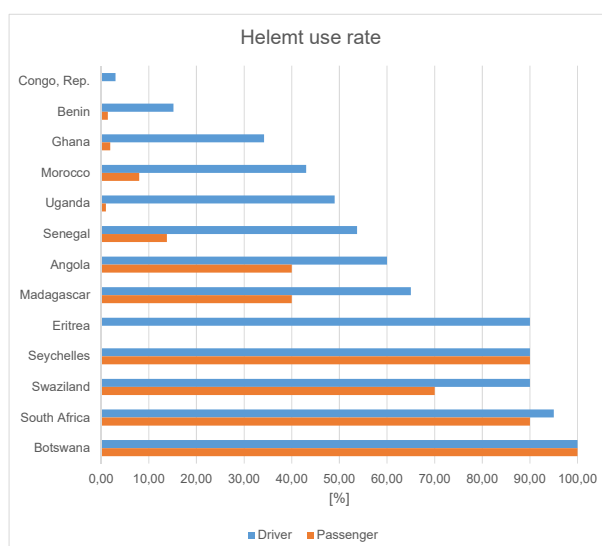
Figure 5.13: Seat-belt use rates by country.

As far as the use of a helmet is concerned, only 16 countries have provided the related data (Table 5.8); 12 of which have also disaggregated the data by user type. In Figure 5.14, the helmet use rates are shown, with the countries being sorted according to the drivers' use rates. In Eritrea, Seychelles, Swaziland, South Africa and Botswana the use rates for drivers are above 90%. The lowest proportion is recorded in the Democratic Republic of Congo. The rates for the passengers are lower than those for drivers, except Seychelles and Botswana.

Country	Total	Driver	Passenger
Morocco		43	8
Eritrea	95	90	
Madagascar		65	40
Seychelles		90	90
Uganda		49	1
Angola		60	40
Congo, Rep.		3	0
Botswana		100	100
Namibia	12		
South Africa		96	90
Swaziland		90	70
Benin		15	1
Burkina Faso	9		
Ghana		34	2
Mali	18		
Senegal		54	14

Source: WHO database

Table 5.8: Helmet use rates (%) by country, 2013.




Source: WHO database

Figure 5.14: Driver and passenger helmet use rates by country, 2013.

5.5 Comparative Analysis and Synthesis

The present section was oriented in the review of the international data sources in order to exploit existing road safety data for African countries. The **main international databases** explored for that



purpose were the International Road Federation (IRF) and the World Health Organisation (WHO), with emphasis on the following types of data: road accident data, exposure data and road safety performance indicators.

The first issue coming up from the review concerns the **availability of data** for the African countries. Only few countries have full time series of road fatality data and especially for the latest available decade 2005-2014, only 21 African countries have available data for more than 5 years. The greatest lack in data concerns risk exposure and safety performance indicators, for which few countries have collected such data.

A second issue concerns the **comparability of the data** and the potential of using different databases in a complementary way. Concerning the fatality data, the review revealed that different definitions are used among the countries. The WHO provides the primary data as received by the national sources in the country profiles of the reports, which adjust them to the 30-days definition and publish them in the statistical tables. However, these data are not directly comparable because of differences in the quality of data collection process among the countries. In order to take into account under-reporting issues and achieve comparability, the WHO has developed statistical models to estimate the number of fatalities. In addition, the comparison of the two databases showed that while the IRF uses the 30-days definition for the killed persons in road accidents, the data that are published are those reported by the national sources, which have different definitions. Thus, data cannot be comparable among the countries, without being processed firstly, and caution is needed when combining the two databases.

Concerning the data on **exposure and road safety performance indicators**, the comparability of the countries with available data is not totally reliable, since the data refer to different years, with a difference of more than 10 years in some cases (e.g. road network density). Moreover, there is not much information on the collection methods which is needed to ensure an appropriate comparison.

However, the available data that are presented in tables and related figures were made in order to obtain an approximate picture of the road safety situation in African countries. There are clear differences in the road safety performance of the countries in terms of road safety outcomes, which are also obvious when examining the motorization level or the characteristics of the road infrastructure of the countries. However, the lack of data on road safety performance and traffic exposure do not allow to reliable conclusions to be drawn.

6 Pilot Study

6.1 General


The objective of the pilot study is to investigate for African countries the **effects of current practice in managing road safety data upon data quality and data accuracy**. This existing performance and capacity assessment in terms of handling data, data collection procedures and definitions is carried out for certain representative African countries, which contributed in the extensive questionnaire and were selected based on the following **criteria**:

- Regional and cultural coverage
An effort was made for the countries to be widespread across Africa in order to have a more extensive view of the continent as a whole.
- Cross checked responses
From certain countries the replies to the extensive questionnaire were provided by more than one stakeholder. Therefore, in order to improve the quality as well as the accuracy of the replies, where possible, such countries were preferred.
- Position of the respondent
In many cases the respondents held a key public position in the examined country's road safety policy and were conversant of the actual situation. Such countries were favoured as well.
- Adequate completion of the survey
Certain countries delivered replies in more fields and in general revealed a more complete way in providing data collection practices and definitions.

The selected countries by region are shown through Table 6.1. The following sections outline the survey results in terms of road safety data, data collection procedures and definitions per selected country.

Selected Country	Region	Questioned Stakeholder	
		Organization	Position
Tunisia	North	Technical Agency for Land Transport	Director
Burkina Faso	West	Automobile Vehicle Control Center	Director
		Road Safety Planning and Promotion at the National Board of Road Safety	Director
Malawi	East	Directorate of Road Traffic & Safety Services	Principal road Traffic Officer
Cameroon	Central	Ministry of Public Works	Engineer
		Ministry of Transport	Captain
South Africa	South	Vehicle Testing Station Operations	Managing Director

Table 6.1: Selected countries for the pilot study.



In every case it should once more be reminded that the results described in the following sections are based on experts' opinions and views, not concrete data, and therefore, should be treated as such.


6.2 Tunisia

As reported through the extensive questionnaire, sustainable systems to collect and manage data on road accidents, fatalities and injuries are in place in Tunisia. Moreover, at the same time the National Road Safety Observatory is centralizing the data systems for road safety and includes data on accidents, fatalities and injuries, behavioural indicators, exposure data, and violations – fines. Benchmarking is also used to monitor progress in the road safety status. A reporting process has been setup to monitor road safety interventions across the country which is not linked to intermediate phases of the road safety programme and applies to planning and engineering interventions in urban areas, enforcement, road safety campaigns, driver training and vehicle related measures. Besides other quantitative targets, safety performance indicators are utilized as well to assess safety performances of the country's road safety programme. Vehicle speeds as well as alcohol impaired driving are used as behavioural indicators.

Common definitions for fatalities, serious injuries and work related accidents are highly prioritized and currently available, excluding the latter which are partially available. The data on the underreporting of road accidents are classified as a medium priority and no further information is provided on their availability as well as the priority and availability ratings regarding accident databases that link data from the Police and the hospitals. Information on road users' behaviour and attitudes, socio-economic cost of accidents, as well as exposure data regarding fatalities and injuries are partially available.

6.3 Burkina Faso

Burkina Faso utilizes data from road accident databases, travel-mobility surveys as well as other exposure databases (e.g. number of vehicles). Sustainable systems to collect and manage data on road accidents, fatalities and injuries but also reliable in-depth accident investigations for road safety purposes are both not in place at present. A national Observatory centralizing the data systems for road safety is available and includes data for all the questioned aspects (accidents, fatalities and injuries, in-depth accident investigations, behavioural indicators, exposure (traffic), violations or fines and driver licensing). A reporting process to monitor road safety interventions across the country has been setup for which the information is addressed to the lead agency, the government, the parliament, as well as every questioned institution. The reporting process is periodical, and applies to areas related to engineering interventions. However, the actions taken on the basis of this process are mostly concentrated to limited changes in the action programme and in training. Benchmarking is also used to monitor road safety progress. The control of safety interventions in order not to generate undesired side effects (process evaluation), is addressed on all intervention areas and performed through observations – surveys by certain working ministerial groups. Such results are available to all stakeholders and may lead to both partial changes in the action programme or to improvement of the implementation conditions. An evaluation process to assess the effects on accidents and injuries or socio-economic costs of certain policy components although in place, is not actually performed. A reliable system to collect and manage data on behavioural indicators is not in place.




Common definitions for fatalities, serious injuries and work related accidents are appreciated and also available at present in Burkina Faso. Data regarding the underreporting of road accidents as well as relevant databases that link Police and the hospitals are highly prioritized but only data on the underreporting of road accidents are currently available. Results from in-depth accident investigations are once again highly appreciated but only partially available. A common methodology for identifying high risk sites and performing in-depth accident analysis are of partial availability and classified as high in terms of priority. Tools for simulating road user behaviour are not currently available, although are a high priority for the questioned stakeholders. Detailed data on the costs of road safety measures don't seem to be available. Digital road mapping of accidents is of medium priority and partially available. Information on road users' behaviour and attitudes, accident causation factors and socio-economic cost of accidents, as well as exposure data regarding fatalities and injuries are of high priority but partially available in general excluding information on socio-economic cost of accidents which is not available. Finally, information related to road safety from the road infrastructure point of view (audits, inspections, road layouts, etc.) seem to be of medium priority and partially available.

6.4 Malawi

Malawi utilizes information from road accident databases. Sustainable and reliable systems to collect and manage data on road accidents, fatalities and injuries as well as in-depth accident investigations for road safety purposes are also in place. A national Observatory, integrating data systems for road safety, is also available and includes data for accidents, fatalities and injuries, in-depth accident investigations, violations or fines, driver licensing as well as vehicle registration aspects. A reporting process to monitor road safety interventions across Malawi has been setup which is linked to intermediate phases of the road safety programme and applies to certain areas of interventions such as enforcement, education, campaigns, driver training and vehicle related measures. The information of this reporting process is addressed to the lead agency and is implemented to cover activities at the regional and/or local level, where the relevant actions are mostly related to limited changes in the action programme as well as in training. The process evaluation of safety interventions during the implementation period of the programme addresses mainly road safety campaigns.

Common definitions for fatalities, serious injuries and work related accidents are highly prioritized and also currently available. Data regarding the underreporting of road accidents as well as relevant databases that link Police and the hospitals are highly prioritized but also unavailable. Results from in-depth accident investigations, naturalistic driving and driving simulator studies, although once again highly appreciated, are either partially available or unavailable. Common methodologies for identifying high risk sites and for performing in-depth accident analysis are classified high in terms of priority but at the same time they are unavailable and available respectively. Tools for simulating road user behaviour as well as detailed data on the costs of road safety measures are not currently available, although once again highly prioritized. The same applies for the utilization of modern technologies (GPS/GIS systems and digital road maps) for the investigation and collection of accident data. Data on socio-economic cost of accidents, fatalities and injuries, exposure data, road users' behaviour and attitudes, as well as accident causation factors, are of high priority but not available at present time, excluding the latter (accident causation factors) the information for which is partially available. Finally, information related to road safety audits – inspections as well as



databases on road layouts, signing, etc. seems not available but of high and medium priority respectively.

6.5 Cameroon

Data from road accident databases, travel-mobility surveys as well as other exposure databases (e.g. number of vehicles) are utilized in Cameroon. Sustainable and reliable systems to collect and manage data on road accidents, fatalities and injuries as well as in-depth accident investigations for road safety purposes are also in place. A national Observatory centralizing data systems for road safety is also used and includes data for accidents, fatalities and injuries, in-depth accident investigations, behavioural indicators, exposure, violations or fines, driver licensing and vehicle registration issues. There is a reporting process in place for monitoring road safety interventions. It is delivered by the authorities, and addresses implementation of the legal changes required as well as identifying needs for programme modification. It is performed both at national as well as regional level and the collected data are addressed to both governmental as well as inter-sectoral decision making road safety higher level stakeholders. The relevant actions on the basis of the outcomes of this information are mostly related to limited changes in the action programme, allocation of funds or human resources as well as in training. A sustainable system to collect and manage data on behavioural indicators is in place and includes data on vehicle speeds, safety belt wearing rates and alcohol impaired driving. The process evaluation of safety interventions during the implementation period of the programme addresses all intervention areas and involves performance indicators, observations and/or field surveys or measurements. Such results are available to all stakeholders and may lead either to partial changes in the action programme or improvements regarding the implementation conditions. A reliable system to collect and manage data on behavioural indicators is in place and includes data on vehicle speeds, safety belt wearing rates and alcohol impaired driving.

Although common definitions for fatalities, serious injuries and work related accidents are currently available in Cameroon, excluding fatalities definitions which are highly prioritized, definitions for serious injuries and work related accidents are of medium priority. An uncertainty seems to exist regarding data on the underreporting of road accidents. However, databases that link Police and the hospitals are highly prioritized but also available. The same vagueness is also noticed on results from in-depth accident investigations, naturalistic driving and driving simulator studies. A common methodology for identifying high risk sites is highly prioritized and also available. Methodologies for performing in-depth accident analysis are not relevant to the work of the respondents and therefore, their availability is unknown. Tools for simulating road user behaviour and detailed data on the costs of road safety measures are of medium and low priority respectively and at the same time not available. Data regarding the utilization of modern technologies (GPS/GIS systems) are once again not relevant to the work of the respondents, where the usage of digital road maps for mapping accidents are highly prioritized but unavailable. Information on road users' behaviour and attitudes, accident causation factors and socio-economic cost of accidents, fatalities and injuries are of high priority and currently available, excluding information on socio-economic cost of accidents which is partially available. The existence on information regarding exposure data is uncertain. Information related to road safety audits – inspections are of high priority but partially available, and once more no information is provided on the existence of databases for road layouts, signing, etc.



6.6 South Africa

South Africa utilizes data from road accident databases as well as other exposure databases (e.g. number of vehicles). Sustainable and reliable systems to collect and manage data on road accidents, fatalities and injuries are in place at both national and regional levels. A national Observatory centralizing data systems for road safety is also available and includes data for accidents, fatalities and injuries, violations or fines, driver licensing and vehicle registration aspects. A reporting process to monitor road safety interventions has been set up which is periodical and applies to certain areas of interventions such as enforcement, education, campaigns, driver training and vehicle related measures. The information from this process, which is performed both at national and regional level, is addressed to stakeholders from the lead agency and the government. Actions on the basis of the outcomes of this information are mostly related to allocation of funds or human resources as well as in training. Benchmarking is also used to monitor road safety progress. A reliable system to collect and manage data on behavioural indicators is in place and includes data on vehicle speeds, safety belt wearing rates and alcohol impaired driving.

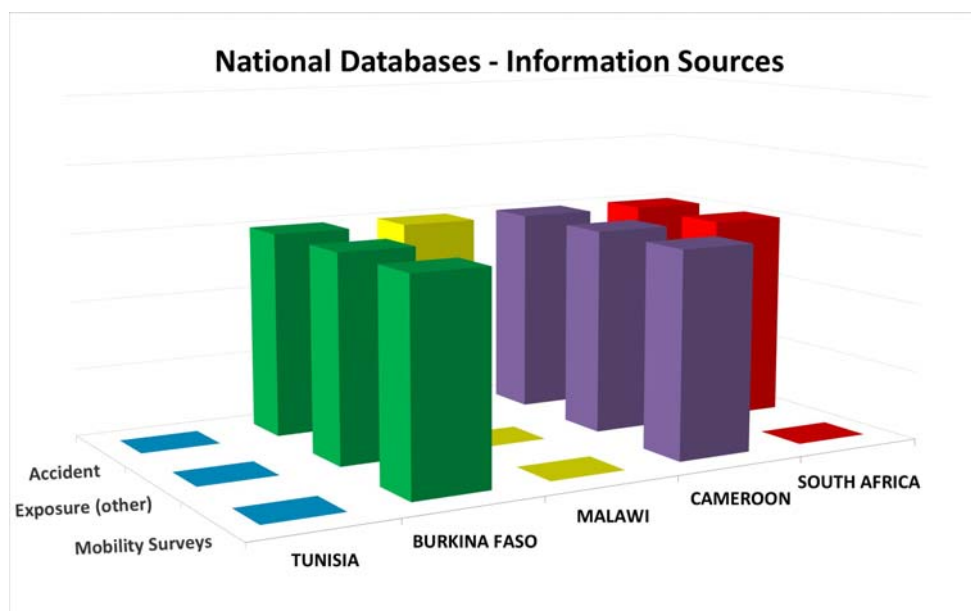
A common definition for fatalities in South Africa is of high priority but partially available at present. On the other hand, a common definition for serious injuries is of medium priority and not available, where no information is provided for defining work related accidents. The existence of data regarding the underreporting of road accidents is highly prioritized but the availability of such information is unknown. Databases that link Police and hospital data are not relevant to the respondent's work priorities and are currently not available in South Africa. Results from in-depth accident investigations are highly appreciated but not available, where results from naturalistic driving studies are available although once again not relevant to the respondent's work. As far as results from driving simulator studies are concerned, they are of low priority and not available. The existence of common methodologies for identifying high risk sites is uncertain in terms of priority but currently available, where common methodologies for in-depth accident analysis are of medium priority and partially available. Tools for simulating road user behaviour are low in terms of priority and partially available. Detailed data on the costs of road safety measures are irrelevant to the respondent's work but at the same time available. The same applies for the utilization of modern technologies (GPS/GIS systems) but such tools are partially available. On the other hand the usage of digital road maps for mapping accidents is of medium priority and fully available. Information on road users' behaviour and attitudes and accident causation factors are highly prioritized and partially available. Data on socio-economic cost of accidents, fatalities and injuries are of medium priority and currently not available. The existence on information regarding exposure data is uncertain. Information related to road safety audits – inspections are once again of medium priority and partially available, and no information in terms of priority rating is provided on the existence of databases for road layouts, signing, etc. although they seem to be partially available.

6.7 Comparative Analysis and Synthesis

The data collection practices from the road safety monitoring and evaluation points of view are addressed in various ways. The following paragraphs provide more details.

Excluding Tunisia where it is not clear, all the other examined countries utilize data from road accident databases. Moreover travel-mobility surveys are conducted in Burkina Faso and Cameroon. The same countries plus South Africa use also information from other exposure databases (e.g.

vehicle fleet). The utilization of the above national databases – information sources items are shown through Figure 6.1.

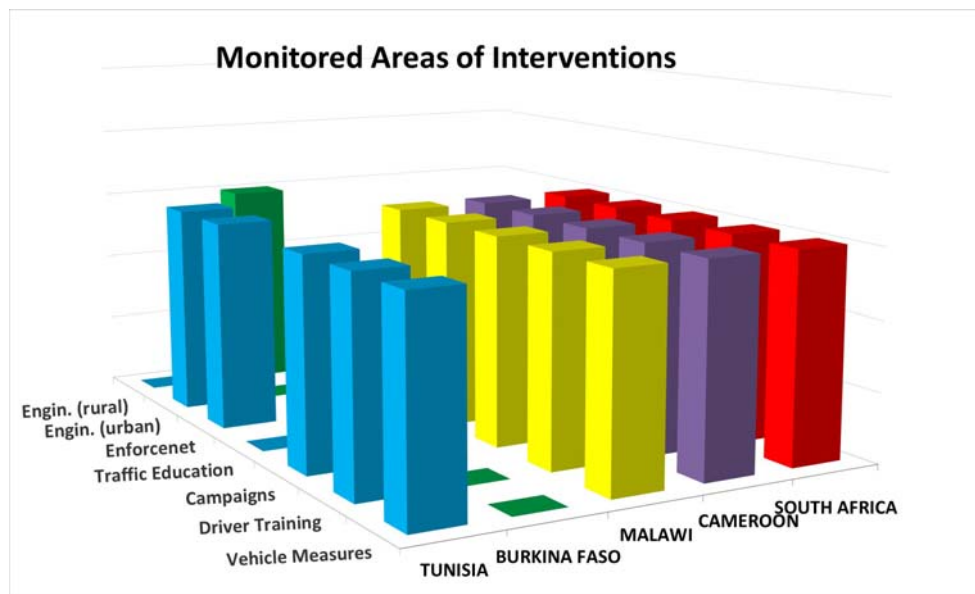


Note: The raised bars imply existence – utilization of the relevant item.

Figure 6.1: Utilization of national databases – information sources.

In-depth accident investigations are carried out in Malawi and Cameroon. According to the survey answers, a national Observatory centralizing the data systems for road safety is available in all pilot countries, including data for various questioned aspects per country (accidents, fatalities and injuries, in-depth accident investigations, behavioural indicators, exposure (traffic), violations or fines, driver licensing and vehicle registration). Benchmarking to monitor progress in road safety situation is utilized in Tunisia, Burkina Faso and South Africa.

A reporting procedure to monitor road safety interventions is available for all countries which is linked to intermediate phases of the national road safety program for Malawi, where for South Africa and Burkina Faso is periodical. Figure 6.2 shows the main areas of intervention it applies for, where it can be seen that almost all countries monitor enforcement, traffic education, road safety campaigns, driver training and vehicles related measures. Such monitoring process is performed at both national and local level for Cameroon and South Africa and at local/regional level for Malawi. For Burkina Faso, Malawi and South Africa this information, among other state organizations, is addressed to the lead agency and for Cameroon to governmental as well as inter-sectoral decision making road safety higher level stakeholders.



Note: The raised bars imply existence – utilization of the relevant item.

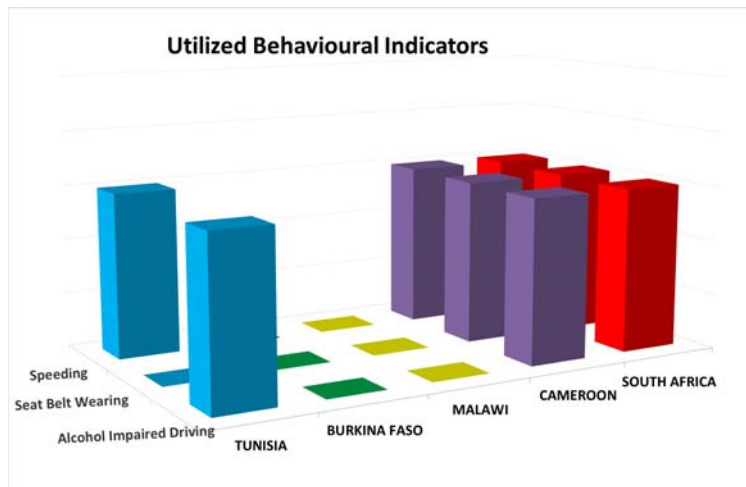
Figure 6.2: Main areas for monitoring road safety interventions.

For Burkina Faso, Malawi and Cameroon a “process evaluation” of safety interventions is in place during the implementation period of a road safety programme for which the evaluation for interventions addresses all areas in Burkina Faso and Cameroon, and mainly road safety campaigns in Malawi. Moreover, in Burkina Faso and Cameroon this “process evaluation” is performed through observations – surveys by certain working ministerial groups. Such results are available to all stakeholders and may lead to an improvement of the implementation conditions, or partial changes in the action programme (Burkina Faso).

An evaluation process to assess the effects on accidents and injuries or socio-economic costs of certain policy components is in place only in Burkina Faso, but actually is not performed.

Exposure indicators were found in the examined countries’ national observatories, where Tunisia, Burkina Faso and Cameroon seem to include exposure data in their national road safety observatories.

For Tunisia, besides other quantitative targets, safety performance indicators are utilized as well to assess safety performances of the country’s road safety programme. In Tunisia, Cameroon and South Africa there is a sustainable system in place for the collection and management of data on behavioural indicators. The utilized behavioural indicators per country are shown through Figure 6.3.



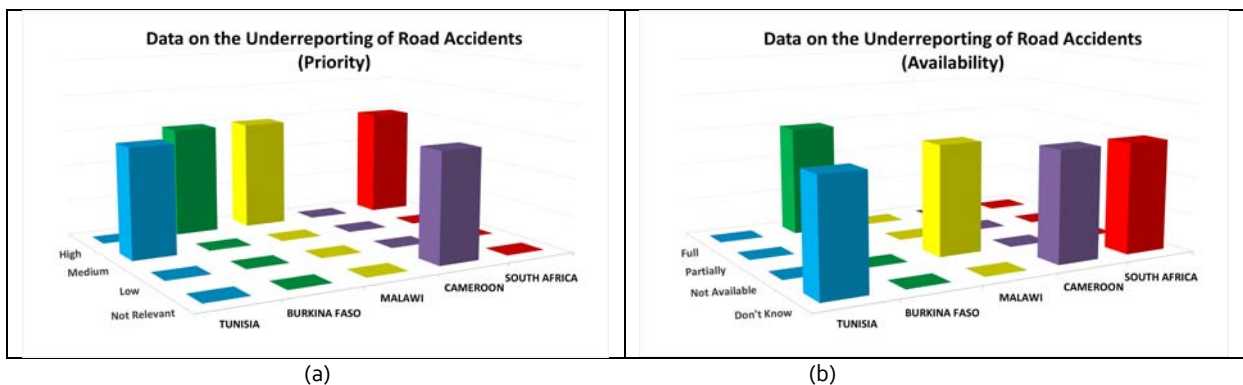
Note: The raised bars imply existence – utilization of the relevant item.

Figure 6.3: Utilized behavioural indicators.

The overview of the stakeholders' priority and availability levels for road safety definitions has shown that in many cases although certain information seems important, its availability is partial or even non-existent. The following paragraphs describe in more detail these ratings for the selected pilot countries.

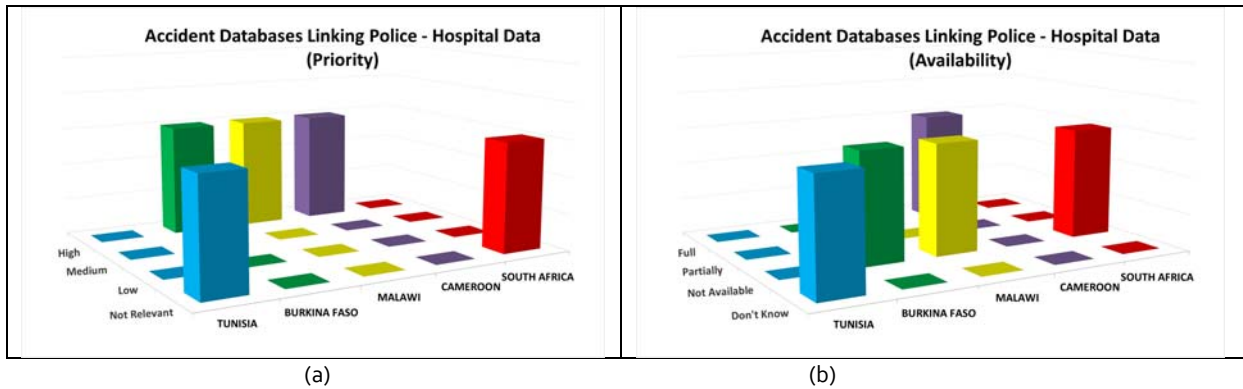
Common definitions for fatalities, serious injuries and work related accidents are in general highly prioritized. Such information is currently available, excluding South Africa (common definitions for fatalities: partly available; common definitions for serious injuries: not available; no information on common definitions for work related accidents) and Tunisia (common definitions for work related accidents: partially available).

Information regarding the underreporting of road accidents is highly appreciated but only in Burkina Faso are such data available (Figure 6.4). On the other hand, relevant databases that link Police and the hospitals are highly prioritized but not actually available in most countries (Burkina Faso, Malawi and South Africa), excluding Cameroon.



Note: The raised bars imply existence – utilization of the relevant item.

Figure 6.4: Data on the underreporting of road accidents [(a): priority, (b): availability].

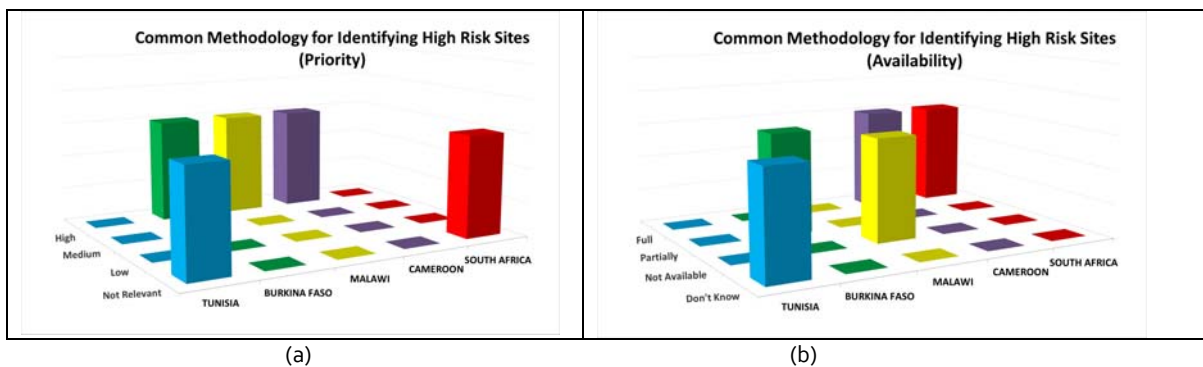


Note: The raised bars imply existence – utilization of the relevant item.

Figure 6.5: Accident databases linking Police – hospital data [(a): priority, (b): availability].

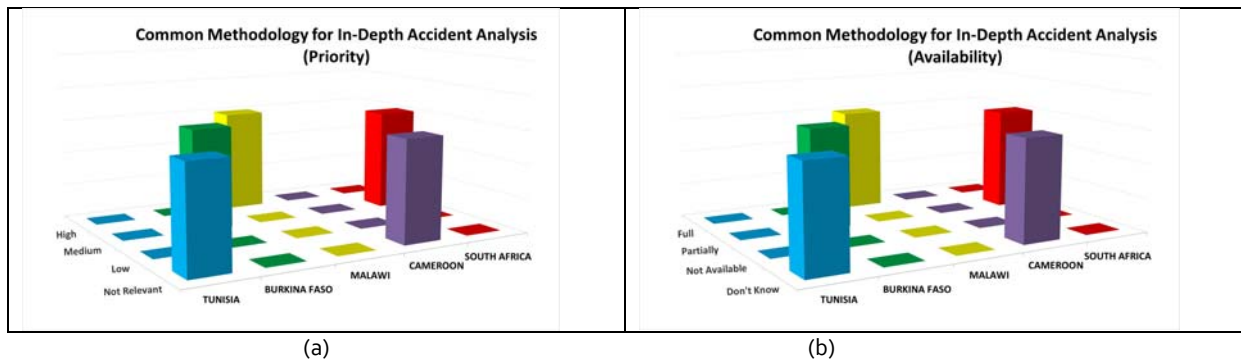
Results from in-depth accident investigations, naturalistic driving and data from driving simulators, are of high priority in Malawi and Burkina Faso (data from in-depth accident investigations highly prioritized also in South Africa). However, their availability is either partial in the first two countries and either non-existent or uncertain in the remaining.

The countries' replies on the existence of common methodologies for identifying high risk sites and performing in-depth accident analysis are shown in Figure 6.6 and Figure 6.7, where it can be seen that such availability (full or partial) is found in South Africa and Burkina Faso, Cameroon (regarding high risk sites) and Malawi (regarding in-depth accident analyses).



Note: The raised bars imply existence – utilization of the relevant item.

Figure 6.6: Common methodologies for identifying high risk sites [(a): priority, (b): availability].



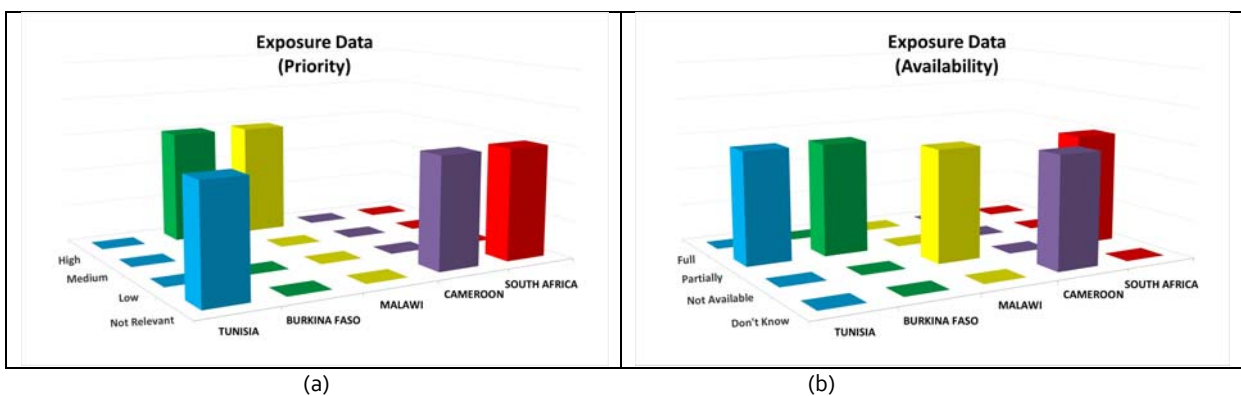
Note: The raised bars imply existence – utilization of the relevant item.

Figure 6.7: Common methodologies for in-depth accident analysis [(a): priority, (b): availability].

Tools for simulating road user behaviour and detailed data regarding the costs of road safety measures were found to be partially available and available respectively only in South Africa. For Burkina Faso, Malawi and Cameroon such information although a priority, is not available to the responded stakeholders.

The utilization of modern technologies (GPS/GIS systems and digital road maps) for the investigation and collection of accident data as well as digital road mapping of accidents are partially available and available respectively only in South Africa, where in Burkina Faso such availability (partial) is noticed only for the latter case.

Information on exposure data per country are shown through Figure 6.8, where it can be seen that although highly appreciated by Burkina Faso and Malawi, such information are partially available only in Tunisia and Burkina Faso.

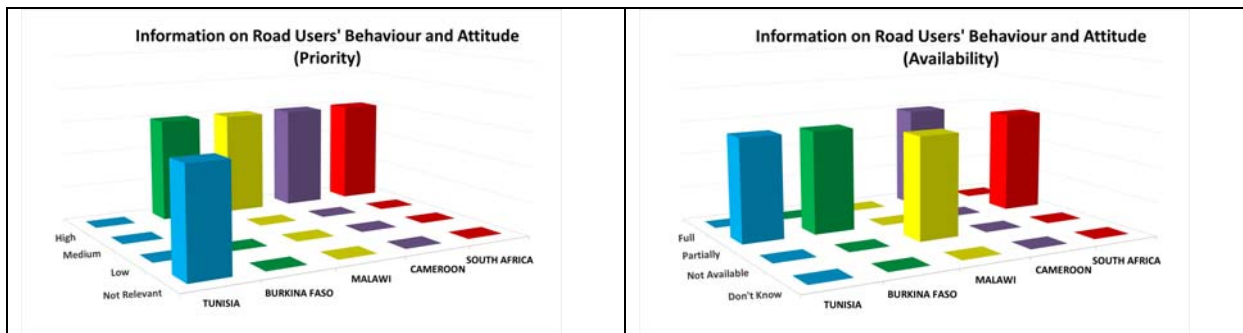


Note: The raised bars imply existence – utilization of the relevant item.

Figure 6.8: Exposure data [(a): priority, (b): availability].

Information on road users' behaviour and attitudes, accident causation factors and socio-economic cost of accidents for each examined country are shown through Figure 6.9, Figure 6.10 and Figure 6.11 respectively.

As seen through these figures, although all three aspects seem to be highly prioritized, not the same is noticed in terms of their availability. More specifically data on road users' behaviour and attitude is unavailable only for Malawi (Figure 6.9). The availability of information on accident causation factors is uncertain for Tunisia but available in Cameroon and partly available in the remaining countries (Figure 6.10). On the other hand, data on socio-economic cost of accidents seem to be less available for Tunisia and Cameroon but unavailable for Burkina Faso, Malawi and South Africa (Figure 6.11).

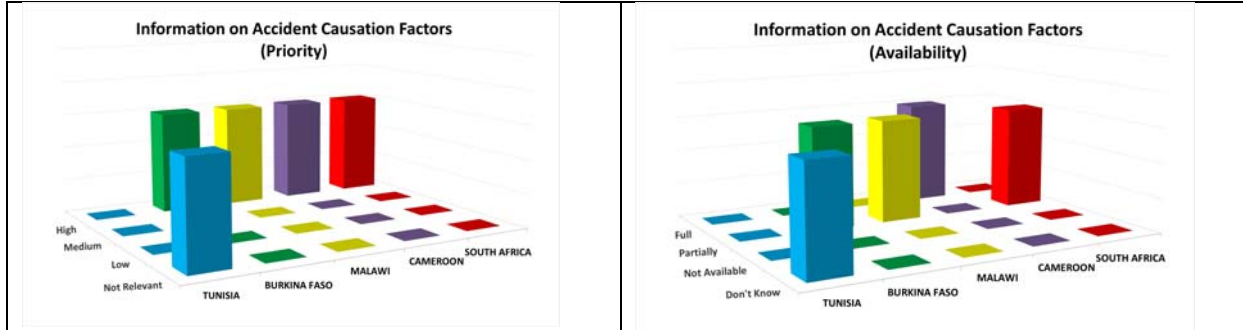


(a)

(b)

Note: The raised bars imply existence – utilization of the relevant item.

Figure 6.9: Information on road users' behaviour and attitudes [(a): priority, (b): availability].

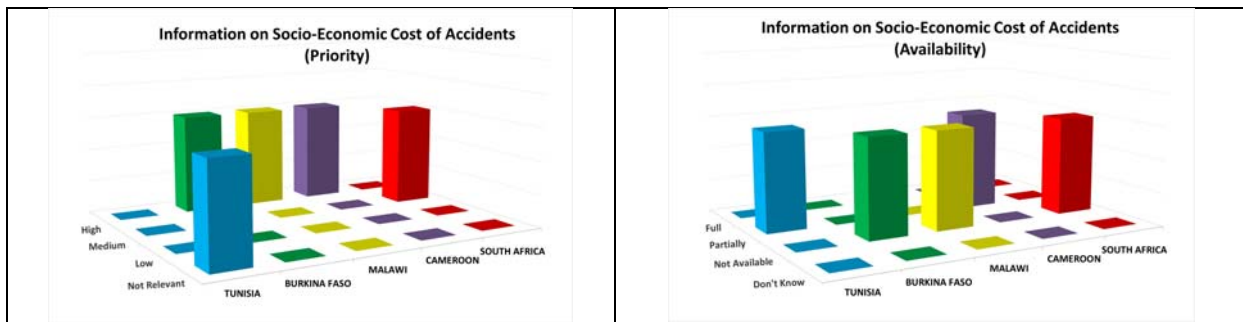


(a)

(b)

Note: The raised bars imply existence – utilization of the relevant item.

Figure 6.10: Information on accident causation factors [(a): priority, (b): availability].



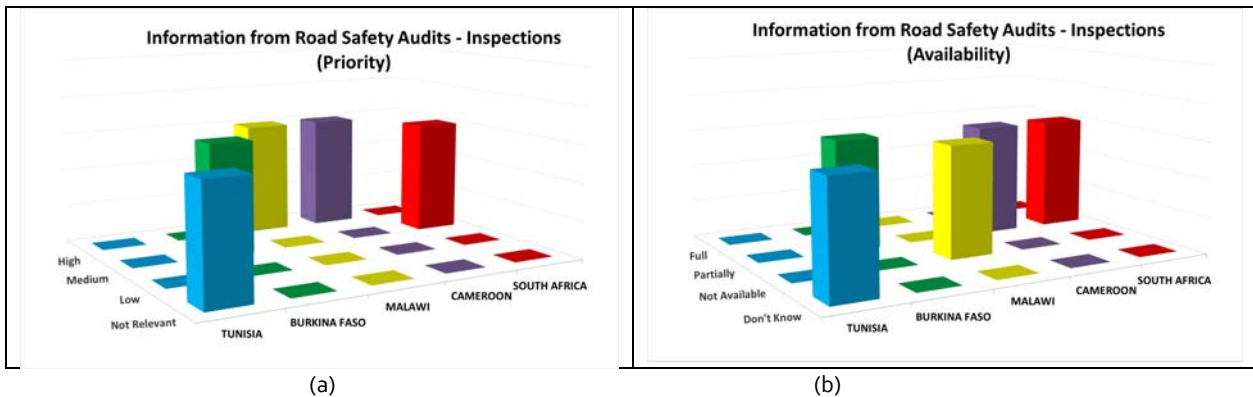
(a)

(b)

Note: The raised bars imply existence – utilization of the relevant item.

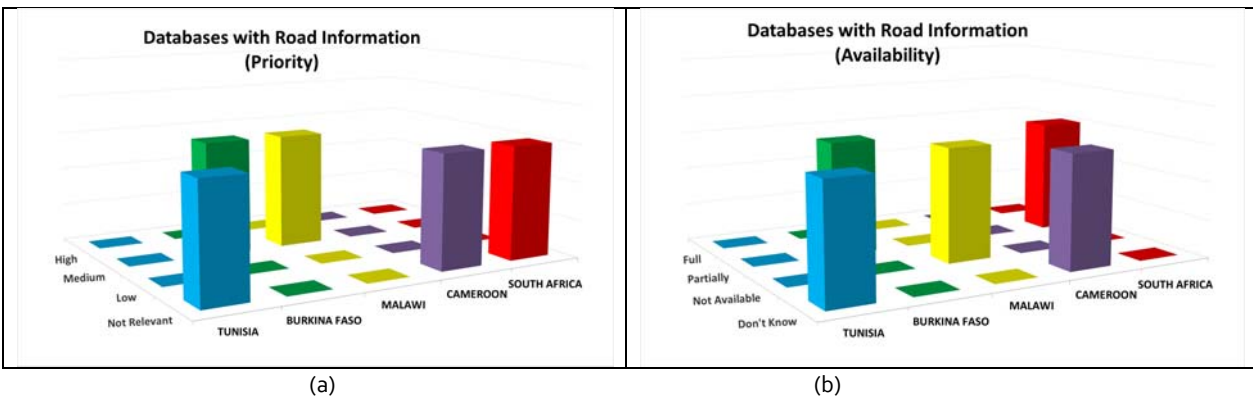
Figure 6.11: Information on socio-economic cost of accidents [(a): priority, (b): availability].

Finally, regarding the availability of information from the road infrastructure point of view (audits, inspections, road layouts, etc.) there seem to be different views by country. Specifically, data from road safety audits – inspections seem to be available (partially) only in Cameroon, Burkina Faso and South Africa (Figure 6.12), whilst road information databases seem to be partially available in Burkina Faso and once again in South Africa (Figure 6.13).



Note: The raised bars imply existence – utilization of the relevant item.

Figure 6.12: Information from road safety audits – inspections [(a): priority, (b): availability].



Note: The raised bars imply existence – utilization of the relevant item.

Figure 6.13: Road information databases [(a): priority, (b): availability].

For all the countries in the pilot study, besides the fact that sustainable systems to collect and manage data on road accidents, fatalities and injuries are in place, many differences are reported. The overview of the stakeholders' priority and availability levels for road safety definitions has shown that, in general, there seems to be a **gap** between the **existing** and the **available information**, where the latter seem to stay far behind. This significant demand for data and knowledge is essential in order to be used for road safety-related decision making.



7 Conclusions

7.1 General considerations

The examination of the existing situation regarding road safety data, data collection systems and definitions in African countries based on the survey results, provides some important insight on **deficiencies of current practices** which might partially explain poor road safety performance in these countries. Furthermore, in combination with the special characteristics of these countries, common deeper problems in structures and policies may be identified.

A number of the questioned issues for many African countries are **collected for the first time** and can be very useful to road safety decision-makers to take into consideration for future actions. In addition, identification of the specific problems may enhance participation of the African countries in road safety initiatives and undertaking a more active role which will promote their efforts towards the improvement of road safety in the area.


Due to the low number of answers to the two-fold surveys, the conclusions have to be confirmed in the future by in depth analysis and additional incoming questionnaires. **Future research** that would analyse the current situation in road safety data collection systems in more countries and with more participants is the key to better comprehend the existing problems and suggest the most appropriate interventions.

Based on the stakeholders' responses it was found that there is a **significant demand for data and knowledge** in order to be used for road safety-related decision making. Currently, such information is **poorly available** in African countries. This fact makes the work of road safety stakeholders difficult and therefore, their discontent was expressed. In several cases, it was found that stakeholders are not even aware of the availability status of items that they consider to be irrelevant to their work. Generally, stakeholders seem to be poorly informed about the availability of road safety data and tools.

7.2 Road Safety Data Collection Systems

The assessment of the existing road safety data collection systems in African countries revealed similarities but mostly **differences** since besides the existence of formal systems for recording road accidents for almost all countries, the data collection practices from the **road safety monitoring** and **evaluation** points of view are addressed in various ways.

Among the most important is the fact that **sustainable systems to collect and manage data** on road accidents, fatalities and injuries are in place for many but not all the examined countries. On the other hand, it was surprising to see that in-depth accident investigations for road safety purposes are conducted for approximately 40% of the countries. More or less, the same countries have a national observatory centralizing data systems for road safety as well as a reporting procedure to monitor road safety interventions. For about 35% of the countries there is a process for assessing the progress of the applied safety measures (process evaluation) in place during the implementation period of a road safety programme which is mainly addressing road safety campaigns.



Exposure indicators were found in the examined countries' national observatories, where 5 countries out of 10 seem to include exposure data in their national road safety observatories.

Approximately 50% of the examined countries have in place a sustainable system for the collection and management of data on **behavioural indicators** emphasizing on speeding and alcohol impaired driving. Safety belt wearing rates were found to be somehow lower. In general, apart from behavioural indicators, the countries utilizing safety performance indicators during a process evaluation seem to be no more than 4.

7.3 Road Safety Data Definitions

The assessment of the **needs and priorities of road safety data and information** to stakeholders in African countries is performed based on the responses in certain fields of the extensive questionnaire and specifically in the following sub-sections:

- Data and resources for fact finding and diagnosis of road safety issues
- Data and resources for the implementation of road safety related measures


Regarding the critical aspect of a **common definition** for road accident fatalities, serious injuries and work related accidents, it was found that although the existence of a common fatality definition (mainly) was highly prioritized such a classification is not available in all the examined countries. Another highlighted issue of general concern is the **underreporting** of road accidents for which the accessibility to relevant data, though regarded as a priority of major importance for the majority of the stakeholders, is only partially available. Road accident databases that link Police and hospital data may serve as a potential solution to the underreporting issue. Such a perspective for **joined databases**, although once again highly acknowledged by the respondents, at present, seems not available to the majority of stakeholders. Identifying **high-risk sites** are considered more important compared to performing in-depth accident analysis, where regarding the latter, the existence of a common methodology seems rather limited.

Exposure data although appreciated by more than 50% of the stakeholders are fully available to approximately 20% of them.

Information on road users' **behavioural aspects and attitudes** were found to be highly prioritized by more than 70% of road safety stakeholders in all countries. However, availability of such information is rather limited to almost 30% of stakeholders. The same percentages more or less in terms of priority and availability ratings respectively were found regarding information on road accident causation factors. From the road infrastructure point of view, data on road safety audits – inspections were greatly appreciated by the stakeholders, although such information is currently available to less than 10% of the respondents.

7.4 Road Safety Data

Only few countries dispose suitable **time series of road fatality data** and especially for the latest available decade 2005-2014, only 21 African countries have available data for more than 5 years. The greatest lack in data concerns risk exposure and safety performance indicators, for which few countries have collected such data.



Moreover, a second issue concerns the **comparability** of the data and the potential of using **different databases** in a complementary way. Concerning the fatality data, the review revealed that different definitions are used among the countries. The **WHO** provides the primary data as received by the national sources in the country profiles of the reports, which adjust them to the 30-days definition and publish them in the statistical tables. However, these data are not directly comparable because of differences in the quality of data collection process among the countries. In order to take into account under-reporting issues and achieve comparability, the WHO has developed statistical models to estimate the number of fatalities. In addition, the comparison of the two databases showed that while the **IRF** uses the 30-days definition for the killed persons in road accidents, the data that publishes are those as reported by the national sources, which have different definitions. Thus, the data cannot be comparable among the countries, without being processed before, while attention is needed when combining the two databases.

Concerning the data on **exposure** and **road safety performance**, the comparability of the countries with available data is not totally reliable, since the data refer to different years, with a difference of more than 10 years in some cases (e.g. road network density). Moreover, there is not much information on the collection methods that ensures an appropriate comparison.

However, the available data are presented in tables and related figures drafted in order to obtain an approximate picture of the road safety situation in African countries. There are clear **differences on road safety performance** of the countries in terms of road safety outcomes, which are also obvious when examining the motorization level or the characteristics of the road infrastructure of the countries. However, the lack of data on road safety performance and traffic exposure do not permit to come to some first conclusions so far.



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ANNEX I Brief Questionnaire

Africa Road Safety Workshop

13-15 December 2016, Nairobi

Questionnaire on Basic Aspects of Road Safety

Country:

Person interviewed:

1. Has a Lead Agency been established to prepare policy orientations or directions for Road Safety (RS)?

Y	N
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2. Does Parliament have a role in decision-making on RS orientations or directions?

Y	N
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3. Has a national Strategy for improved RS performance in the long term officially been set?

Y	N
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3a. If yes, please describe.

4. Have national medium-term (four to ten years) quantitative targets been set for improved safety performance?

Y	N
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4a. Have the targets been defined:

	on a purely (national) political basis (top-down)
	on the basis of the UN Decade of Action RS target ('-50% in 2020')
	using a rational process based on known key problems and potentially efficient measures (bottom-up)

4b. Are the targets based on:

Y/N	fatalities (please describe)
Y/N	serious injuries (please describe)
	other indicators:

4c. Have intermediate safety performance indicators (SPIs) been defined to check progress towards the target?

Y	N
---	---

5. Are sustainable systems (durable, funded, maintained) in place to collect and manage data on road crashes, fatalities and injuries?

Y	N
---	---

6. Is there a Central Organization in charge of data systems for RS?

Y	N
---	---

7. Are there crash databases that link police and hospital data?

Y	N
---	---

8. Has a reporting procedure been set up to monitor the RS interventions carried out in the country?

Y	N
---	---

9. Is "benchmarking" used to monitor progress in the RS situation relatively to other (European) countries?

Y	N
---	---

10. Do you use any international RS databases/information sources?

Y	N	N/A
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10a If 'yes', please specify which international sources you have used



ANNEX II Extensive Questionnaire



INTRODUCTION

The SaferAfrica project aims at creating favorable conditions and opportunities for the effective implementation of actions for road safety and traffic management in African countries, by setting up a **Dialogue Platform between Africa and Europe**. Besides other initiatives the Dialogue Platform aims at supporting the assessment of the implementation of African Road Safety Action Plan as well as defining recommendations on future road safety actions and conduct institutional activities to foster their adoption.

Consequently certain knowledge and management tools need to be developed in the road safety domain that will improve commonly available data and tools. However, the overall objective is concretedata and information to be accessible by all stakeholders involved in road safety, either directly or indirectly. As a first step towards meeting this goal, it is important to assess thoroughly the needs of these actors in terms of knowledge, data and information tools.

This questionnaire is subdivided in two main sections. The first one (Parts A, B and C) concerns your activity in the field of road safety, road safety management practices in your country and key road safety resources you use in your daily work. The second section (Parts D and E) concerns data collection practice and basic road safety data in your country.

Thank you very much in advance.

Questions or comments can be directed to: Stergios Mavromatis (stemavro@central.ntua.gr) and Antonino Tripodi (antonino.tripodi@uniroma1.it)

PART A: Background information

Date of interview:

Person interviewed:

Name:

Current position, previous positions if relevant:

A1. In which country are you working?

A2. What type of organization are you working for?

A3. What are **your** main **road safety** related activities? (select all that apply)

- Data collection and analysis
- Campaigns
- Communication
- Education
- Training
- Monitoring and evaluation
- Planning and design
- Driver, passenger and VRU safety
- Infrastructure safety
- Vehicle safety
- Enforcement
- Health – post crash treatment
- Research (commissioning)
- Research (conducting myself)
- Management
- Policy making
- Government lobbying
- Other (please specify)

A4. How many years have you been working in the field of road safety?

- <5 years
- 5-10 years
- 11-20 years
- >20 years

PART B: Road safety management practices

Institutional organization, coordination and stakeholders' involvement

	Yes	No	Unknown	Please elaborate
B1. Have high level inter-sectoral decision-making institutions been established to prepare policy orientations or directions for RS?				<i>(Name of the institution?) Ex: France, Intersectorial Ministerial Road Safety Committee under the Prime Minister</i>
If yes: B1a) has it been created legally (law, decree)?				<i>(Since when?)</i>
B1b) Does it operate :				
- Under the Head of State (Prime Minister, President, etc).?				<i>(Does it have authority over ministries, road agencies, etc?)</i>
- Parliament				
- Other? (please specify)				
B1c) Does it represent all governmental sectors potentially involved in RS in the country:				
- Urban planning?				<i>(Are all sectors represented actually involved in road safety decisions?)</i>
- Transport and traffic planning?				
- Road infrastructure?				
- Enforcement?				
- Justice?				
- Health?				
- Vehicles and ITS (Intelligent transport Systems)?				
- Research?				
- Education?				
- Others? (please specify)				
B1d) Are some non-governmental stakeholders represented in the high-level decision-making institution, in particular from:				
- Research institutions				
- Private businesses				
- NGOs				
B1e) Has a periodical schedule for meetings been specified?				<i>(What period?)</i>
B1f) Is the high-level decision-making institution meeting regularly?				<i>(How often?)</i>

B2. Does Parliament have a prominent role in initiating decision-making on road safety orientations or directions?				<i>(Parliament may introduce laws on its own initiative, or may request specific policy components)</i>
B3. Is Parliament involved in adopting road safety orientations or directions?				<i>(Parliament may vote a vision or a programme)</i>
B4. Has a Lead Agency been formally appointed to take responsibility for road safety (direct the national road safety effort)?				
If yes is it				
- A ministry?				<i>(Which one?)</i>
- A road safety dedicated structure?				
- An agency (roads, transport, etc.)?				
- An individual?				
B5. Has a technical inter-sectoral road safety institution been established to coordinate policy formulation and implementation?				<i>(Under whose authority?)</i>
If yes: B5a) Has it been created legally (law, decree)?				<i>(When was the law or decree passed?)</i>
B5b) Is it integrated into the decision-making hierarchy (as opposed to having been created as an association, a foundation or other non-governmental structure)?				<i>(Does the policy-making institution have authority to get a programme adopted? To get it implemented by all the stakeholders involved?)</i>
B5c) Does it come under:				
- the Prime Minister or other higher level decision-maker,				
- the inter-sectoral decision-making institution, or				
- the Lead Agency?				
B5d) Does it include the agencies responsible for road safety interventions in each one of the following fields:				
- Rural infrastructure				
- Urban infrastructure				
- Transport and traffic planning				
- Vehicles				
- Traffic education				
- Driver training and licensing				
- Road safety campaigns				
- Enforcement				
- Health				

<ul style="list-style-type: none"> - Research - Others(please specify) <p>B5e) Are some relevant non-governmental actors or networks represented in the institution?</p> <p>B5f) Are the members of the technical inter-sectoral institution individually nominated (as opposed to generic nominations by position?)</p> <p>B5g) Is the duration of the mandate of the members precisely defined in order to ensure continuity of RS activities?</p> <p>B5h) Is the technical inter-sectoral institution endowed with a statutory (law or decree established) budget</p> <ul style="list-style-type: none"> - for "fact-finding" (studies, research, preparation of decisions)? - to implement some road safety interventions? <p>If yes: B5i) Does the statutory budget include:</p> <ul style="list-style-type: none"> - Public funding? - Private funding? 				<p>(for example, teachers, driving instructors, health personnel, etc.)</p> <p>(Is the coordinating institution stable enough that its members can acquire adequate expertise?)</p> <p>(For experimentation? for measures which would not otherwise be implemented?)</p>
<p>If it exists:</p> <p>B6a) is the technical inter-sectoral RS institution also empowered to coordinate implementation of interventions horizontally across agencies?</p> <p>B6b) If yes, does the coordination actually works across all sectors of interventions?</p> <p>If it does not exist or if not empowered:</p> <p>B6c) Are all interventions being coordinated horizontally across agencies through other means or structures?</p> <p>B6d) Are some types of interventions otherwise coordinated?</p>				<p>(Ensuring that implementation is on schedule? Helping with problems? Ensuring that connected measures are all implemented?)</p> <p>(For example: through bi-sectoral cooperation on specific policy components)</p>
<p>If it exists:</p> <p>B7a) Is the technical inter-sectoral institution also empowered to coordinate interventions vertically between national, provincial and/or local road safety institutions or agencies</p>				<p>(For example: do provincial authorities participate in national policy formulation? in policy adoption?)</p>

involved? B7b) If not, are interventions being coordinated vertically across agencies through other means or structures?				
B8. Have any institutional structures for the consultation of stakeholders been formally established (by law or decree)?				(Since when?)
If yes: B8a) Does it include representatives of:				
- Elected bodies at the national level representing the citizens				(For example: representatives, senators, etc.)
- Regional authorities				(Elected councils? technical services?)
- Local authorities				
- Professional organizations (related to Health, Transport, Traffic, Enforcement, etc.)				(Which ones?)
- NGOs				(Which ones?)
- Businesses related to transport or traffic (vehicle manufacturers or importers, insurance companies, etc.)				(Which ones?)
B8b) Does it include, or can it call upon, scientific experts?				
B8c) Does it have its own statutory budget :				
- To operate?				
- To sponsor research or studies?				
B9. Are the legislative instruments defining inter-sectoral road safety management functions periodically reviewed and reformed,				
- Regarding the higher level decision-making institution?				
- Regarding the policy formulation and implementation institution?				
- Regarding the stakeholders' consultation structure?				

Policy formulation and adoption

	Yes	No	Unknown	Please elaborate
B10. Are some government agencies actively advocating the need for taking road safety action:				
- The health sector?				
- The transport sector?				
- The enforcement sector?				

- Others(please specify)				
B11. Are there NGOs actively promoting road safety?				(Which NGOs?)
B12. Are regional authorities consulted as to the part they are called to play in national road safety policy, before:				
- Setting up targets?				(Which ones?)
- Finalizing an inter-sectoral programme?				
- Adopting specific policy components?				(Which ones?)
B13. Are regional road safety programmes or policy components integrated into the national road safety policy?				(This concerns regional targets, measures taken at the regional level, etc.)
B14. Are local authorities (municipalities, counties) consulted as to the part they are called to play in national road safety policy before:				
- Setting up targets?				
- Finalizing an inter-sectoral programme?				
- Adopting specific policy components?				
B15. Are local road safety programmes or policy components integrated into the national road safety policy?				(This may involve generalizing or legalizing local innovative or experimental practice)
B16. Has a national "vision" for improved RS performance in the long term officially been set?				
If yes: B16a) Has it been voted in Parliament?				
B16b) Is it otherwise compelling for the government?				
B16c) Has it already triggered:				
- Action?				
- Research?				
B17. Have national medium-term (four to ten years) quantitative targets been set for improved safety performance?				(Is each target realistic, attainable?)
If yes: B17a) Have the targets been defined:				
- on a purely national political basis?				
- on the basis of the UN Decade of Action road safety target?				
- using a rational process based on known key problems and potentially				

<ul style="list-style-type: none"> - Changes in the institutional organisation? - Others?(please specify) <p>B19d) Have implementation tasks and responsibilities been distributed between the key actors (government, regional, local authorities, NGOs) within the programme?</p>				<i>(please describe)</i>
<p>B20. If a national medium term road safety programme has been elaborated, has it been adopted at high level?</p> <p>If yes: B20a) Has it been adopted :</p> <ul style="list-style-type: none"> - by the Head of State/President of the Republic? - by the Prime Minister? - by Parliament? - Others (please specify)? 				

Policy implementation and funding

	Yes	No	Unknown	Please elaborate
<p>B21. Have partnerships or agreements been established at the national level with the private sector for a contribution in terms of:</p> <ul style="list-style-type: none"> - Management of particular activities? - Expertise? - Research? - Funding? - Communication on key RS issues? - Other?(please specify) 				<i>(Which partners?)</i>
<p>B22. If a national road safety programme has been elaborated and adopted, has the budget needed for programme implementation been estimated?</p> <p>If yes: B22a) Have funding capabilities and opportunities been explored?</p>				<i>(Have all potential costs been considered?)</i>
<p>B23. If a long term vision has been adopted, has a budget been estimated to move towards this vision (distinct from the road safety budgets allocated to medium-term inter-sectoral programmes)?</p> <p>If yes: B23a) Is it:</p> <ul style="list-style-type: none"> - A budget for research? - A budget for implementation? 				<i>(Have all foreseeable costs been considered?)</i>

<p>B24. Has a high level engagement (decision) been taken to ensure availability of a budget for road safety:</p> <ul style="list-style-type: none"> - For a medium term programme? - For a long term vision? 				<p><i>(Is it in line with the estimated necessary budget? Was the decision officially approved?)</i></p>
<p>B25. Does the government allocate the product of fines (or any funds collected from RS measures) to road safety interventions or related activities?</p> <p>If yes: B25a) Is it legalized (law or decree)?</p> <p>B25b) Is the public informed of the use of funds?</p>				
<p>B26. Is there a budget specifically allocated to road safety activities, interventions and capacity building from the national budget (Treasury)?</p>				<p><i>(Is there a line for RS in the national budget? Is RS partly or totally funded through ministries?)</i></p>
<p>B27. Is there a sustainable funding structure for road safety, independent from the Treasury (RS Fund, RS Foundation)?</p> <p>If yes: B27a) Has it been legally created (law, decree, statutes, etc.)?</p> <p>B27b) Is the financing coming from one or several of these sources:</p> <ul style="list-style-type: none"> - Treasury? - Taxes? - Tolls? - Revenue from road safety interventions? - Insurance companies? - Private sources? - Other? (please specify)? 				<p><i>(The national RS budget may be allocated directly (question 27) or through the RS funding structure)</i></p> <p><i>(For example: a percentage of the tax on petroleum products, specific taxes on driver licenses, vehicle registration, etc.)</i></p> <p><i>(The measures which may bring in a revenue include fines, technical control of vehicles, driver licensing, etc.)</i></p>
<p>B28. Are there formal resource allocation procedures to support road safety management tasks and interventions?</p>				<p><i>(Is there a list of "fundable" activities? A list of criteria to get funding?)</i></p>

policemen, road engineers, etc.)

B33b) Have the contents of the training plans been established with, or validated by, scientific institutions?

B33c) Has funding been allocated to the training activities planned?

Monitoring and evaluation

	Yes	No	Unknown	Please elaborate
B34. Are sustainable and reliable systems (durable, funded, maintained) in place to collect and manage data on road accidents, fatalities and injuries?				<i>(police records, health records, others?)</i>
- at national level				
- at regional level				
- at local level				
B35. Are sustainable and reliable in-depth accident investigations for road safety purposes in place?				
B36. Are sustainable and reliable systems in place to collect and manage data on behavioural indicators:				
- Vehicle speeds				
- Safety belt wearing rates				
- Alcohol-impaired driving				
- Others (please specify)				
B37. Is there a national Observatory centralizing the data systems for road safety?				
If yes: B37a) Does it include data on:				
- accidents, fatalities or injuries?				
- in-depth accident investigations?				
- behavioural indicators?				
- exposure (traffic)?				
- violations or fines?				
- driver licensing?				
- vehicle registration?				
- Other? (please specify)				
B38. Has a reporting procedure been set up to monitor the road safety interventions carried out in the country?				

If yes: B38a) Is the reporting

- periodical?
- linked to intermediate phases of the RS programme?

B38b) Does it apply to all areas of intervention:

- Engineering measures on rural roads
- Planning and engineering interventions in urban areas
- Enforcement operations
- Traffic education
- RS campaigns
- Driver training
- Vehicle related measures
- Others (please specify)

B38c) Does it address:

- Delivery by the authorities (actors) concerned
- Compliance with the timetable of implementation
- Implementation of the needed legal changes
- Identified needs for programme modification or changes in implementation conditions

B38d) Is it performed "horizontally" at the national level (covering ministries and government agencies)?

B38e) Is it performed "vertically" to cover activities at the regional and/or the local level?

B38f) Is the information addressed to?

- the Lead Agency?
- the high level inter-sectoral decision-making road safety institution?
- the technical inter-sectoral road safety institution?
- the government?
- the Parliament?

B38g) Has some action been taken on the basis of the outcome of this information:

<ul style="list-style-type: none"> - partial changes in the action programme? - improvement of implementation conditions? 				
<p>B42. Has an evaluation process been planned to assess the effects on accidents and injuries or socio-economic costs of some policy components ("product" evaluation)?</p>				<p><i>(This may involve legal or institutional changes, increased budget or human resources, training, etc.)</i></p>
<p>If yes: B42a) Which areas of intervention are covered by the evaluation plan:</p>				
<ul style="list-style-type: none"> - infrastructure? 				
<ul style="list-style-type: none"> - enforcement? 				
<ul style="list-style-type: none"> - vehicle related measures? 				
<ul style="list-style-type: none"> - others? (please specify) 				
<p>B42b) Is the evaluation actually being performed?</p>				
<p>B42c) Are scientific teams involved in the evaluation process?</p>				
<p>B42d) Are the results available to all stakeholders?</p>				
<p>B42e) Are the results formally published?</p>				<p><i>(Through which media? Under which initiative?)</i></p>

Scientific support and knowledge, capacity building

	Yes	No	Unknown	Please elaborate
<p>B43. Is there at least one institute or university department in your country performing multi-disciplinary road safety research and/or studies?</p>				
<p>If yes: B43a) Are there steady research teams</p>				<p><i>(Do at least some of the researchers have a permanent or long-term appointment?)</i></p>
<p>B43b) Is evaluation of safety measures, interventions and/or programmes part of the research and studies carried out in the country?</p>				
<p>B43c) Are road safety research results published at the international level?</p>				<p><i>(this would mean in English or French language)</i></p>
<p>B43d) Are road safety research results systematically made available to the decision-makers and policy-makers in the</p>				<p><i>(Do researchers or research institutions translate their scientific</i></p>

country?				<i>findings into applicable results?)</i>
B43e) Is there sustainable funding available for road safety research?				
B44a) Are results of safety analyses and research actually used in formulating the country's RS policy?				
B44b) Are the teams of road safety researchers in the country systematically requested by policy-makers to contribute knowledge for policy formulation?				
B45. Are the government or road safety institutions providing factual and valid information on road accidents, injuries and risk to the citizens?				
If yes, is it communicated:				
- Through reports?				
- Through the media?				
- On internet?				
- Other? (please specify)				
B46. Are the government or road safety institutions systematically (or periodically) informing the citizens of the national road safety policy and interventions and their effects?				
B47. Are there articles or programmes in the media on road accidents and/or on road safety activities which review, criticize or challenge current policies?				<i>(How often do such articles appear?)</i>
B48. Is there at least one university (or other superior education structure) providing a multi-disciplinary course on road traffic safety for students?				
If yes: B48a) At which level:				
- under-graduate?				
- post graduate?				
B48b) Does the course lead to a diploma or a certificate?				
B49. Do universities or other educational institutions offer specialized courses addressing future professionals who may be involved in road safety:				
- Urban planners?				<i>(Courses integrated in initial training)</i>
- Road engineers/technicians?				
- Teachers?				
- Enforcement officers?				

<ul style="list-style-type: none"> - Driving instructors? - Health personnel? - Others?(please specify) 	<table border="1" style="width: 100%; height: 100%;"> <tr><td style="width: 33%; height: 20px;"></td><td style="width: 33%; height: 20px;"></td><td style="width: 33%; height: 20px;"></td></tr> <tr><td style="width: 33%; height: 20px;"></td><td style="width: 33%; height: 20px;"></td><td style="width: 33%; height: 20px;"></td></tr> <tr><td style="width: 33%; height: 20px;"></td><td style="width: 33%; height: 20px;"></td><td style="width: 33%; height: 20px;"></td></tr> </table>																												
<p>B50. Do universities, research or other educational institutions offer further-training sessions addressing key professionals currently involved in road safety:</p> <ul style="list-style-type: none"> - Urban planners? - Road engineers/technicians? - Teachers? - Enforcement officers? - Driving instructors? - Health personnel? - Multidisciplinary? - Others?(please specify) 	<table border="1" style="width: 100%; height: 100%;"> <tr> <td style="width: 33%; height: 20px;"></td> <td style="width: 33%; height: 20px;"></td> <td style="width: 33%; height: 20px;"></td> <td rowspan="9" style="width: 33%; vertical-align: middle; text-align: center;"><i>(Training sessions may be part of continuing education programmes)</i></td> </tr> <tr><td style="width: 33%; height: 20px;"></td><td style="width: 33%; height: 20px;"></td><td style="width: 33%; height: 20px;"></td></tr> <tr><td style="width: 33%; height: 20px;"></td><td style="width: 33%; height: 20px;"></td><td style="width: 33%; height: 20px;"></td></tr> <tr><td style="width: 33%; height: 20px;"></td><td style="width: 33%; height: 20px;"></td><td style="width: 33%; height: 20px;"></td></tr> <tr><td style="width: 33%; height: 20px;"></td><td style="width: 33%; height: 20px;"></td><td style="width: 33%; height: 20px;"></td></tr> <tr><td style="width: 33%; height: 20px;"></td><td style="width: 33%; height: 20px;"></td><td style="width: 33%; height: 20px;"></td></tr> <tr><td style="width: 33%; height: 20px;"></td><td style="width: 33%; height: 20px;"></td><td style="width: 33%; height: 20px;"></td></tr> <tr><td style="width: 33%; height: 20px;"></td><td style="width: 33%; height: 20px;"></td><td style="width: 33%; height: 20px;"></td></tr> <tr><td style="width: 33%; height: 20px;"></td><td style="width: 33%; height: 20px;"></td><td style="width: 33%; height: 20px;"></td></tr> </table>				<i>(Training sessions may be part of continuing education programmes)</i>																								
			<i>(Training sessions may be part of continuing education programmes)</i>																										

PART C: Key road safety resources

C1. Do you use any international road safety databases/information sources?(yes, no, don'tknow)
 If 'yes', please specify which international sources you have used

.....

C2. Do you use any national databases/information sources?

- a. Road accident databases: (yes, no, don't know)
- b. Travel/mobility survey results: (yes, no, don't know)
- c. Other exposure databases (e.g. vehicle fleet): (yes, no, don't know)
- d. Other please specify: (yes, no, don't know)

Documents

C3. Please specify the key international/ national documents on **road safety analyses** that you mostly use:

Africa									
No	Organisation / Author	Title	Year Published	Country - Region	Language	Keyword 1	Keyword 2	Keyword 3	Link
1									
2									
3									
National									
No	Organisation	Title	Year	Country -	Language	Keyword	Keyword	Keyword	Link

	/ Author	Published	Region	1	2	3	
1							
2							
3							

C4. Please specify the key international/ national documents on **roadsafetymanagement** that you mostly use:

International									
No	Organisation / Author	Title	Year Published	Country - Region	Language	Keyword 1	Keyword 2	Keyword 3	Link
1									
2									
3									
National									
No	Organisation / Author	Title	Year Published	Country - Region	Language	Keyword 1	Keyword 2	Keyword 3	Link
1									
2									
3									

C5. Please specify the key international/ national road safety **good practice manuals** that you mostly use:

International										
No	Organisation / Author	Title	Year Published	Country - Region	Language	Category	Keyword 1	Keyword 2	Keyword 3	Link
1										
2										
3										
National										
No	Organisation / Author	Title	Year Published	Country - Region	Language	Category	Keyword 1	Keyword 2	Keyword 3	Link
1										
2										
3										

Contacts

C6. Please indicate the key road safety stakeholders in your country (add as many lines as necessary)

n								
b. Serious injury definition								
c. Work related crash definition (i.e. a crash that occurs whilst commuting or during professional activities)								
d. Data on the underreporting of road traffic crashes (i.e. underestimation of the true number of accidents)								
e. Crash databases that link police and hospital data								
f. The use of GPS and/or GIS technologies in accident data collection								
g. Information on road users' behaviour and attitudes								
h. Exposure data (e.g. kilometres driven, numbers of trips)								
i. Statistical methods for priority setting (e.g. to rank road safety measures)								
j. Results from in-depth crash investigations								
k. Results from naturalistic driving studies (using data recorders and/or cameras in vehicles)								
l. Results from driving simulator studies								
m. Information on the effect of external factors on the number of road traffic crashes (e.g. the								

procedures and methods for carrying out evaluations of road safety measures								
d. Information on the safety impacts of singular road safety measures (e.g. graduate driver licensing)								
e. Information on the safety impacts of combined road safety measures								
f. Information on the costs and benefits of a road safety measure								
g. Information on the public acceptance of a road safety measure								
h. Comparisons of the frameworks in which road safety policies and measures are implemented								
i. Comparisons of safety rules and regulations								
j. Comparisons of road safety policies and measures regarding specific road user groups								
k. Good practice catalogue of measures including implementation conditions								
l. Other (please specify below)								

D4. Please state any other data or resources that should be available for the development of road safety programmes.

m.Information on potential funding sources for road safety measures								
n.Collections of video clips and billboards of road safety campaigns								
o.Other (please specify below)								

D6.Please state any other data or resources that should be available for the implementation of roadsafety measures.

Data and resources for the monitoring and evaluation of road safety measures

D7.Please indicate both **priority** and **availability** of the following data and resources **in relation to your personal work**.

	PRIORITY level for my work				AVAILABILITY at the level of my country			
	High priority	Medium priority	Low priority	Not relevant for my work	Already available to me	Partially available	Currently not available	Don't know
a. Methods for evaluation of safety impacts of road safety measures								
b.Common methodology for the evaluation of costs and benefits of road safety measures								
c.Statistical methods for following trends								
d.Focusing on " seriously " injured counts, in addition to fatality counts								
e.Other (please specify below)								

D8.Please state any other data or resources that should be available for the monitoring and evaluation of road safety measures.

PART E: Basic road safety data

E1.Please provide the following definitions in your country:

Road fatality	
Road injury	
Hospitalised due to road accident	

E2. Please fill in the following road safety data in your country:

Value Year

Road fatalities in time-series

Number of fatalities	number	1995-2015	
Passenger car fatalities	number	1995-2015	
PTW fatalities	number	1995-2015	
Cyclist fatalities	number	1995-2015	
Pedestrian fatalities	number	1995-2015	
Male fatalities	number	1995-2015	
Female fatalities	number	1995-2015	
Fatalities < 25 years old	number	1995-2015	
Fatalities > 65 years old	number	1995-2015	

Road fatalities latest year

Fatalities on motorways	number	2015	
Fatalities on urban roads	number	2015	
Fatalities on rural roads	number	2015	
Number of Injuries	number	2015	
Number of hospitalized road accident casualties	number	2015	
Number of hospitalized road accident casualties with MAIS>3 score	number	2015	

Risk Exposure

Vehicle km of travel (all vehicles)	number	2015	
Vehicle km of travel (passenger cars)	number	2015	
Vehicle Km of travel (motorcycles)	number	2015	
Vehicle Km of travel (HGV)	number	2015	
Length of road network (total)	number	2015	
Length of motorways	number	2015	
Length of rural roads	number	2015	
Length of paved roads	number	2015	
Length of road tunnels	number	2015	
Modal split road/rail	%	2015	
Modal split passenger/freight	%	2015	
Modal split private/public	%	2015	
Number of registered vehicles (total)	number	2015	
Number of passenger cars	number	2015	
Number of HGV	number	2015	
Number of power two wheelers	number	2015	

Road Safety Measures

Existence of national speed limit law	yes/no	Year of implementation	
Max speed limits on urban roads	number	2015	
Max speed limits on rural roads	number	2015	
Max speed limits on motorways	number	2015	
Treatment of HRS	yes/no	Year of implementation	
RSA compulsory on new roads	yes/no	Year of implementation	
Technical inspection legislation-ADR	yes/no	Year of implementation	
Existence of child restraint law	yes/no	Year of implementation	
Existence of a national helmet law	yes/no	Year of implementation	
Law requires helmet to be fastened	yes/no	Year of implementation	
Law refers to helmet standards	yes/no	Year of implementation	
Existence of law on mobile phone use while driving	yes/no	Year of implementation	
Law applies to hand-held phones	yes/no	Year of implementation	
Law applies to hands-free phones	yes/no	Year of implementation	
Demerit/Penalty Point System in place	yes/no	Year of implementation	
Existence of national drink-driving law	yes/no	Year of implementation	
BAC limits (general)	number	2015	
BAC limits (young/novice drivers)	number	2015	
BAC limits (professional drivers)	number	2015	
Driving licences thresholds (minimum ages per category) for passenger cars	number	2015	
Driving licences thresholds (minimum ages per category) for motorcycles	number	2015	
Driving licences thresholds (minimum ages per category) for trucks and goods vehicles	number	2015	
Compulsory / voluntary education programmes in primary / secondary school	yes/no	2015	
Compulsory / voluntary education programmes for particular groups (e.g. elderly, bicyclists)	yes/no	2015	
Country has one national emergency access number;	yes/no	Year of implementation	
Technical inspection mandatory for passenger cars	yes/no	Year of implementation	
Technical inspection mandatory for motorcycles	yes/no	Year of implementation	
Laws that prohibit the use of vehicles without seatbelts (front and rear).	yes/no	Year of implementation	
Vehicle standards-seat belts	yes/no	Year of implementation	

Vehicle standards-seat belt anchorages	yes/no	Year of implementation	
Vehicle standards-Frontal impact	yes/no	Year of implementation	
Vehicle standards-Side impact	yes/no	Year of implementation	
Vehicle standards-Electronic Stability Control	yes/no	Year of implementation	
Vehicle standards-Pedestrian Protection	yes/no	Year of implementation	
Vehicle standards-Child Seats	yes/no	Year of implementation	
Designated trauma care centres.	yes/no	2015	
Trauma care training is required for emergency care personnel.	yes/no	2015	

Road Safety Performance Indicators

Number (and length) of Road Safety Audits conducted	number	2015	
Number of identified high risk sites and related interventions	number	2015	
Mean age of vehicle fleet	number	2015	
Seat-belt use rates-front	%	2015	
Seat-belt use rates-rear	%	2015	
Helmet use rates-all	%	2015	
Rates of driving while using a mobile phone (handheld / hands-free) for car drivers	%	2015	
Estimated % SI patients transported by ambulance	%	2015	
Emergency response time	number	2015	
Number of ambulances per population	number	2015	
Hospital beds per 1000 inhabitants	number	2015	
Average percentage occupant protection score for new cars sold	number	2015	
Average percentage score of VRUs protection for new cars sold	number	2015	
Percentage of drivers above speed limit in roadside checks	%	2015	
Roadside police speed checks per 1,000 population	number	2015	
Percentage of drivers above legal alcohol limit in roadside checks	%	2015	
Roadside police alcohol tests per 1,000 population	number	2015	

Economy and Management Indicators

GDP per capita	number	1995-2015	
Population	number	1995-2015	
Share of people under 25 years old	%	2015	
Share of people over 65 years old	%	2015	
Population per 1 km ² of country's territory	number	2015	
% of population living in urban areas (>10.000 inhabitants)	%	2015	
Existence of a road safety lead agency	yes/no	2015	
The lead agency is funded	yes/no	2015	
Existence of national strategy	yes/no	2015	
National strategy funded	yes/no	2015	
Existence of national fatality targets	yes/no	2015	
Targets in compliance with UN target	yes/no	2015	
Assessment of measures	yes/no	2015	

Data collection & analysis	yes/no	2015	
Existence of guidelines (design, RSA)	yes/no	2015	



List of Abbreviations

AU	African Union
EC	European Commission
EU	European Union
GHO	Global Health Observatory
GIS	Geographic Information System
GPS	Global Positioning System
IRF	International Road Federation
IRTAD	International Road Traffic Accident Database
NDCs	National Data Coordinators
SPIs	Safety Performance Indicators
UNECA	United Nations Economic Commission for Africa
WRS	World Roads Statistics
WHO	World Health Organisation